Maryland Transportation Authority

Maryland Transportation Authority

October 2020

Response to Maryland Department of Environment (MDE) Comments on Fiscal Year 2019 Progress Report for National Pollutant Discharge Elimination System (NPDES) General Permit 13-SF-5501 for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4)

SUBMITTED TO:
Maryland Department of the Environment
Water and Science Administration
Program Review
1800 Washington Boulevard
Baltimore, Maryland 21230

SUBMITTED BY:
Maryland Transportation Authority
Office of Engineering and Construction
Environmental Division
300 Authority Drive
Baltimore, Maryland 21222

Maryland Transportation Authority (MDTA) submitted its report for fiscal year (FY) 2019, the first year of the National Pollutant Discharge (NPDES) General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4), Permit No.13-SF-5501, to the Maryland Department of the Environment (MDE) in October 2019. This submission/n included the Impervious Area Restoration Form and Work Plan, which discussed MDTA's plans to meet the Chesapeake Bay Restoration and Total Maximum Daily Load (TMDL) requirements set forth by the permit through new stormwater management projects. MDE provided comments to MDTA on January 29, 2020, regarding their first annual report submission. MDE comments were organized by topic area and are provide below. MDTA's responses are shown in italics following the MDE comments.

1 Reporting

MDE Comment 1:

The Progress Report Submittal Form was complete and included a signature for the appropriate responsible personnel and contact information. This information is required to be updated annually.

MDTA Response:
MDTA confirms that the signature of appropriate responsible personnel and contact information will be updated annually in the MS4 Progress Report.

MDE Comment 2:

The next Progress Report is due October 31, 2020 and must include:

- Updates to impervious area restoration progress and response to all comments outlined below.
- Progress on program implementation to address the six minimum control measures (MCMs) for the first two years of the permit term (i.e., October 31, 2018 – June 30, 2020). While this information is only required in years 2 and 4, the Department will request any supplemental information related to MCM program development as necessary at any time during the permit term. This will ensure MDTA remains on track for achieving compliance with the permit conditions.
- The MS4 Progress Report in accordance with Appendix D of the permit, including any supplemental attachments in order to thoroughly address reporting requirements.

MDTA Response:
MDTA's FY20 MS4 Progress Report includes updates to the impervious area restoration progress section and a description of the six MCM programs. This submission also includes the reporting forms and attachments, which provide details on impervious area reporting and programs implemented by MDTA to address six MCMs for FY19/20.

2 Impervious Area Baseline Analysis and Urban BMP Database

MDE Comment 3:

MDTA has calculated an impervious area baseline of 1,766.8 acres, and therefore the 20% restoration target is 353.4 acres. Prior to the Department's approval of the baseline and restoration target, additional information is needed as noted below.

MDTA Response:
MDTA reviewed MDE's comments on the Impervious Area Baseline Analysis and Urban BMP Database and provided specific responses along with supporting documentation to the comments below.

MDE Comment 4:

MDTA used aerial imagery to determine impervious area (e.g., roadways, campuses, maintenance facilities) covered under the permit. However, further information is needed regarding what year of aerial imagery was used in generating the baseline assessment. MDTA reported that the baseline year is 2002 and that 2,416 acres is impervious. From that total, MDTA subtracted 597 acres treated by new development constructed from 2002 to the beginning of the permit term. This methodology would only be applicable if the year of aerial imagery used to generate the 2,416 acres is 2018.

MDTA Response:
MDTA adjusted the baseline year of assessment and is now using 2018 as the baseline year. The aerial imagery used to generate 2,329.7 impervious acres in MDTA's Impervious Area Restoration Work Plan is from 2018.

MDE Comment 5:

Section I of the Reporting Form should be edited to include all impervious area covered under the permit, including new development since 2002 and the Intercounty Connector (i.e. 2,416 acres). If the baseline year is 2018 (i.e., the year the total impervious area was generated), the 597 acres treated by new development would be reported in Section I of the Reporting Form as acres treated.

MDTA Response:
As noted above, MDTA adjusted the baseline year of assessment and is now using 2018. The Section I Reporting Form was updated to include the new baseline impervious area, which includes new development projects from 2002-2018 including Intercounty Connector and I-95 Section 100 Express Toll Lanes

MDE Comment 6:

A comprehensive Urban BMP database has been submitted in the required format. The database is generally consistent with the structure outlined in the general permit; however, a few minor edits are required. Specific fields that need to be corrected or updated include:

a. The Approval_Date must be reported for every BMP in the BMP database and should be based on the Department's Sediment, Stormwater and Dam Safety Plan Review Division's state and federal approval number and approval date of the project.

b. The Local_BMP_ID shall be provided for each BMP. This information is based on the Department's Sediment Stormwater and Dam Safety Plan Review Division's State and federal approval number and approval date for the project.

c. The last maintenance date (Main_Date) needs to be populated for each BMP listed in the database each year. MDTA is responsible to ensure that regular maintenance occurs for all BMPS, therefore a properly maintained BMP will have updated information every year.

MDTA Response:

a. The Approval Date was populated for BMPs with available Sediment and Erosion Control Approval Letters. MDTA is currently coordinating with MDE to acquire approval letters for any BMPs missing this date. Currently, MDTA has received approximately 500 erosion and sediment control (ESC) approval letters.

b. *Local_BMP_ID was populated in the Urban BMP Database for BMPs with stormwater as-built plans and record set plans available.*

c. *MDTA updated the database to include most recent maintenance dates. The annual MCM report also discusses remedial maintenance conducted under MCM 5.*

MDE Comment 7:

All 614 structural and ESD practices were reported to be in passing condition per the BMP database. However, last inspections date back to 2014 and most maintenance dates were not provided. MDTA must provide additional explanation on how BMPs were evaluated to verify that they are functioning as designed. Inspection and maintenance activities need to occur in accordance with the schedules on the approved plans (e.g. seasonal, annual). Updated schedules can be found at mde.maryland.gov/programs/Water/StormwaterManagementProgram/Documents/Technical%20Memorandum%20No.%209%20-%20Maintenance%20Schedules.pdf.

MDTA Response:

Section 3.B.3 was added to the Impervious Area Restoration Work Plan to describe inspections and maintenance conducted by MDTA. The most recent inspections and remedial dates were also updated in the Urban BMP Database submitted with the FY20 MCM report.

MDE Comment 8:

Impervious areas draining to BMPs that are not functioning or are behind schedule on inspections and maintenance must be added back into the baseline.

MDTA Response:

If a BMP receives a failing score of D or E during the inspection, MDTA remediates the issues before the next inspection cycle, and often before the next reporting cycle. If a BMP were to remain in failing condition past the next reporting cycle, MDTA would then remove the credit from the database until the BMP is brought into working order. At this time, MDTA has not removed TMDL credit as all BMPs are functioning or scheduled to undergo repairs before the end of the next reporting period.

MDE Comment 9:

Further information is needed to verify the level of treatment based on site specific as-built conditions. While a certain level of treatment can be conservatively assumed based on built date, treatment will need to be verified by as-built plans and inspections for all BMPs during this permit term. If as-built plans are not available, MDTA must follow the Department's published guidance on verifying BMPs.

MDTA Response:

The Impervious Area Restoration Work Plan was revised to include details of the approach for verifying BMPs without stormwater as-builts in Section 3.B.1. Existing treatment information populated in the database is generally inferred based on design/construction era when as-built treatment information is not available.

MDE Comment 10:

Provide an update in the FY20 annual report on the status of submitting as-built plans to the Department for any existing BMP that has not received an as-built acceptance letter. The BMP database indicates that there are numerous BMPs with missing as-builts. MDTA will also need to address any outstanding comments noted by the Department regarding as-built plans as part of future work plans.

MDTA Response:

Section 3.B.2 of the Impervious Area Restoration Work Plan details the status of the MDTA as-built submission to MDE.

MDE Comment 11:

MDTA assigned P_E values to some BMPs built prior to 2002. Stormwater management BMPs constructed prior to Maryland's Stormwater Design Manual may receive a credit for a maximum P_E of 1 inch. In-stream facilities may receive a credit for a maximum P_E of 0.5 inches. However, these credits are conditional upon criteria detailed at mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/NPDES%20PI

%20Resource%20Files/MDE%20Memo%20on%20BMPs%20and%20Completion%20Dates%20for%20MS4%20Permit%20Requiremnts%204_9_2018.pdf.

MDTA Response:
MDTA reviewed design and as-built plans and design reports, as available, for existing BMPs to determine treatment P_E. MDTA compared the required treatment volume from plans and reports to the provided treatment volume per plans and reports or GIS data. The maximum P_E was then reduced as necessary to not exceed MDE's maximum for pre-2002 BMPs.

MDE Comment 12:

MDTA assigned a P_E of 1 inch to dry ponds (XDPD) and dry extended detention structures (XDED). These practices do not provide water quality treatment. Impervious acres draining to them must be included in the impervious area baseline. In addition, 37 BMPs were labelled XOTH (i.e., Other) and assigned a P_E of either 0.5 or 1 inch. MDTA must provide details on these practices to verify that they are approved BMPs that provide water quality treatment.

MDTA Response:
While P_E values were assigned to dry ponds(XDPD) and extended detention dry ponds (XDED), no impervious area credit is being claimed for these BMPs. Therefore, the impervious area baseline is not impacted. Of the BMPs labelled as others(XOTH), only BMP #KH0663N01 provides MS4 credit. Credit for this BMP is based on drainage area calculations developed from GIS data on the BMP's drainage and the provided storage value from the design plans.

MDE Comment 13:

MDTA must continue to update and annually submit a database for all BMPs.

MDTA Response:
MDTA will submit the BMP database documenting all BMPs at MDTA facilities.

3 Work Plan

MDE Comment 14:

MDTA provided a work plan with the first progress report submittal.

MDTA Response:
MDTA acknowledges the MDE comment.

MDE Comment 15:

The work plan provided sufficient detail regarding potential restoration projects and efforts to revise the baseline. The work plan should also address how MDTA will ensure that ongoing

BMP inspections and maintenance activities will be performed with consideration of the long-term costs.

MDTA Response:
Section 3.B.3 was added to the Impervious Area Restoration Work Plan documenting consideration of long-term costs with inspections and remediation.

MDE Comment 16:

The Department expects the work plan to be updated annually and identify adaptive management and new strategies for meeting the restoration target.

MDTA Response:
MDTA will continue to identify adaptive management strategies and new strategies for restoration, despite exceeding the restoration target. MDTA will update this work plan prior to every Progress Report submittal.

4 Restoration Activity Schedule

MDE Comment 17:

MDTA submitted several tables describing progress made toward the restoration goal. MDTA reported completing 486.8 acres of impervious acre restoration through redevelopment projects, street sweeping, and impervious area removal. The Department commends MDTA for implementing projects to achieve the restoration goal.

MDTA Response:
MDTA acknowledges the MDE comment.

MDE Comment 18:

MDTA must submit a complete restoration activity schedule that includes all restoration and redevelopment projects completed since 2006 that provide water quality treatment. MDTA must also address previous comments related to the BMP database, as-built plans, and BMP inspection and maintenance activities. This will enable the Department to verify restoration achieved.

MDTA Response:
MDTA submitted an updated restoration activity schedule with the submission of each Progress Report. This Progress Report addresses the Department's comments. The schedule for the FY20 MS4 Progress Report includes all BMPs used to meet the 20% requirement. Comments related to the database, as-built plans, and inspections and remediation were addressed.

MDE Comment 19:

The restoration activity schedule must be updated annually and submitted electronically in the format available on the Department's website.

MDTA Response:
The restoration activity schedule in MS Excel format is attached with the FY20 MS4 Progress Report.

5 Funding and Resources

MDE Comment 20:

MDTA estimates a total cost of $835,000 to implement the impervious area restoration program throughout the permit term.

MDTA Response:
MDTA acknowledges the MDE comment

MDE Comment 21:

MDTA should continue to explore opportunities for innovative, cost effective measures and strategies to achieve permit goals such as leveraging partnerships, public education and participation to enhance compliance, grants, and technical support for capacity building or asset management.

MDTA Response:
Section 7 of the Impervious Area Restoration Work Plan describes MDTA's partnership with other entities.

MDE Comment 22:

Resources related to MS4 program development and guidance for compliance with permit requirements are available on the Department's website at: https://mde.maryland.gov/programs/Water/St0rmwaterManagementProgram/Pages/NPDESMs4 New.aspx

MDTA Response:
MDTA acknowledges the MDE comment.

Maryland Transportation Authority

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor
Pete K. Rahn, Chairman

Board Members:
Peter J. Basso
Dontae Carroll
William H. Cox, Jr.
William C. Ensor, III
W. Lee Gaines, Jr.
Mario J. Gangemi, P.E.
Jeffrey S. Rosen
John F. von Paris

James F. Ports, Jr., Executive Director

October 30, 2020

Ms. Deborah Cappuccitti
Maryland Department of the Environment
Water and Science Administration
1800 Washington Boulevard, Baltimore, Maryland 21230

RE: National Pollutant Discharge Elimination System (NPDES)
MS4 Phase II General Discharge Permit No. 13-SF-5501
Progress Report Year 2 – FY 2020

Dear Ms. Cappuccitti:

The Maryland Transportation Authority (MDTA) is pleased to submit our Progress Report for Year 2 of the NPDES Municipal Separate Storm Sewer System (MS4) Phase II General Permit, Number 13-SF-5501. The submittal addresses MDE's comments on the Year 1 Progress Report and highlights our actions during the past two fiscal years (July 2018 through June 2020) to meet the Six Minimum Control Measures (MCM) and Chesapeake Bay Restoration requirements. The following are highlights of MDTA's accomplishments:

- Completed Impervious Area Baseline assessment using 2018 as the baseline year.
- Updated stormwater management implemented prior to the updated baseline year.
- Updated Chesapeake Bay Restoration Goal to be 359.57 acres.
- Updated restoration credits based on stormwater management treatment from redevelopment projects, stormwater retrofits, and alternative urban BMPs (street sweeping).
- Continued to develop and implement programs to meet the MCM requirements.

The following information is provided with this progress report:

- State and Federal Small MS4 Progress Report [Appendix D, Section I and II of the General Permit (using MDE's "fillable form")]
- Responses to MDE comments on the Year 1 MS4 Progress Report.
- Impervious Area Restoration Work Plan, FY 2020 - Chesapeake Bay Restoration and Meeting Total Maximum Daily Loads
  - Appendix A includes MS Excel Urban BMP Database
  - Appendix B includes MS Excel Restoration Activity Schedule
- MCM Report, FY 2019 and FY 2020 – includes discussion of programs implemented over permit years 1 and 2
  - Appendices include supplemental information required by the Progress Report

If you have any questions, please contact me at 443.915.0667 or Joyce Rebar at 410.537.7857.

Sincerely,

Peter Mattejat, P.E.
Environmental Manager

Enclosures

cc: Paul Truntich, MDTA
Joyce Rebar, MDTA

Maryland Transportation Authority
Submission to

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
GENERAL PERMIT FOR DISCHARGES FROM
STATE AND FEDERAL SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

GENERAL DISCHARGE PERMIT NO. 13-SF-5501
GENERAL NPDES NO. MDR055501

Final Determination:	April 27, 2018
Effective Date:	October 31, 2018
Expiration Date:	October 30, 2023

This National Pollutant Discharge Elimination System (NPDES) general permit covers State and federal small municipal separate storm sewer systems (MS4s) in certain portions of the state of Maryland. MS4 owners and operators to be regulated under this general permit must submit a Notice of Intent (NOI) to Maryland Department of the Environment by October 31, 2018. An NOI serves as notification that the MS4 owner or operator intends to comply with the terms and conditions of this general permit.

APPENDIX D

State and Federal Small MS4 Progress Report

Maryland Department of the Environment (MDE)

National Pollutant Discharge Elimination System (NPDES)
Small Municipal Separate Storm Sewer Systems (MS4) General Permit

This Progress Report is required for those State and federal agencies covered under General Discharge Permit No. 13-SF-5501. Progress Reports must be submitted to:

Maryland Department of the Environment, Water and Science Administration
Sediment, Stormwater, and Dam Safety Program
1800 Washington Boulevard, Suite 440, Baltimore, MD 21230-1708
Phone: 410-537-3543 FAX: 410-537-3553
Web Site: www.mde.maryland.gov

Contact Information

Permittee Name:	Maryland Transportation Authority
Responsible Personnel:	Peter Mattejat, Environmental Manager
Mailing Address:	Office of Engineering and Construction
	300 Authority Drive, Baltimore, MD 21222
Phone Number(s):	410-537-7874
Email address:	pmattejat@mdta.state.md.us
Additional Contact(s):	Joyce Rebar, Stormwater Compliance Lead
Mailing Address:	Office of Engineering and Construction
Phone Number(s):	301-602-4143
Email address:	jrebar@mdta.state.md.us

Signature of Responsible Personnel

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Peter Mattejat, P.E.	Pete Mattejat	10/30/2020
Printed Name	Signature	Date

Reporting Period (State Fiscal Year): FY19/20

Due Date: 10/31/2020 **Date of Submission:** 10/30/2020

Type of Report Submitted:

Impervious Area Restoration Progress Report (Annual): ☐

Six Minimum Control Measures Progress (Years 2 and 4): ☐

Both: ☑

Permittee Information:

Renewal Permittee: ☑

New Permittee: ☐

Compliance with Reporting Requirements

Part VI of the Small MS4 General Discharge Permit (No. 13-SF-5501) specifies the reporting information that must be submitted to MDE to demonstrate compliance with permit conditions. The specific information required in this MS4 Progress Report includes:

1. Annual: Progress toward compliance with impervious area restoration requirements in accordance with Part V of the general permit. All requested information and supporting documentation must be submitted as specified in Section I of the Progress Report.
2. Years 2 and 4: Progress toward compliance with the six minimum control measures in accordance with Part IV of the general permit. All requested information and supporting documentation shall be reported as specified in Section II of the Progress Report. MDE may request more frequent reporting and/or a final report in year 5 if additional information is needed to demonstrate compliance with the permit.

Instructions for Completing Appendix D Reporting Forms

The reporting forms provided in Appendix D allow the user to electronically fill in answers to questions. Users may enter quantifiable information (e.g., number of outfalls inspected) in text boxes. When a more descriptive explanation is requested, the reporting forms will expand as the user types to allow as much information needed to fully answer the question. The permittee must indicate in the forms when attachments are included to provide sufficient information required in the MS4 Progress Report.

Section I: Impervious Area Restoration Reporting Form

Section I: Impervious Area Restoration Reporting

1. a. Was the impervious area baseline assessment submitted in year 1?
   ☑ Yes ☐ No

   b. If No, describe the status of completing the required information and provide a date at which all information required by MDE will be submitted:

   c. Has the baseline been adjusted since the previous reporting year?
   ☐ Yes ☑ No
2. Complete the information below based on the most recent data:

   Total impervious acres of area covered under this permit: 2,329.7

   Total impervious acres treated by stormwater water quality best management practices (BMPs): 501.3

   Total impervious acres treated by BMPs providing partial water quality treatment (multiply acres treated by percent of water quality provided):
   30.6

   Total impervious acres treated by nonstructural practices (i.e., rooftop disconnections, non-rooftop disconnections, or vegetated swales):
   0

   Total impervious acres untreated: 1,797.8

   Twenty percent of this total area (this is the restoration requirement):
   359.6

   Verify that all impervious area draining to BMPs with missing inspection records is not considered treated. Describe how this information was incorporated into the overall analysis:

*The Maryland Transportation Authority (MDTA) has a robust inspection and maintenance program that follows the MDTA **Stormwater Best Management Practices Field Inspection Manual (January 2017)** as the standard operating procedure (SOP). As part of the BMP inspection and maintenance program, each feature of the BMP is inspected, and an overall rating of A through E is given to the BMP. Ratings of A and B indicate that the BMP is functioning as designed. Ratings of C and D indicate that the BMP is operational but is a potential candidate for minor or major repair. A rating of E indicates that the BMP is not functional and has significant problems. Credits from BMPs with a rating of E are not included in the baseline assessment calculations. Once these BMPs are rehabilitated to function per their original design, the baseline assessment calculations will be revised to*

Section I: Impervious Area Restoration Reporting

include them. A last inspection date has been populated for all BMPs included in the Urban BMP Database, which is submitted along with this Progress Report.

3. Has an Impervious Area Restoration Work Plan been developed and submitted to MDE in accordance with Part V.B, Table 1 of the permit or other format?
   ☑ Yes ☐ No

   Has MDE approved the work plan?
   ☑ Yes ☐ No

   If the answer to either question is No, describe the status of submitting (or resubmitting) the work plan to MDE and provide a date at which all outstanding information will be available:

   Describe progress made toward restoration planning, design, and construction efforts and describe adaptive management strategies necessary to meet restoration requirements by the end of the permit term:

MDTA has been conducting the following activities to meet the restoration requirements of the permit:

- *Continuously evaluating water quality retrofit opportunities for impervious area without adequate existing water quality treatment, including developing assessment protocols.*
- *Constructing stormwater retrofits, such as bioswales and biofiltration BMPs within the grassed roadway medians and shoulders.*
- *Considering alternative retrofits and innovative options that MDE is promoting including stream restoration, reforestation, outfall stabilization and shoreline stabilization.*
- *Implementing street-sweeping alternative urban BMPs at MDTA facilities.*
- *Working on partnerships with adjacent MS4 permit holders on cooperative Total Maximum Daily Load (TMDL) projects.*
- *Since January 1, 2006, MDTA has implemented BMPs as a part of redevelopment projects that treat 116.1 acres of impervious acres.*
- *MDTA has implemented retrofits to a small number of BMPs. Approximately 90.9 acres of equivalent impervious area credits were obtained from these retrofits.*
- *Approximately 23.28 acres of equivalent impervious area credits were obtained from impervious area removal projects.*
- *Approximately 199.01 acres of equivalent impervious area credits were obtained from street-sweeping activities during fiscal year (FY) 2019 and FY 2020 (FY19/20).*

Section I: Impervious Area Restoration Reporting

4. Has a Restoration Schedule been completed and submitted to MDE in accordance with Part V.B, Table 2 of the permit?
   ☑ Yes ☐ No

   In year 5, has a complete restoration schedule been submitted including a complete list of projects and implementation dates for all BMPs needed to meet the twenty percent restoration requirement?
   ☐ Yes ☐ No

   Are the projected implementation years for completion of all BMPs no later than 2025?
   ☑ Yes ☐ No

   Describe actions planned to provide a complete list of projects in order to achieve compliance by the end of the permit term:

MDTA has met its Chesapeake Bay Restoration requirements and continues to be proactive by planning for future stormwater management and alternative BMP designs. The Restoration Activity Schedule in the attached Progress Report includes the list of all projects implemented to meet the Chesapeake Bay Restoration requirements and the year of implementation.

   Describe the progress of restoration efforts (attach examples and photos of proposed or completed projects when available):

MDTA has met its Chesapeake Bay Restoration requirements through redevelopment projects, retrofit of BMPs, and alternative urban BMP projects.

5. Has the BMP database been submitted to MDE in Microsoft Excel format in accordance with Appendix B, Tables B.1.a, b, and c?
   ☑ Yes ☐ No

   Is the database complete?
   ☑ Yes ☐ No

   If either answer is No, describe efforts underway to complete all data fields, and a date that MDE will receive the required information:

6. Provide a summary of impervious area restoration activities planned for the next reporting cycle (attach additional information if necessary):

Section I: Impervious Area Restoration Reporting

MDTA has met its Chesapeake Bay Restoration requirements; however, it continues to evaluate and identify additional projects to improve the water quality. Currently, MDTA is evaluating several new BMP and BMP retrofit projects to treat additional untreated impervious area.

7. Describe coordination efforts with other agencies regarding the implementation of impervious area restoration activities:

MDTA has a Memorandum of Agreement (MOA) to implement joint projects with Anne Arundel County, but has not planned any such projects as of the writing of this report.

8. List the total cost of developing and implementing impervious area restoration program during the permit term:

MDTA spent $835,000 over the course of the permit term (FY19/20).

Section II: Minimum Control Measures Reporting Forms

MCM #1: Personnel Education and Outreach

1. Does the permittee maintain a process and phone number for the public and/or staff to report water quality complaints?
   ☑ Yes ☐ No

   Number of complaints received: 1

   Describe the actions taken to address the complaints:

MDTA reached out to the environmental monitors on the construction team for the Interstate 895 (I-895) Canton Viaduct Project. Environmental monitors for the project indicated that the incident was isolated and that they had conducted a site investigation. Construction procedures, including erosion and sediment control measures, were adjusted to minimize similar incidents. Additional details of the water quality complaint are included in Section 2.A.1 of the Six Minimum Control Measures Report for FY 2019 and FY 2020.

2. Describe training to employees to reduce pollutants to the MS4:

MDTA employees receive trainings throughout the year, including:

- *Environmental briefings for managers*
- *Block trainings focusing on stormwater pollution prevention, Chesapeake Bay TMDLs, illicit discharge detection and elimination (IDDE), and good housekeeping procedures*
- *Erosion and sediment control training*
- *Lunchtime learning sessions focused on environmental topics such as vegetation management and stormwater pollution prevention*
- *Professional training*
- *BMP maintenance training*

3. Describe the target audience(s):

The target audience includes:

- *managers,*
- *engineers, and*
- *inspection and maintenance staff.*

4. Are examples of educational/training materials attached with this report?
   ☑ Yes ☐ No

   Provide the number and type of educational materials distributed:

MCM #1: Personnel Education and Outreach

- *Pocket cards and a fact sheet related to IDDE – 356 pocket cards distributed at environmental block training; fact sheet to be published to the website and hung at MDTA facilities in FY21*
- *356 pocket cards related to spill prevention, control, and countermeasures distributed at environmental block training*
- *Fact sheet related to Stormwater Pollution Prevention Plans Inspections – to be published to the website and hung at MDTA facilities in FY21*
- *"What is MDTA doing to protect Maryland's waters?" fact sheets – to be published to the website and hung at MDTA facilities in FY21.*
- *"Why should we care about water quality? What can we do about it at home?" fact sheets – to be published to the website and hung at MDTA facilities in FY21.*
- *Water Sampling Poster – to be published to the website and displayed at FY21 Earth Day event.*
- *Landscape Mitigation Poster – to be published to the website and displayed at FY21 Earth Day event.*

*Training and educational materials are provided in **Appendix A** of the Minimum Control Measures Report (MCM report).*

Describe how the personnel education program is appropriate for the target audience(s):

The topics are appropriate because the day-to-day responsibilities of employees can impact stormwater quality. Due to the industrial nature of operations at MDTA, employees often handle hazardous chemicals, oils and grease, and large machinery. By understanding industrial pollution in the scope of the Maryland's waters, employees are able to carry out the responsibilities detailed in their job descriptions more safely and efficiently.

5. Describe how stormwater education materials were distributed to the public and/or staff (e.g., newsletters, website):

- *Web pages –MDTA uses various web pages for staff and public use. Information provided in web pages includes MDTA's Green Initiatives, geographic information system (GIS) data, environmental policies, SOPs, and environmentally friendly tips.*
- *Publications –MDTA publishes engineering policies and procedures and an internal monthly e-newsletter that has information relevant to employees.*
- *Handouts – These are distributed during annual training sessions.*

6. Describe how educational programs facilitated efforts to reduce pollutants in stormwater runoff:

MCM #1: Personnel Education and Outreach

The MDTA educational program focuses on awareness of key issues and improvement of behaviors regarding such topics as IDDE, spill response, stormwater pollution prevention, BMPs, and good housekeeping. As a result, programs like the IDDE and construction site stormwater runoff control programs are improved because understanding and participation have increased. The trainings may also motivate the target audience to change their personal behavior by washing cars in the grass, containing vehicular fluids with absorbent booms, or planting rain gardens at their own residences.

7. Provide a summary of activities planned for the next reporting cycle:

For the next reporting cycle, MDTA will continue with regular training sessions, produce additional outreach materials, and continue to advertise online resources to MDTA employees to ensure immediate access to information. MDTA will also continue to address water quality complaints quickly and effectively.

8. List the total cost of implementing this MCM over the permit term:

MDTA spent $245,000 over the course of the permit term (FY19/20).

MCM #2: Public or Personnel Involvement and Participation

1. Describe how the public or personnel involvement and participation program is appropriate for the target audience(s):

The information presented through activities hosted by MDTA directly relates to the daily job responsibilities of the target audience, most of whom are employed by MDTA. Because MDTA employees are continually working in and around the environment and systems involving stormwater, these specific activities increase their awareness of the importance of reducing stormwater pollution.

2. Quantify and report public and/or staff involvement and participation efforts as shown below where applicable.

Number of participants at public and/or staff events:	320
Quantity of trash and debris removed at clean up events:	0
Number of employee volunteers participating in sponsored events:	9
Number of trees planted:	180
Length of stream cleaned (feet):	0
Number of storm drains stenciled:	0

Number of public notices published to facilitate public and/or staff participation: 6

Number of public and/or staff meetings organized: 24

Total number of attendees at all public and/or staff meetings: 200

Describe the agenda, items discussed, and collaboration efforts with interested parties for public and/or staff meetings:

MDTA's Environmental Management System (EMS) team of eight to 10 people (which consists of representatives from the Office of Environment, Safety, and Risk Management; Operations; the Office of Engineering and Construction [OEC]; and Planning and Program Development)

meets monthly to discuss setting environmental objectives to reduce environmental risks, updating EMS procedures, and developing EMS awareness training. The environmental objectives for this permit term include:

- *Ensure compliance with hazardous waste management and disposal regulations at facilities/construction sites.*
- *Ensure oil water separators and wash bays are in compliance and functioning properly.*
- *Ensure environmental compliance related to mechanical services.*
- *Study road salt reduction/salt brine expansion.*
- *Study mechanical services at facilities.*

*A sample agenda for the EMS meeting on March 13, 2020, and EMS awareness training slides are provided in **Appendix B** of the MCM report.*

Describe how public and/or staff comments have been incorporated into the permittee's MS4 program, including water quality improvement projects to address impervious area restoration requirements:

The Annual MS4 Progress Report submitted to MDE is available to MDTA staff and MDOT. Staff can review the report and submit comments to the OEC staff responsible for preparing the Annual MS4 Progress Report. Staff comments are strongly considered and are incorporated into the MS4 program where applicable. MDTA is working to publish a summary of the Annual MS4 Progress Report on the MDTA website.

Describe any additional events and activities if applicable:

Additional events conducted by MDTA to engage the target audience include:

- *Earth Day Fair*
- *Bay Bridge webpage, which provides games for children*
- *Turner Station Outreach Event*
- *Customer Appreciation Day*
- *Stenciling storm drain markers*

3. Provide a summary of activities planned for the next reporting cycle:

For the next reporting cycle, MDTA will continue to host events and public/personnel involvement activities related to stormwater protection, such as Earth Day events and possibly another event at Turner Station. However, due to the continuing COVID-19 pandemic, MDTA will plan events such that they can be hosted virtually, if needed.

4. List the total cost of implementing this MCM for the permit term:

MDTA spent $55,000 over the course of the permit term (F19/20).

MCM #3: Illicit Discharge Detection and Elimination (IDDE)

1. Does the permittee maintain a map of the MS4 owned or operated by the permittee, including stormwater conveyances, outfalls, stormwater best management practices (BMPs), and waters of the U.S. receiving stormwater discharges?
   ☑ Yes ☐ No

   If Yes, attach the map to this report and provide a progress update on any features that are still being mapped. (If submitting a map would compromise the operational security of an agency, indicate that the map is available for MDE review on site.) If No, detail the current status of map development and provide an estimated date of submission to MDE:

*MDTA continues to review information related to stormwater structures as new projects are constructed. Attribute and spatial information for drainage pipes are logged into MDTA's comprehensive NPDES GIS database that accurately depicts the storm drainage network owned by MDTA. A map created from this information is updated annually. In addition, illicit discharge screening and outfall inspections are also logged in the internal NPDES geodatabase. This map is provided in **Appendix C** of the MCM report.*

2. Does the permittee have a policy, or other agency directive, that prohibits illicit discharges?
   ☑ Yes ☐ No

   If Yes, describe the policy utilized for enforcement by the permittee (alternatively, a link may be provided to the permittee's webpage where this information is available). If No, describe the permittee's plan, including approximate time frame, to establish a policy that prohibits illicit discharges into the storm sewer system:

The Illicit Discharge Detection and Elimination Directive defines illicit discharges and describes their possible sources from MDTA facilities. This document also provides resources for reporting illicit discharges.

3. Did the permittee submit to MDE standard operating procedures (SOPs) in accordance with Part IV.C of the permit?
   ☑ Yes ☐ No

   If No, provide a proposed date that SOPs will be submitted to MDE. MDE may require more frequent reports for delays in program development:

   Did MDE approve the submitted SOPs?
   ☐ Yes ☑ No

   If No, describe the status of requested SOP revisions and approximate date of resubmission for MDE approval:

MCM #3: Illicit Discharge Detection and Elimination (IDDE)

This FY20 Progress Report includes the first submission of the IDDE SOP to MDE.

4. Describe how the permittee prioritized screening locations in areas of high pollutant potential and identify the areas within which screenings were conducted during this reporting period:

MDTA prioritizes screening of major and minor NPDES outfalls, that discharge to Waters of the United States. MDTA performs these inspections on a 3-year cycle divided by facility, generally with ICC in one cycle, BHT, FMT, and FSK in another cycle, and JFK, TJH, WPL, and HWN in the third cycle. MDTA performs more frequent screening at selected outfalls when there may be a suspected illicit discharge. Outfalls identified as having a higher pollutant potential at MDTA facilities include LBEH00017, LBEH00019, LBEH00037, HTEH00119, HTEH00020, HTEH00245, HTEH00246, FTEH00124, KBEH00082, KBEH00083, KHEH00861, KHEH00872, NBEH00009, and NBEH00012.

5. Answers to the following questions must reflect this two-year reporting period.

How many outfalls were identified on the map? 1,573

How many outfalls were required to be screened for dry weather flows to meet the minimum numeric requirement based on property size? 200

How many outfalls were screened for dry weather flows? 225

Per the permittee's SOP, how frequently were outfalls required to be screened?

The numbers listed above for required and performed screening refer to outfalls over FY19 and FY20 collectively; 110 outfalls and 115 outfalls were screened in FY19 and FY20, respectively. The requirement is to screen 100 outfalls per year, or 200 outfalls over a 2-year MCM reporting period.

MDTA performs more frequent screenings at selected outfalls when there may be a suspected illicit discharge.

At what frequency were outfalls screened during the reporting period?

Annually.

How many dry weather flows were observed? 45

MCM #3: Illicit Discharge Detection and Elimination (IDDE)

If dry weather flows were observed, how many were determined to be illicit discharges? 0

Describe the investigation process to track and eliminate each suspected illicit discharge and report the status of resolution:

When an illicit discharge is discovered, MDTA follows this procedure:

1. *Trace through the drainage system to determine the source.*
2. *Contact the landowner if the illicit discharge originates on a neighboring property.*
3. *Start clean-up procedures if the illicit discharge is on MDTA property and continue the procedures until the discharge is fully eliminated.*
4. *Monitor the site to ensure that there are no recurrences.*

*Discharge samples from 6 outfalls collectively in FY19/20 tested above threshold contaminant levels. However, results from re-inspections confirmed that no true illicit discharges were present. IDDE reports from FY19 and FY 20 can be found in **Appendix C** of the MCM report.*

6. Describe maintenance or corrective actions undertaken during this reporting period to address erosion, debris buildup, sediment accumulation, or blockage problems:

During the first two permit reporting cycles, 21 and 55 outfalls were identified in FY19 and FY20, respectively, as having maintenance concerns. These outfalls had cracking concrete, vegetation buildup, sediment accumulation, and/or corrosion in the pipes. Remedial actions taken to resolve these issues included structural repair/replacement of headwalls and pipes and removal of vegetation or sediment accumulation. MDTA has addressed all issues identified in FY19 and is currently working on addressing the issues identified during FY20.

7. Is the permittee maintaining all IDDE inspection records and are they available to MDE during site inspections?
   ☑ Yes ☐ No

8. If spills, illicit discharges, and illegal dumping occurred during this reporting period, describe the corrective actions taken, including enforcement activities, and indicate the status of resolution:

Spills are detailed in the MCM report in Section 2.F.2. No illicit discharges or illegal dumping occurred during FY19/20.

9. Attach to this report specific examples of educational materials distributed to the public and/or staff related to illicit discharge reporting, illegal dumping, and spill prevention. If these are not available, describe plans to develop public and/or staff education materials and submit examples with the next Progress Report:

MCM #3: Illicit Discharge Detection and Elimination (IDDE)

*A fact sheet on IDDE is provided in **Appendix A** of the MCM report.*

10. Specify the number of employees trained in illicit discharge detection and spill prevention: 430

11. Provide examples of training materials. If not available, describe plans to develop employee training and submit examples with the next Progress Report:

*Slides related to IDDE from the environmental block training stormwater pollution prevention presentation are provided in **Appendix A** of the MCM report.*

12. List the cost of implementing this MCM during this permit term:

MDTA spent $200,000 over the course of the permit term (FY19/20).

MCM #4: Construction Site Stormwater Runoff Control

1. Does the permittee have a process for receiving, investigating, and resolving complaints from interested parties related to construction activities and erosion and sediment control?
   ☑ Yes ☐ No

   Describe the process:

1. *Findings and complaints are reported directly to project management or other contacts within MDTA.*
2. *Noncompliance findings are investigated by field management staff, who recommend corrective actions when necessary.*
3. *Project or area engineers direct the contractor to perform corrective actions.*
4. *Any interested party is notified of follow-up actions within 7 days.*
5. *Documentation on action items and routine inspections is kept by project management staff.*

   Provide a list of all complaints and a summary of actions taken to resolve them:

No complaints have been received in FY19/20.

2. Total number of active construction projects within the reporting period: 20

   Provide a list of all construction projects and tabulate the total disturbed area:

Construction Project Number	***Project Name***	***Erosion and Sediment Control (ESC) / Grading Permit No.***	***LOD(acres)***
KH-3012-0000	*Bradshaw Road Overpass Reconstruction*	*18-SF-0074*	*2.80*
KH-3015-0000	*Old Joppa Road Overpass Reconstruction*	*18-SF-0205*	*1.68*
KH-3010-0000	*I-95 NB Auxiliary Lane MD 152 to MD 24 and MD 24 / MD 924 Ramps*	*18-SF-0070*	*23.18*
KH-3009-0000	*I-95 NB Two-Lane ETL Extension to MD 152*	*18-SF-0098*	*111.30*
KH-3014-0000	*Section 200 SB Noise Wall - New Forge Road to Big Gunpowder Falls*	*19-SF-0128*	*2.26*

MCM #4: Construction Site Stormwater Runoff Control

KH-3028-0000	*Carsins Run Stream Mitigation*	*19-SF-0196*	*2.53*
KH-3033-0000	*MD 7 Fish Passage*	*20-SF-0140*	*1.89*
KH-3023-0000	*MD 24 and MD 924 Park and Ride*	*19-SF-0125*	*8.17*
KH-3027-0000	*MD 152 Park and Ride Relocation*	*20-SF-0019*	*6.66*
KH-3022-0000	*Clayton Road Overpass Reconstruction*	*19-SF-0204*	*2.91*
KH-3029-0000	*Abingdon Road Overpass*	*19-SF-0212*	*1.30*
KH-3030-0000	*Noise Wall on SB I-95 at MD 24 / Woodsdale*	*20-SF-0111*	*5.69*
KH-3019-0000	*MD 152 Interchange*	*19-SF-0187*	*113.66*
KH-3020-0000	*I-95 NB ETL Extension to Bynum Run* *Noise Wall NB I-95 N. of Abingdon Rd.*	*20-SF-0143*	*43.80*
KH-3031-0000	*Noise Wall on SB I-95 South of Calvary Road*	*20-SF-0170*	*4.08*
KH-3021-0000	*MD 24 Interchange*	*20-SF-0157*	*144.34*
KH-3040-0000	*MD 24 NB toward Singer Road*	*-*	*7.65*
KH-3038-0000	*Eccelston Mitigation*	*-*	*42.17*
KH-3032-0000	*Old Mountain Road Advance Utility Bore*	*-*	*0.11*
MR-3018-0000/ MR-3027-0000	*DMS Relocation from Clayton Road to Bynum Run*	*20-SF-0176*	*0.10*
Total:			***526.28***

3. Total number of violation notices issued by MDE related to this MCM on the agency's property: 0

   Describe the status of enforcement activities:

MDTA did not receive any violation notices during FY19/20, so no enforcement activities were necessary.

MCM #4: Construction Site Stormwater Runoff Control

Describe how the permittee communicates and collaborates with MDE to maintain compliance with this MCM for all active construction projects on the agency's property:

Coordination is typically done through emails, but CMI teams also directly call MDE compliance inspectors. After corrective measures are taken, MDTA QA inspector, CMI staff representative and MDE inspectors conduct a field visit to ensure the measures are satisfactory.

Are erosion and sediment control inspection records retained and available to MDE during field review of the agency MS4 program?
☑ Yes ☐ No

If No, explain:

4. Number of staff trained in MDE's Responsible Personnel Certification: 17

5. Describe the coordination with other entities regarding implementation of this MCM:

Complaints and notices on erosion issues and illicit discharge typically go through each facility's operations and maintenance office. Reporting typically doesn't identify between project related concerns or discharges from O&M activities. This necessitates coordination on reporting, documenting, and resolving such issues with IDDE program.

As noted in description of processes to address NOV's, MDTA coordinates with MDE on plan approvals and modifications, including the construction general permit, and construction compliance. MDTA also coordinates with Anne Arundel County Soil Conservation District and the Chesapeake Bay Critical Area Commission, who have regulatory authority on construction activities in defined zones within the State.

6. List the total cost of implementing this MCM over the permit term:

MDTA spent $4.4 million over the course of the permit term (FY19/20).

MCM #5: Post Construction Stormwater Management

1. Has an Urban BMP database been submitted in accordance with the database structure in Appendix B, Tables B.1.a, b, and c as a Microsoft Excel file?
   ☑ Yes ☐ No

   Describe the status of the database, efforts to complete all data fields, and provide a date as to when the required information will be submitted to MDE:

*MDTA has submitted a completed Urban BMP Database to MDE as part of the impervious area reporting requirements. The database has been updated to address MDE's comments on the FY19 database submission. The database is provided in **Appendix B** of the Impervious Area Restoration Report.*

2. Total number of plans submitted to MDE for review and approval: 2

   Total number of as-built plans submitted to MDE: 55

   Number of submitted as-built plans approved by MDE: 55

3. Total number of BMPs located on each property covered under the general permit (list individual property, and total BMPs for that property – provide separate attachment if necessary):

- *Fort McHenry Tunnel - 6 BMPs*
- *Harbor Tunnel - 44 BMPs*
- *Hatem Bridge - 1 BMP*
- *Intercounty Connector – 245 BMPs*
- *Kennedy Highway - 270 BMPs*
- *Key Bridge - 24 BMPs*
- *Lane Bridge – 20 BMPs*
- *Nice Bridge – 3 BMPs*
- *Point Breeze – 3 BMPs*

Total – 616 BMPs

Does the permittee perform inspections for all structural BMPs in accordance with the Dam Inspection Checklist in Maryland Pond Code 378 at least once every three years?
☑ Yes ☐ No

If No, describe efforts to train staff and develop a program to perform these required inspections on a triennial basis:

Are BMP inspection records retained and available to MDE during field review of local programs?
☑ Yes ☐ No

4. Provide a summary of routine maintenance activities for all BMPs:

Maintenance is carried out in accordance with the procedures detailed on MDE-approved plans. Additional field meetings were held to discuss maintenance of BMP vegetation. Proper techniques will prolong the service life of BMPs, minimize damage, ensure access to critical components (e.g., risers, inflow structures), and reduce the opportunities for invasive or noxious vegetative growth.

In general, routine maintenance activities include vegetation, debris, trash, and sediment removal; minor structural repair; and erosion stabilization. Completed BMP maintenance checklists are available at all sites. A sample maintenance manual is provided in ***Appendix E*** *of the MCM report.*

Are BMP maintenance procedures consistent with maintenance requirements on MDE approved plans?
☑ Yes ☐ No

Are completed BMP maintenance checklists available to MDE during field review of local programs?
☑ Yes ☐ No

If either answer is No, describe planned actions to implement maintenance checklists and procedures and provide formal documentation of these activities:

Describe all problems discovered during routine maintenance operations and repair work performed to restore the function of the BMP(s) (attach photos and additional documentation as needed):

A total of 576 BMP remediations were conducted during the permit term.

- *Ponds: 93 preventative remediation; 41 minor repairs*
- *Infiltration: 11 minor repairs*
- *Filtering: 399 preventative remediation; 29 minor repairs*
- *Other: 3 minor repairs*

MCM #5: Post Construction Stormwater Management

Specific repairs included:

- *Phragmite management – Was remediated by spraying the BMPs, and the phragmites were mechanically removed by Maryland Environmental Service.*
- *Vegetation management – Woody vegetation was removed from surrounding control structures or was trimmed to allow access to BMPs. Work was performed by MDTA maintenance staff.*
- *Debris removal – Sediment and debris were removed within the footprint and from the stone windows and control structures. Work was performed by MDTA maintenance staff.*
- *Stabilization – Specifically, check dams and side slopes of BMPs were stabilized. Work was performed by MDTA maintenance staff and the Remediation Team.*
- *Pipe cleaning/repairs – Low-flow pipes or underdrains needed to be cleaned and/or repaired. Work was performed by MDTA maintenance staff.*

5. Number of staff trained in proper BMP design, performance, inspection, and routine maintenance: 15

6. Provide a summary of activities planned for the next reporting cycle:

Over the next reporting cycle, MDTA will use program funding to continue BMP inspections and maintenance, updating the MDE-required Urban BMP Database, and training employees in inspections and maintenance.

7. List the total cost of implementing this MCM over the permit term:

MDTA spent $407,312 over the course of the permit term (FY19/20).

MCM #6: Pollution Prevention and Good Housekeeping

1. Provide a list of topics covered during the last training session related to pollution prevention and good housekeeping, and attach to this report specific examples of training materials:

MDTA employees receive annual training during the environmental block training, which covers topics such as:

- *Spill prevention and response*
- *Proper waste disposal*
- *Inspection and mitigation of discharges*
- *How to use the Environmental Management System*
- *How to use the Enterprise Environmental Information Management System*

*Sample training materials are provided in **Appendix A**, as good housekeeping and pollution prevention were presented during the environmental block training sessions.*

List all training dates within this two-year reporting period:

FY19 Training Dates:			
07/11/2018	07/12/2018	08/16/2018	09/12/2018
09/27/2020	**Total Sessions: 5**		
FY20 Training Dates:			
8/6/2019	8/7/2019	8/9/2019	8/12/2019
8/14/2019	9/9/2019	9/10/2019 (2 sessions)	9/16/2019 (2 sessions)
9/18/2019 (2 sessions)	9/26/2019	10/15/2019	10/29/2019
11/15/2019	11/18/2019	**Total Sessions: 17**	

Number of staff attended: 430

2. Are the good housekeeping plan and inspection records at each property retained and available to MDE during field review of the local program? ☑ Yes ☐ No

If No, explain:

Provide details of all discharges, releases, leaks, or spills that occurred in the past reporting period using the following format (attach additional sheets if necessary).

Property Name: Date:

Describe observations:

Describe permittee's response:

MCM #6: Pollution Prevention and Good Housekeeping

Descriptions of all accidental discharges from FY19/20 are included in Table 12 in Section 2.F.2 of the MCM report.

3. Quantify and report property management efforts as shown below, where applicable (attach additional sheets if necessary).

   Number of miles swept: 878

   Amount of debris collected from sweeping (indicate units): 1882 tons

   If roads and streets are swept, describe the strategy the permittee has implemented to maximize efficiency and target high priority areas:

MDTA prioritizes street sweeping in areas that accumulate high volumes of pollutants such as intersections, exits, and roadway shoulders. Bridges are also given high priority due to the drains and accumulation around barrier walls. Other roadways and parking lots are also swept, though may be swept less frequently than high pollutant potential areas. Some MDTA facilities try to sweep in the evenings when traffic volumes are lower or there are road closures.

   Number of inlets cleaned: 17,384

   Amount of debris collected from inlet cleaning (indicate units): part 1882

   Describe how trash and hazardous waste materials are disposed of at permittee owned and operated property(ies), including debris collected from street sweeping and inlet cleaning:

Employees at MDTA deposit waste in the appropriate receptacle (recycling bin or trash can). Housekeeping personnel remove materials from interior receptacles and place them in vendor-provided containers located outside. A vendor collects material from the external containers on each campus. MDTA also has a recycling SOP. Hazardous waste disposal, including disposal of universal waste, follows the SOPs provided in ***Appendix F*** *of the MCM report.*

Street-sweeping waste is placed into sweeper dirt piles or dumpsters at the facilities that store sweeper waste. MDTA's contractor collects a sample for testing from the sweeper dirt material before it is removed. Once the lab data are received, the vendor takes the material to a facility where it is "cleaned" and then recycled or reused.

   Does the permittee have a current State of Maryland public agency permit to apply pesticides?

MCM #6: Pollution Prevention and Good Housekeeping

☑ Yes ☑ No

If No, explain (e.g., contractor applies pesticides):

All MDTA facilities except for WPL and HWN have a permit to apply pesticides. WPL and HWN contract pesticide application services.

Does the permittee employ at least one individual certified in pesticide application?
☑ Yes ☐ No

If Yes, list name(s):

- *JFK II/W&I/TJH – Jim Grove and Charles Marcum (herbicides only)*
- *JFK I – Ricky Gibson*
- *FSK – John Monk*
- *BHT – Chuck Klinglehofer and Robert Lowe*
- *FMT – Sherri Michaels*
- *ICC – Amy Faulk*

If the permittee applied pesticides during the reporting year, describe good housekeeping methods (e.g., integrated pest management, alternative materials/techniques):

When applying pesticides, MDTA employs the following procedures:

- *Follow instructions on pesticide packaging related to mixing, application, and storage.*
- *Keep spill kits nearby when transferring or mixing pesticides.*
- *Keep application equipment clean and free of chemical buildup.*
- *Apply pesticides only in dry weather.*
- *Never mix, apply, or store pesticides near a storm drain.*

If the permittee applied fertilizer during the reporting year, describe good housekeeping methods (e.g., application methods, chemical storage, native or low maintenance species, training):

MDTA applies very small quantities of fertilizers on an as needed basis. When applying fertilizers, the following good housekeeping practices are adopted:

- *Follow instructions on fertilizer packaging regarding mixing, application, and storage of fertilizers.*
- *Keep spill kits nearby when transferring or mixing fertilizers.*
- *Never apply fertilizers to frozen ground.*

- *Keep application equipment clean and free of chemical buildup.*
- *Apply fertilizers only in dry weather.*
- *Never mix, apply, or store fertilizers near a storm drain.*

If the permittee applied materials for snow and ice control during the reporting year, describe good housekeeping methods (e.g., pre-treatment, truck calibration and storage, salt domes):

MDTA follows good housekeeping practices when applying snow and ice control materials. These procedures include:

- *Minimize spills by not overloading salt-spreading trucks and equipment.*
- *Use the least amount of salt necessary to achieve safe walking and driving conditions.*
- *Store salt in a covered dome with barriers blocking the exit to prevent migration of salt outside, where it can come into contact with stormwater.*
- *Establish snow storage areas that are not located near storm drains. Ideal snow storage areas are located on pervious areas where snowmelt can infiltrate.*
- *Sweep excess salt and sand from paved areas after the last snow.*
- *MDTA also calibrates trucks to make sure proper amount of salt is applied to the roads.*

Describe good housekeeping BMP alternatives not listed above:

N/A

4. If applicable, provide a status update for permittee owned or operated properties regarding coverage under the Maryland General Permit for Stormwater Discharges Associated with Industrial Activity or an individual industrial surface water discharge permit:

All 11 maintenance facilities of the MDTA have a General Industrial Permit.

Facility	***Municipality***
1-95 J.F. Kennedy Memorial Highway – Maintenance Facility 1	*Harford County*
1-95 J.F. Kennedy Memorial Highway – Maintenance Facility 2	*Cecil County*
1-95 J.F. Kennedy Memorial Highway – Truck Weigh & Inspection Station	*Cecil County*
US-40 Thomas J. Hatem Memorial Bridge – Maintenance Facility	*Cecil County*
I-95 for McHenry Tunnel – Maintenance Facility	*Baltimore City*

MCM #6: Pollution Prevention and Good Housekeeping

I-895 Baltimore Harbor Tunnel – Maintenance Facility	*Baltimore City*
I-695 Francis Scott Key Bridge – Maintenance Facility	*Baltimore City*
US-50 W.P. Lane Memorial (Bay) Bridge – Maintenance Facility	*Anne Arundel County*
US-301 Gov. Harry W. Nice Memorial Bridge – Maintenance Facility	*Charles County*
Intercounty Connector/MD200 – East Operations	*Prince George's County*
Intercounty Connector/MD200 – West Operations	*Montgomery County*

5. List the total cost of implementing this MCM over the permit term:

MDTA spent $360,000 over the course of the permit term (FY19/20).

Maryland Transportation Authority

Six Minimum Control Measures Report
FY 2019 and FY 2020

October 2020

National Pollutant Discharge Elimination System General Permit for Discharges from State and Federal Municipal Separate Storm Sewer Systems Permit Number 13-SF-5501

SUBMITTED TO:
Maryland Department of the Environment
Water and Science Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

SUBMITTED BY:

Maryland Transportation Authority (MDTA)
Office of Engineering and Construction
Environmental Division
300 Authority Drive
Baltimore, Maryland 21222

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Six Minimum Control Measures Report

FY 2019 and FY 2020

October 2020

National Pollutant Discharge Elimination System (NPDES)
General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4)

MDE Contact:

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Maryland Department of the Environment
Water and Science Administration

1800 Washington Boulevard Baltimore, Maryland 21230

Phone: 410-537-3543
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Web: www.mde.state.md.us

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ACRONYMS AND ABBREVIATIONS

BHT	Baltimore Harbor Tunnel
BMP	best management practice
CFR	Code of Federal Regulations
COMAR	Code of Maryland Regulations
CTP	Consolidated Transportation Program
ECT	Environmental Compliance Team
EEIMS	Enterprise Environmental Information Management System
EMS	Environmental Management System
EO	environmental objective
ESC	erosion and sediment control
ESD	environmental site design
EV	electric vehicle
FMT	Fort McHenry Tunnel
FSK	Francis Scott Key Bridge
FY	fiscal year
GIS	geographic information system
HWN	Harry W. Nice Memorial Bridge
ICC	Intercounty Connector
IDDE	illicit discharge detection and elimination
JFK	John F. Kennedy Memorial Highway
MCM	minimum control measure
MD	Maryland
MDE	Maryland Department of the Environment
MDOT	Maryland Department of Transportation
MDTA	Maryland Transportation Authority
MEP	maximum extent practicable
MES	Maryland Environmental Service
MS4	Municipal Separate Storm Sewer System(s)
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
OEC	Office of Engineering and Construction
OESRM	Office of Environment, Safety, and Risk Management
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RPC	Responsible Personnel Certification
SOP	standard operating procedure
SPCC	spill prevention, control, and countermeasures
SWM	stormwater management
SWPPP	Stormwater Pollution Prevention Plan
TBU	Transportation Business Unit
TJH	Thomas J. Hatem Bridge
TMDL	Total Maximum Daily Load
WO	work order
WPL	William Preston Lane Jr. Memorial (Bay) Bridge

1 Introduction

The Maryland Transportation Authority (MDTA) maintains coverage of its properties under the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4), referred to as the permit, issued by the Maryland Department of the Environment (MDE). The goal of the permit is to control and improve the quality of stormwater discharged from State and federal properties covered under the General Permit by requiring permittees to comply with six minimum control measures (MCMs). The latest permit became effective on October 31, 2018 with Permit No 13-SF-5501. In addition to the six MCMs, this permit incorporates for first time the Chesapeake Bay Total Maximum Daily Load (TMDL) requirements for nutrients and sediment issued by the U.S. Environmental Protection Agency (EPA) by requiring permittees to treat 20 percent of the untreated impervious area as of a permittee established baseline year using MDE-approved best management practices (BMPs). MDTA submitted a Notice of Intent in October 2018 for coverage under this Phase II Permit. This report summarizes activities completed by MDTA during the past two fiscal years (FYs), from July 1, 2018, through June 30, 2020 (FY19/20), in compliance with the Phase II Permit six MCMs.

MDTA has committed substantial resources to implement six MCMs. In addition, MDTA's goal is to maintain an environmental program to meet or exceed state and federal environmental requirements. This report describes MDTA's efforts related to the MCMs.

1.A MDTA Roadways and Campuses

Properties covered by the permit include toll roadways and their crossings as well as related campuses and maintenance facilities. The roadways are:

- I-95 of John F. Kennedy Memorial Highway (JFK)
- US 40 at the Thomas J. Hatem Memorial Bridge (TJH)
- I-95 and I-395 by the Fort McHenry Tunnel (FMT)
- I-895 at the Baltimore Harbor Tunnel Throughway (BHT)
- I-695/MD-695 at the Francis Scott Key Bridge (FSK)
- US 50/301 at the William Preston Lane Jr. Memorial (Bay) Bridge (WPL)
- US 301 at the Harry W. Nice Memorial Bridge (HWN) and
- MD200 of Intercounty Connector (ICC).

The campuses include administration, finance, human resources, engineering offices, and E-Z Pass customer centers. These office buildings and associated parking lots are covered under by this permit.

Facilities where maintenance activities occur (e.g., garages, storage bins, salt barns) are regulated under the General Permit for Stormwater Associated with Industrial Activities (Permit 12-SW-A).

1.B Program Resources

Since January 2005, MDTA has committed operating and capital funds to address permit compliance requirements. **Table 1** shows a breakdown of the expenditures to implement the six MCMs for FY19/20.

These funds are used for education, outreach, training, inventory, inspections, assessments, maintenance, construction, and other efforts directly related to meeting Phase II permit requirements.

Table 1: Six Minimum Control Measures Expenditures for FY19/20

Minimum Control Measures	FY19 Expenditures	FY20 Expenditures
Public/Personnel Education and Outreach	$120,000	$125,000
Public/Personnel Involvement and Participation	$30,000	$22,000
Illicit Discharge Detection and Elimination	$70,000	$130,000
Construction Site Stormwater Runoff Control	$2,200,000	$2,200,000
Post-Construction Management	$312,000	$497,000
Pollution Prevention and Good Housekeeping	$100,000	$260,000
Total	$2,832,000	$3,234,000

2 Minimum Control Measures

MDTA has expanded and continued to implement the programs developed in the previous permit term to meet the six MCM requirements specified in Part IV of the current Phase II Permit. The following sections describe how each MCM was addressed at MDTA during FY19/20. The MCMs include:

- Public or personnel education and outreach
- Public or personnel involvement and participation
- Illicit discharge detection and elimination
- Construction site stormwater runoff control
- Post-construction stormwater management
- Pollution prevention and good housekeeping

MDE's permit requirements are listed in bold below for each of the six MCMs. Activities conducted by MDTA are described for each requirement. The information provided in these sections supplements the responses provided by MDTA in Section II of State and Federal Small

MS4 Progress Report (Appendix D) submitted to MDE as part of the FY20 Annual MS4 Progress Report.

2.A MCM No. 1 - Public or Personnel Education and Outreach

2.A.1 According to Part IV.A of the NPDES MS4 Phase II Permit, *"Permittees are required to implement and maintain a public/personnel education and outreach program and distribute education materials to the community and employees to help reduce the discharge of pollutants caused by stormwater runoff."* Develop a process by which the public and/or staff can report water quality complaints that must include a phone number, within one year of permit issuance.

The public and staff can submit complaints related to stormwater at the 24/7 MDTA police dispatch number, 410-537-7911, which is advertised on the MDTA website (https://mdta.maryland.gov/Police/traffic-safety). MDTA is currently evaluating the addition of a "Report a Problem" link on the MDTA website for easier reporting of an issue. MDTA is proactive in addressing and correcting issues while minimizing impacts to the safety of travelers on roadways and adjacent property owners. Typically, environmental staff investigate the stormwater issue, assess the cause, and develop remedial recommendations. MDTA also responds to requests from local municipalities to provide roadway emergency services for impacts from storm events. This process normally involves several MDTA divisions, such as Communications, Engineering, Construction and Operations. For FY19/20, only one water quality complaint was received, as shown in **Table 2**.

Table 2: Water Quality Complaints during FY19/20

Fiscal Year	Water Quality Complaint	Action Taken to Address Complaint
2019	"While passing underneath 895, construction concrete runoff came down off the overpass onto my vehicle. It must have been spilling for hours and the runoff was likely to enter storm drains."	MDTA reached out to the environmental monitors on the construction team for the I-895 Canton Viaduct Project. The project's environmental monitors stated that the incident was isolated and that they had conducted a site investigation. Construction procedures, including erosion and sediment control measures, were adjusted to minimize similar incidents.

2.A.2 Determine the target audience and develop materials to educate the audience on the impact of stormwater.

The target audience for this MCM is MDTA staff, including managers, engineers, inspectors, and maintenance staff across many divisions. The training and educational materials were developed for this audience and are provided in **Appendix A.**

2.A.3 Distribute stormwater education materials through newsletters, website, or other appropriate methods. Submit examples of educational material to MDE in accordance with reporting requirements.

To educate the target audience, MDTA continues to distribute stormwater-related education materials through several forms of communication, such as trainings, brochures, presentations, websites, workshops, and various types of signage. These materials and educational platforms are discussed below.

- **Web pages –** MDTA maintains various web pages and online resources to provide the target audience with 24/7 access to information. These web pages are advertised to employees via email, including:
    - "Maryland: Smart, Green and Growing": MDTA is registered in the Maryland Green Registry. This platform provides information about the State's efforts to restore the Chesapeake Bay and preserve green space as well as implement green initiatives to improve the environment. MDTA's green initiatives can be found on the Maryland Green Registry's website: https://mde.maryland.gov/marylandgreen/Documents/MDTA_Profile.pdf.
    - MDTA's enterprise Geographic Information Systems (GIS): This user-friendly tool is accessible to all MDTA staff and provides summary data on inventory, inspection, and remediation. Also included in the tool are best management practice (BMP) photos and plans.
    - MDTA's intranet website: This website includes links to standard operating procedures (SOPs), including those that protect the environment, such as SOPs for spill containment, management of recycled materials, and environmental inspections. It also includes information regarding where MDTA employees should take household hazardous waste as well as tips on personal efforts that can help the environment. Information such as the guide to MDE's Environmental Permits and Approvals, mapping from the Chesapeake Critical Area Commission, and the Maryland Department of Natural Resources Roadside Tree Laws are also available on this website.
    - MDTA's external environmental web page (http://www.MDTA.maryland.gov/Environment/Home.html): This web page contains MDTA's Environmental Policy Statement and information on MDTA's sustainability initiatives, such as its energy conservation, recycling, fuel management, and stormwater management initiatives.
    - MDTA's Bay Bridge web page (www.baybridge.maryland.gov): This web page includes content by "Spike & Otis", the seagull characters also found in radio spots and posters, who promote public information about MDTA's roadways and crossings and promote safety.

- **Publications** – MDTA prepares various forms of publication for internal use and public information, including:
  - Engineering Policies and Procedures: MDTA continued to distribute procedures related to environmental design and recordkeeping during FY19/20. These documents describe each phase of the project design process and related environmental permitting and compliance steps, different types of permits, and the associated agency for each permit. These policies and procedures are distributed to employees via email and are available on the MDTA intranet.
  - Connections e-newsletter: MDTA distributes an internal monthly e-newsletter via email that has articles related to the environment, health, and safety. The e-newsletter also advertises upcoming activities such as field trips. Connections encourages employees to participate in various environmental programs, such as MDTA's Earth Day fairs and contests. Each year, the newsletter highlights Earth Day activities. A copy of an Earth Day issue is provided in **Appendix A**.
- **Handouts –** During FY19/20, eight educational materials were developed to and are available to staff. These materials are summarized in **Table 3** and provided in **Appendix A**.

Table 3: Educational Materials Developed in FY19/20

Education/Outreach Material Topic	Type	Distribution	Number of Copies Distributed
Illicit Discharge Detection and Elimination	Pocket Card	Paper copies dispensed at FY20 annual training sessions	356
	Factsheet	Will be published on the MDTA web page and posted at the FY21 Earth Day Fair	Pending digital distribution
Spill Prevention, Control, and Countermeasures	Pocket Card	Paper copies dispensed at FY20 annual training sessions	356
Stormwater Pollution Prevention Plans Inspections	Fact Sheet	Will be published on the MDTA web page and posted at the FY21 Earth Day Fair	Pending digital distribution
What is MDTA doing to protect Maryland's waters?	Fact Sheet	Will be published on the MDTA web page and posted at the FY21 Earth Day Fair	Pending digital distribution
Why Should We Care about Water Quality? What Can We Do about It at Home?	Fact Sheet	Will be published on the MDTA web page and posted at the FY21 Earth Day Fair	Pending digital distribution
Water Sampling	Poster	Will be published on the MDTA web page and posted at the FY21 Earth Day Fair	Pending digital distribution

Education/Outreach Material Topic	Type	Distribution	Number of Copies Distributed
Landscape Mitigation	Poster	Will be published on the MDTA web page and posted at the FY21 Earth Day Fair	Pending digital distribution

These topics are appropriate for the target audience because the day-to-day responsibilities of employees can impact stormwater quality. Given the industrial nature of operational activities at MDTA, employees often handle hazardous chemicals, oils and grease, and large machinery. By understanding the impacts of potential pollution from these operations on Maryland's waters, employees can carry out their job descriptions more safely and efficiently.

2.A.4 Develop and implement an annual employee training program that addresses appropriate topics to prevent or reduce the discharge of stormwater pollution into the MS4. Submit example training materials and attendee list to MDE in accordance with reporting requirements.

MDTA delivers a comprehensive training program that promotes environmental awareness to personnel, using a variety of approaches such as in-person training, presentations, guidance documents, and intranet web pages. This training program involves diverse staff across many divisions, including managers, engineers, inspectors, and maintenance staff.

- **Environmental Briefings for Managers** – Throughout the year, MDTA executive and management-level personnel are briefed on the progress and the importance of environmental compliance, particularly with the NPDES permit program. Details are communicated during management meetings to inform managers of compliance requirements and to ensure that resources and funding sources are maintained. For FY19/20, meetings included briefings for executive staff and senior management on continuing efforts to meet the requirements of NPDES permits (the Phase II General Permit and the 12-SW-A Industrial Stormwater General Permit). Briefing topics included the status of current stormwater retrofit construction and the planning for stormwater quality improvements. Information was also presented on drainage remediation and preservation projects. Facility administrators were informed of upcoming stormwater quality issues and TMDLs related to road salt deicing and given information on potential alternate road deicing strategies. MDOT leadership was also briefed on environmental activities at MDTA.
- **Environmental Block Training –** MDTA performs annual environmental training for staff at each maintenance facility. Training is offered in three "blocks" that focus on stormwater pollution prevention; spill prevention, control, and countermeasures (SPCC); and waste management related to the Resource Conservation and Recovery Act (RCRA). This training is required for all facility maintenance crews and is also offered to all MDTA personnel. Copies of the training presentations are provided in **Appendix A**.

Stormwater pollution prevention training specifically addresses the requirements in the MS4 and Industrial NPDES permits. Topics such as Stormwater Pollution Prevention Plans (SWPPPs), Chesapeake Bay Total Maximum Daily Load (TMDL), illicit discharge detection and elimination (IDDE), erosion and sediment control (ESC), and good housekeeping procedures are covered. Information on the quarterly facility inspections and sampling at the outfalls, a requirement of the Industrial NPDES permit, is also included. The training sessions include group discussion, short videos, and interactive exercises focused on identifying stormwater issues in the field, recognizing pollutants and illicit discharges, and estimating spill volumes. The training is updated each year, and new activities and videos are added.

The SPCC training topics include handling of oil and petroleum products and spill response, identification of major versus minor spills, and spill prevention. The training modules include group discussions and short videos.

Waste management/RCRA training addresses topics such as RCRA regulations, hazardous, solid, and universal waste disposal, and waste management. This module includes group discussion and a short informal quiz.

In FY18/19, MDTA conducted 14 environmental block training sessions, which were attended by 319 employees. Of these, nine training sessions attended by 245 employees were conducted in FY 2018, and five makeup training sessions attended by 74 employees were conducted in FY19. In FY20, MDTA conducted 17 environmental block training sessions, which educated 356 employees.

- **Erosion and Sediment Control Training –** Engineering, Construction, and Operations staff were encouraged to take ESC training to understand MDE's ESC and stormwater management (SWM) requirements. To obtain or renew ESC certifications, project reviewers and project managers attend training courses sponsored by MDE and the MDOT State Highway Administration.

  Currently, 17 Office of Engineering and Construction (OEC) personnel have MDE's latest Responsible Personnel ESC certification (formerly called the "Green Card"). Maintenance personnel are encouraged to obtain ESC certification, and each facility is urged to have at least one ESC-certified supervisor.

  MDTA staff and consultants are kept abreast of new regulations, such as those in the latest version of the 12-SW-A Permit and in the *2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE 2011).

- **Lunchtime Learning Sessions** – These sessions focused on environmental topics such as vegetation management, potential use of drones for field inspections, and stormwater pollution prevention.

- **Professional Training** – MDTA staff continued to broaden their stormwater expertise by participating in a variety of training events and professional groups. Staff viewed webcasts sponsored by the U.S. EPA, MDE, and the American Society of

Civil Engineers that focused on NPDES compliance and Chesapeake Bay TMDL implementation. Topics included the Baltimore Urban Waters partnership flood policy, MDE dam embankment guidance, and pipe and precast installation. Staff also attended stormwater and environmental conferences and training sessions such as the American Society of Highway Engineers Water Resources Conference, Annual Transportation Research Board Meeting, and Chesapeake Water Environment Association Stormwater Seminars. The content of these events provides overall stormwater awareness, as well as specific technical information and professional growth and networking opportunities.

- **BMP Maintenance Training** – MDTA continued to train operations staff on preventative maintenance of BMPs. Maintenance manuals for each facility are provided and include information related to its BMPs, such as inventory, descriptions, location maps, and standard maintenance work orders. Training included field instructions on how to inspect BMPs and perform maintenance activities. This training is further discussed in Section 2.E.4

Appendix A provides examples of training materials and the attendee lists for mandatory annual employee trainings conducted by MDTA.

2.A.5 Briefly describe in reports to MDE how the education programs complement and strengthen other programs of the MS4 permit.

The stormwater education program complements other programs relating to the NPDES MS4 Phase II Permit by educating how to prevent stormwater pollution through awareness of key issues and improved behaviors. Through the education program, the target audience learned about topics such as IDDE, spill response, stormwater pollution prevention, BMPs, and good housekeeping. MDTA staff attending the annual training provide anonymous feedback on topics they learned and liked as a part of the environmental block training. As a result of these trainings, findings from IDDE and construction site stormwater runoff control programs are improved because of the increased knowledge and participation of MDTA staff. For instance, the target audience is aware of what stormwater pollution or an illicit discharge can look like, they may notice and report issues that may arise to the appropriate manager.

Similarly, the target audience may now be inclined to change their personal behavior through such actions as washing vehicles at designated car washes, containing vehicular fluids with absorbent booms, or planting rain gardens at their own residences.

MDTA evaluates the effectiveness of this MCM program by comparing reported complaints and examining the frequencies of illicit discharges detected, spills, and BMPs that are in passing condition year to year. As fewer discharges are reported, fewer complaints come in, and BMPs maintain a passing condition, then MDTA can conclude that the program is effective at educating and empowering employees to protect water resources through their actions at work and at home.

2.A.6 Implementation costs and summary of activities planned for the next reporting cycle

MDTA spent approximately $120,000 and $125,000 in FY19 and FY20, respectively, to implement this MCM. For the next reporting cycle, MDTA will continue to hold regular training sessions for its employees and produce additional outreach materials. It will also continue to advertise online resources to staff to ensure they have immediate access to information. MDTA will also continue to address water quality complaints quickly and effectively.

2.B Public or Personnel Involvement and Participation

According to Part IV.B of the Permit *"Permittees are required to create and foster opportunities for public and/or staff participation in the MS4 management program for controlling stormwater discharges."* MDTA has developed a successful program by using multiple techniques to reach a variety of audiences.

2.B.1 Determine the target audience to promote public and/or staff involvement and participation activities.

The target audience for this permit includes MDTA employees, the general public in adjacent communities, travelers, and project stakeholders. Outreach activities led by MDTA are designed to engage this audience.

2.B.2 Specify activities appropriate for the target audience and promote participation.

Activities appropriate for this target audience include events such as public notices and meetings, MDTA initiatives, trash pickups, volunteering events, the Earth Day event, and other "pop-up" events. The information presented at these events directly relates to the daily job responsibilities of the target audience, the majority of whom are employed by MDTA.

These activities are valuable and appropriate for the target audience because MDTA employees are continually working in and around the environment and stormwater assets. Involvement in these activities increases their awareness of issues and situations related to preventing stormwater pollution.

2.B.3 Perform at least five public and/or staff participation events during the permit term and report to MDE in accordance with reporting requirements

During the first 2 years of the permit, MDTA exceeded this requirement. These activities include:

- **MDOT / MDTA Initiatives** – staff participate in programs that promote environmental compliance and stewardship. MDTA also participates in MDOT work groups composed of MDOT Transportation Business Units (TBUs). Some of the topics discussed in the work groups include emerging technologies to meet the Chesapeake Bay's restoration requirements.
    - Environmental Management System (EMS) – The EMS is implemented across MDOT TBU's.

- MDOT Annual Attainment Report – This report measures the progress of the MDOT TBUs toward achieving their strategic goals through projects in the Consolidated Transportation Program (CTP). The Environmental Stewardship sections of these reports summarize the environmental achievements of these TBUs, including MDTA. MDTA's key environmental initiatives in FY19/20 included installing electric vehicle (EV) charging stations at BHT and FMT customer service centers and initiating a feasibility study for installing EV charging stations at remaining MDTA facilities. **Appendix B** of this report provides copies of the environmental stewardship sections of the MDOT 2019 and 2020 Annual Attainment Reports.
- MDOT Excellerator Performance Management System – This system is composed of 10 tangible results that drive the business decisions of the TBUs. The ninth tangible result, which is to "Be a Good Steward of Our Environment" measures the following areas:
    - Water Quality Treatment to Protect and Restore the Chesapeake Bay
    - Stormwater Cleanup – Street Sweeping and Inlet Cleaning
    - Bay Restoration Program Spending
    - Recycled Waste from Office and Non-Office
    - Recycled/Reused Materials from Maintenance Activities and Construction/Demolition Projects
    - Fuel Efficiency: Miles Per Gallon and Total Gallons Consumed
    - Utility Electricity Use
    - Renewable Energy Generation
    - Air Quality Emissions

  The Excellerator report is available on the MDOT website, and the section of the report on the ninth tangible result is provided in **Appendix B**.

- **MDTA's Bay Bridge web page** (www.baybridge.maryland.gov) – This web page has children's games that help families become aware of the Bay as an environmental and cultural resource.
- **Earth Day Fair** – MDTA organizes this event annually, and last held this event in FY19. Booths with information on pollution prevention and environmental awareness were set up by MDTA's Office of Engineering and the Office of Environment, Safety, and Risk Management (OESRM). The event coincided with Bring Your Child to Work Day, so the outreach conducted for this event extended beyond MDTA staff.

OESRM also held five field trips for Earth month in FY19. Trips were taken to the Patapsco Wastewater Treatment Plant, the Green Street Academy, the Soil Safe Treatment Plant, Battle Creek Cypress Swamp Sanctuary, and the Veteran Compost

Facility. No in-person Earth Day events were hosted in FY20 due to the COVID-19 pandemic.

- **Turner Station Outreach Event -** MDTA conducted outreach to children and their families at the Turner Station Outreach event on April 11, 2019 near FSK, to educate them on stormwater pollution prevention. The event began with a presentation on stormwater pollution prevention in the Chesapeake Bay area and then followed by a demonstration using EnviroScape kits to show the impacts of stormwater pollution and the effectiveness of BMPs.
- **Customer Appreciation Day –** On September 21, 2019, at ICC East, MDTA set up booths to provide information to the general public about MDTA. The booths hosted activities featuring the Plinko game and EnviroScape kits and offered information and handouts on various topics including related to environmental topics.
- **Environment Management System (EMS) Meetings –** MDTA's EMS team of 8 to 10 staff meets monthly to discuss environmental objectives (EOs) to reduce environmental risks, updating EMS procedures, and developing EMS awareness training. The EMS team has representatives from OESRM, Operations, OEC, and Planning and Program Development. In FY19, several EOs were set and action plans developed include:
    - Ensure compliance with hazardous waste management and disposal regulations at facilities and construction sites.
    - Ensure oil water separators and wash bays are in compliance and functioning properly.
    - Ensure environmental compliance relating to mechanical services, specifically during fueling at construction sites.
    - Study road salt reduction/salt brine expansion.
    - Study mechanical services (fueling) at facilities, focusing on issues with other state agencies using MDTA fueling facilities.

A sample agenda from the EMS meeting on March 13, 2020, and EMS awareness training slides are provided in **Appendix B**.

- **Storm drain markers –** To increase stormwater awareness among the public, MDTA affixed permanent storm drain markers, shown in the adjacent figure, on MDTA's storm drains along access roads and travel plaza parking lots. These markers tell the public not to dump in the storm drains and that drainage goes to the Chesapeake Bay. The public can scan the bar-code on these markers with a smart phone to access a website with stormwater pollution prevention information. MDTA is listed as a sponsor on this website: *www.StormDrainMarkingUSA.com*. No new storm drains were marked in FY19/20, although markers are replaced when the markings become faded or damaged.



Storm Drain Marker

- **Tree Planting -** MDTA planted 130 trees in FY19 and 50 trees in FY20 along the JFK I operated roadways as part of environmental stewardship.

Table 4 quantifies the public and staff involvement in various activities. Due to impact of COVID-19, some of the public and/staff involvement activities have been paused, but MDTA plans to resume these activities virtually when feasible.

Table 4: Summary of Public and/or Staff Involvement and Participation for FY19/20

Activity	Quantity
Number of participants at public and/or staff events	320
Quantity of trash and debris removed at clean-up events	0
Number of employee volunteers participating in sponsored events	9
Number of trees planted	180
Length of stream cleaned (feet)	0
Number of storm drains stenciled	0
Number of public notices published to facilitate public and/or staff participation	6
Number of public and/or staff meetings organized	24
Total number of attendees at all public and/or staff meetings	200

2.B.4 Provide public and staff members access to the permittee's MS4 Progress Reports via website or other method and consider any substantive public and/or staff comments received concerning the permittee's MS4 program.

The Annual MS4 Progress Report submitted to MDE is available can be accessed by MDTA and MDOT staff. Staff can review the reports and submit comments to the OEC staff responsible for preparing the MS4 report. Staff-provided comments are strongly considered and

are incorporated into the MS4 program where applicable. MDTA is working toward publishing a summary of the Annual MS4 Progress Report on the MDTA website.

2.B.5 Comply with all State and federal public notice requirements for any regulated activity associated with this general permit.

MDTA notifies the target audience of any regulated activities under the NPDES MS4 Phase II permit. To notify the public and project stakeholders about stormwater pollution and control activities in the planning, design, and construction phases of all major projects, MDTA has set up public notices and meetings. Major projects (discussed in section 2.D.5) involve the following:

- Conducting public hearings and public meetings
- Providing a point of contact between the public and the project team
- Proactively informing adjacent property owners and key stakeholders of pending construction activities, potential environmental impacts, and impacts that were avoided.
- Promoting environmental mitigation/stewardship projects, for example, with news releases on upcoming MDTA construction projects that describe environmental efforts related to the work
- Offering project stakeholders a chance to provide input into specific project decisions
- Holding field meetings during construction to resolve any public concerns

2.B.6 Implementation costs and summary of activities planned for the next reporting cycle.

MDTA spent approximately $30,000 and $22,000 in FY19 and FY20, respectively, to implement this MCM program. For the next reporting cycle, MDTA will continue to host events and promote public/staff involvement in activities related to stormwater pollution prevention, such as Earth Day events and possibly another event at Turner Station. However, due to the continuing COVID-19 pandemic, MDTA will plan events that can be hosted virtually, if needed.

2.C Illicit Discharge Detection and Elimination

According to Part IV. C of the Phase II Permit, *“Permittees are required to develop, implement, and enforce a program to detect and eliminate illicit discharges into the MS4 in accordance with 40 CFR § 122.34(b)(3).”*

MDTA has a robust IDDE program that focuses on field screening of outfalls in potential hot spots.

2.C.1 Develop and maintain an updated map of the MS4 that identifies all stormwater conveyances, outfalls, stormwater BMPs, and waters of the U.S. receiving stormwater discharges.

MDTA continues to review information related to stormwater structures as new projects are constructed. Attribute and spatial information for drainage pipes are logged in a comprehensive GIS geodatabase that depicts the drainage network owned by MDTA. A map created from this information is updated annually and is provided in **Appendix C**. In addition, illicit discharge screening and outfall inspections are logged in the NPDES database.

2.C.2 Establish a policy or other agency directive that prohibits illicit discharges into the MS4.

MDTA, prohibits illicit discharges into the MS4 through environmental directives. OEC has published the *Illicit Discharge Detection and Elimination Directive* for MDTA employees prohibiting illicit discharges into the storm drains. This directive will be made available to employees on MDTA's intranet. MDTA has published the *Environmental Management System (EMS) Manual,* which outlines policies that foster environmental protection and reinforces practices among MDTA employees that are essential to operations. The EMS Manual also outlines the various operations that would be conducted by MDTA staff, including maintenance of underground storage tanks, construction and earth-disturbing activities, storage of petroleum products, and concrete/asphalt surfacing, and their potential to impact water resources. The EMS Manual can be accessed on the MDTA intranet.

2.C.3 Maintain the capability to access the storm sewer system across the entire property(ies) to investigate and eliminate illicit discharges (e.g., maintain physical access, proper internal permissions).

MDTA maintains access to its storm sewer system by ensuring that access points are in good condition. This maintenance involves tending to outfalls and surrounding areas at to ensure vegetation, debris, or a safety hazard are not preventing access. MDTA is also in contact with property owners of areas surrounding MDTA outfalls. This close coordination allows MDTA constant access to stormwater conveyance systems without trespassing. Site accessibility allows MDTA to address illicit discharges and other water quality concerns promptly after they are reported.

2.C.4 Develop and implement written SOPs.

MDTA has procedures to proactively detect and address potential illicit discharges. The screening for illicit discharges involves visual inspection of storm drain outfalls or affiliated drainage structures. If there is any type of dry-weather flow three days after a storm event, the discharge is characterized, the source of discharge is investigated, as-needed corrective actions are evaluated, and appropriate actions are taken.

The *Illicit Discharge Detection and Elimination Practices and Procedures Manual* (updated January 29, 2019) developed by MDTA documents the procedures for conducting IDDE

inspections. The manual is provided as **Appendix C** and includes the following information, as required by the Phase II permit:

- An inspection checklist for collecting site description, outfall description, structural integrity of the outfall, characteristics of the discharge, and measurement of chemical parameters in case a dry weather flow is observed at the outfall
- Frequency of outfall inspections — up to 100 outfalls per year per permit requirements, as MDTA, at more than 2,000 acres, is considered a large property
- Procedures for identifying the source and eliminating spills, illegal dumping, and other suspected illicit discharges
- Identification of priority areas or hot spots for illicit discharge screening based on pollution potential

2.C.5 Submit SOPs to MDE for review and approval within 2 years of permit issuance. MDE will review for consistency with the guidance [in the permit] in Appendix B, Section II.

MDTA included the IDDE SOP in **Appendix C** for MDE review and is the first time it is provided.

2.C.6 Document results of illicit discharge screening efforts, including a description of how screening locations were prioritized, and any necessary follow-up investigations and remediation measures implemented to address any suspected discharge. Submit to MDE in accordance with reporting requirements.

There are 1,573 total outfalls at MDTA properties, so 20%, up to 100 outfalls, are required to be screened annually per MDE guidelines. Generally, MDTA prioritizes screening of major NPDES outfalls, which are storm drain pipes with an equivalent diameter of 36 inches or larger that discharge to Waters of the United States. However, for the recent IDDE inspections, MDTA has been considering all outfalls. MDTA performs IDDE screening on a 3-year cycle, divided by facility, generally with ICC in one cycle; BHT, FMT, and FSK in another cycle; and JFK, TJH, WPL, and HWN in the third cycle. MDTA performs more frequent screening at selected outfalls when there may be a suspected illicit discharge. Outfalls identified as having a higher pollutant potential at MDTA facilities include LBEH00017, LBEH00019, LBEH00037, HTEH00119, HTEH00020, HTEH00245, HTEH00246, FTEH00124, KBEH00082, KBEH00083, KHEH00861, KHEH00872, NBEH00009, and NBEH00012. These outfalls were identified as high-priority outfalls because their drainage areas include multiple potential pollutant sources.

During FY19/20, illicit discharge screenings were conducted for NPDES outfalls along roadways associated with BHT, FSK, FMT, JFK, WPL, TJH, and HWN. In FY19/20, 110 and 115 outfalls or associated upstream inlets were inspected, respectively.

Field tests kits were used to test dry weather flows observed at 33 outfalls in FY19 and at 12 outfalls in FY20. The dry weather flows were screened for temperature, pH, chlorine, phenol, copper, and detergents.

Dry weather flow screening for FY19 revealed that two outfalls had detergent/phenol concentrations that exceeded their respective screening criteria. Discharge from these outfalls tested during re-inspections did not exceed any of the parameter/contaminant thresholds, therefore it was concluded that no illicit discharges were identified in FY19.

Dry weather flow screening for FY20 revealed that four outfalls had detergent/phenol concentrations that exceeded their respective screening criteria. During re-inspections of these outfalls, two were found to have dry weather flow. Flow from these two outfalls was tested and found to be compliant with all threshold parameter/contaminant values. Therefore, it was concluded that no illicit discharges were identified during FY20, and it is likely that the suspicious samples from both years were due to seasonal fluctuations or activities performed by members of nearby communities in the watershed on an infrequent basis.

For cases where a true illicit discharge is discovered, it will be traced through the drainage system to determine the source. If it originates on a neighboring property, the landowner will be contacted. If the source is on MDTA property, clean-up procedures will be initiated based on the material. The MDE response unit may be called, in appropriate instances. The source of the illicit discharge will be eliminated, and the site will be closely monitored to prevent recurrences.

MDTA also addresses discharges from vehicular spills along highways and major crossings. Discharge Notification Forms are completed that record the date, time, and location of the spill, and the authorities that were notified and procedures that were used to clean up the spill and properly dispose of the hazardous materials. When required, documentation is provided to MDE. **Table 11** in section 2.F.2 summarizes reported spills on MDTA roadways in FY19/20.

MDTA also has a drainage inspection protocol for storm drain outfalls to assess drainage performance and structural condition. As part of the IDDE investigations, the drainage structure conditions are noted. Where warranted, remedial work orders are developed to address deficiencies. Drainage inspections also can help identify potential illicit discharge issues for further investigation.

During the first two permit reporting cycles, 21 and 55 outfalls with maintenance concerns were identified in FY19/20, respectively. These outfalls had cracking concrete, vegetation buildup, sediment accumulation, and/or corrosion in the pipes. Remedial actions taken to resolve these issues included structural repair or replacement of headwalls and pipes and removal of vegetation or sediment accumulation. MDTA has addressed the issues identified in FY19 and is currently addressing the issues identified in FY20.

Reports summarizing the results of the IDDE inspections are provided in **Appendix C**.

2.C.7 Maintain complete records of IDDE program investigations and make them available to MDE during field reviews of the permittee's MS4 program.

MDTA maintains records of all IDDE inspections electronically and at the Point Breeze office. These records are updated after every IDDE inspection.

2.C.8 IDDE education and training program

As part of the annual environmental block training, MDTA provided IDDE training to 74 employees in FY19 and to 356 employees in FY20. The employees learned how to identify pollutant types, observe pollutant characteristics, and report findings to the appropriate authority, which can investigate and eliminate the illicit discharge. Materials developed to meet education and training requirements are provided in **Appendix A**. These materials include IDDE pocket cards and sections of the stormwater pollution prevention training related to IDDE inspection.

2.C.9 Cost of implementation

Over the first and second reporting cycles, MDTA spent approximately $70,000 and $130,000, respectively, developing and implementing this MCM. MDTA dedicates significant resources to the IDDE program to ensure that issues are addressed in a timely manner.

2.D Construction Site Stormwater Runoff Control

According to Part IV.D of the Phase II Permit *"Permittees are required to comply with Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland and State erosion and sediment control regulations under Code of Maryland (COMAR) 26.17.01. The statute and COMAR specify the requirements for any construction activity that disturbs 5,000 square feet of land area or 100 cubic yards or more of earth movement. MDE considers compliance with the State statute to be compliance with this MCM of the general permit, and 40 CFR § 122.34(b)(4)."*

2.D.1 Submit erosion and sediment control plans to MDE (or other authority when applicable) for review and approval in accordance with COMAR and with the Maryland Stormwater Management and Erosion and Sediment Control Guidelines for State and Federal Projects (February 2015).

When required, MDTA prepares an ESC plan for activities involving land disturbance for MDE review and approval. Once MDE approves the plan, MDTA is issued a Sediment and Stormwater Permit for projects that have earth disturbances exceeding 100 cubic yards or 5,000 square feet.

2.D.2 Ensure compliance with requirements under MDE's 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control or more recent revision and COMAR 26.17.01.

Maryland laws require enacted ESC regulations to protect waters of the state. MDE has promulgated regulations for ESC, and all MDTA construction projects are governed by the Code of Maryland Regulations Title 26, Subtitle 17, Chapter 1 (COMAR 26.17.01). The chapter governing ESC consists of 11 regulations. MDTA complies with Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland and State and federal laws, regulations, ordinances, and procedures that regulate construction site activity.

2.D.3 Ensure all necessary permits have been obtained, including MDE's General Permit for Stormwater Associated with Construction Activity for projects disturbing one acre or more, and local sediment and erosion control plan approval.

Construction projects are initiated only when the required permits, including the ESC permit (unless the project is exempt), are obtained. For projects with disturbances that exceed 1 acre, MDTA must obtain coverage under the General Permit for Stormwater Associated with Construction Activity in compliance with the federal NPDES program.

2.D.4 Develop a process for receiving, investigation, and resolving complaints from any interested party related to construction activities within the property(ies). Notify the complainant of the investigation and findings within seven days.

Noncompliance findings and complaints from different stakeholders are reported directly to project management staff or through other contacts in MDTA. Assigned staff information for active construction projects is distributed monthly within the OEC and makes it possible to direct complaints to the respective project managers without delay. The general procedure to address noncompliance findings and concerns is for field management staff to investigate and recommend corrective actions when necessary. Project or Area Engineers would direct the contractor to perform corrective actions, regardless of the payment involved, to resolve complaints in a timely manner. The interested party would be notified of the follow-up actions within seven days. Project management staff ensure that documentation on such action items and routine inspections is available on-site. No construction complaints were received during FY19/20.

2.D.5 Track all active grading permits for each property covered under this general permit and report disturbed areas for all active grading permits to MDE in accordance with reporting requirements.

MDTA tracks active grading (erosion and sediment control) permits, project status, approvals, inspections, inspection findings and compliance efforts for all projects and tasks orders via coordination between different divisions and offices within MDTA. There were 20 projects in FY19/20 that were issued ESC permits. The area disturbed by the 20 grading permits totals 526.28 and has been reported to MDE. **Table 5** lists these construction projects and the disturbed areas.

Table 5: Active Construction Projects and Disturbed Area during FY19/20

Project	Description	MDE No.	LOD (ac)
KH-3012-0000	Bradshaw Road Overpass Reconstruction	18-SF-0074	2.80
KH-3015-0000	Old Joppa Road Overpass Reconstruction	18-SF-0205	1.68
KH-3010-0000	I-95 NB Auxiliary Lane MD 152 to MD 24 and MD 24 / MD 924 Ramps	18-SF-0070	23.18
KH-3009-0000	I-95 NB Two-Lane ETL Extension to MD 152	18-SF-0098	111.30
KH-3014-0000	Section 200 SB Noise Wall - New Forge Road to Big Gunpowder Falls	19-SF-0128	2.26
KH-3028-0000	Carsins Run Stream Mitigation	19-SF-0196	2.53
KH-3033-0000	MD 7 Fish Passage	20-SF-0140	1.89
KH-3023-0000	MD 24 and MD 924 Park and Ride	19-SF-0125	8.17
KH-3027-0000	MD 152 Park and Ride Relocation	20-SF-0019	6.66
KH-3022-0000	Clayton Road Overpass Reconstruction	19-SF-0204	2.91
KH-3029-0000	Abingdon Road Overpass	19-SF-0212	1.30
KH-3030-0000	Noise Wall on SB I-95 at MD 24 / Woodsdale	20-SF-0111	5.69
KH-3019-0000	MD 152 Interchange	19-SF-0187	113.66
KH-3020-0000	I-95 NB ETL Extension to Bynum Run Noise Wall NB I-95 N. of Abingdon Rd.	20-SF-0143	43.80
KH-3031-0000	Noise Wall on SB I-95 South of Calvary Road	20-SF-0170	4.08
KH-3021-0000	MD 24 Interchange	20-SF-0157	144.34
KH-3040-0000	MD 24 NB toward Singer Road	-	7.65
KH-3038-0000	Eccelston Mitigation	-	42.17
KH-3032-0000	Old Mountain Road Advance Utility Bore	-	0.11
MR-3018-0000/ MR-3027-0000	DMS Relocation from Clayton Road to Bynum Run	20-SF-0176	0.10
		Total	**526.28**

2.D.6 Ensure that construction site inspections and enforcement procedures are performed in accordance with COMAR. This will require ongoing communication and collaboration with MDE to ensure that any violations are properly addressed.

At MDTA, engineering design and construction of projects is overseen by Office of Engineering and Construction. Under this office, Environmental Engineering division applies for and acquires permits during a project's design development. The construction management and inspection (CMI) team, typically consisting of a project engineer and several inspectors, manages the construction phase activities. This team reports to Engineering divisions when inspections, done by MDE or, as QA/QC, by MDTA staff, reveal work is not meeting permit requirements. As applicant, Environmental Engineering division coordinates with the CMI staff, and MDE on corrective measures. Minor issues are resolved with a direct coordination between the CMI team and MDE compliance inspectors. .

Periodic site inspections by MDE and regular inspections by MDTA personnel are performed at all MDTA construction sites to ensure safety, adherence to regulations, and the success and quality of the project. MDTA uses the State Highway Administration's evaluation system for construction site ESC ratings and appoints quality assurance (QA) inspectors to assess permitted construction sites with this system. This process requires follow-up inspections for projects with ratings of C, D, or F to ensure corrective measures have been taken. MDTA encourages certification of construction inspectors, contractors, engineering designers, and maintenance staff in MDE's Responsible Personnel ESC Certification.

When MDE issues a Notice of Violation (NOV), MDTA addresses the NOV within the time frame specified on the NOV and puts in place a preventative measure to ensure the violation is not reissued. MDTA did not receive NOVs during FY19/20. If an NOV is received and resolved by MDTA, coordination is typically done through emails, but CMI teams also directly call MDE compliance inspectors. After corrective measures are taken, MDTA QA inspector, CMI staff representative and MDE inspectors conduct a field visit to ensure the measures are satisfactory.

For each project, inspection records are kept on inspection frequency, findings, and contractor notifications and resulting actions. MDTA ensures that design and construction activities are performed in accordance with ESC laws and regulations. Permits and approvals are obtained prior to construction, and permit conditions are met through and after project completion.

For megaprojects such as the I-95 Section 100 Express Toll Lanes project, additional oversight may include an Environmental Compliance Team (ECT). An ECT comprises managers, inspectors, and independent environmental monitors who administer the ESC QA program and the NPDES General Permit for Construction Activities. An ECT performs routine environmental inspections, monitoring, and oversight during construction to evaluate compliance with the permits issued by MDE and the U.S. Army Corps of Engineers, as well as other environmental laws and regulations.

2.D.7 Incorporate procedures within property operations to effectively abate sediment pollution and comply with all applicable State and federal laws pertaining to erosion and sediment control practices.

SHA standard specification for construction and materials, which is maintained online, with special provisions for MDTA, serves as standard policy document guiding pollution abatement and prevention on construction projects. It references and adopts applicable MDE issued manuals and guidelines.

2.D.8 Ensure staff is adequately trained on proper procedures and actions to address potential discharge of pollutants into the MS4 as a result of any construction activity. The Responsible Personnel Certification on-line training course through MDE must be made available to appropriate staff.

As noted above, MDTA staff are trained on IDDE, pollution prevention, and spill response in their annual training. This training covers the impacts of construction activity on stormwater pollution prevention. As of FY20, 17 employees at MDTA have received MDE's Responsible

Personnel Certification (RPC). A list of OEC personnel with MDE's RPCs is provided in **Appendix D**.

2.D.9 Coordination with Other Entities

Complaints and notices on erosion issues and illicit discharge typically go through each facility's operations and maintenance office. Reporting typically doesn't identify between project related concerns or discharges from O&M activities. This necessitates coordination on reporting, documenting, and resolving such issues with IDDE program.

As noted in description of processes to address NOV's, MDTA coordinates with MDE on plan approvals and modifications, including the construction general permit, and construction compliance. MDTA also coordinates with Anne Arundel County Soil Conservation District and the Chesapeake Bay Critical Area Commission, who have regulatory authority on construction activities in defined zones within the State.

2.D.10 Cost of Implementation

Over FY19/20, MDTA spent approximately $4.4 million ($2.2 million/year) for this MCM.

2.E Post Construction Stormwater Management

According to Part IV. E of the Phase II Permit *"Permittees are required to maintain an acceptable stormwater management program in accordance with Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland and State stormwater management regulations under COMAR 26.17.02. The statute and COMAR require that stormwater management must be addressed for new development and redevelopment for any proposed project that disturbs 5,000 square feet or more of land area. MDE considers compliance with the State statute to be compliance with this MCM of the general permit, and 40 CFR § 122.34(b)(5)."*

2.E.1 Submit stormwater management plans to MDE (or other authority when applicable) for review and approval in accordance with COMAR and with the Maryland Stormwater Management Erosion and Sediment Control Guidelines for State and Federal Projects (February 2015) for compliance with State stormwater management requirements.

Plans from MDTA projects with stormwater management requirements are submitted to MDE for review and approval.

2.E.2 Implement the principals, methods, and practices found in the latest version of the 2000 Maryland Stormwater Design Manual, Volume I & II (Manual), and the latest version of MDE's Maryland Stormwater Management Guidelines for State and Federal Projects. This includes that environmental site design (ESD) be implemented to the maximum extent practicable (MEP).

For MDTA development and redevelopment projects, stormwater design activities follow MDE's *Maryland Stormwater Management and Erosion and Sediment Control Guidelines for State and*

Federal Projects, dated February 2015, and include stormwater management design that complies with the *2000 Maryland Stormwater Design Manual, Volumes I and II*, including the updated Chapter 5 of the manual. MDTA incorporates ESD requirements to the maximum extent practicable.

2.E.3 Maintain stormwater program implementation information and provide updates in accordance with the MS4 Progress Report that include: a) total number of plans submitted to MDE for review and approval; b) total number of as-built plans submitted to MDE and approved and c) verification that BMPs are maintained in accordance with MDE requirements outlined on approved plans.

During FY19/20, two plans were submitted to MDE, and were approved. All of the 55 as-built plans submitted to MDE were also approved.

BMPs

Once approved by MDE, as-built plans are kept by MDTA as the official record for a BMP. Relevant data from the plans are populated in the MDE-required Urban BMP Database. MDTA maintains an internal NPDES geodatabase to track BMP inventory and maintains BMPs through regular inspections and remedial maintenance.

- **Inventory -** MDTA maintains a comprehensive inventory of stormwater BMPs and drainage systems. MDTA continually updates stormwater infrastructure data as new stormwater features are constructed or existing assets are enhanced as part of MDTA projects. MDTA also tracks proposed BMPs scheduled for construction, such as those for development projects and for stormwater retrofits that address Chesapeake Bay TMDL restoration requirements. Inventory data are based on design documents, construction plans, and as-built plans, and on aerial imagery and field inspections as-needed. These data are stored in MDTA's NPDES geodatabase, which includes spatial and attribute data and connectivity between stormwater features. The BMP inventory is linked with design documents, impervious area treatment and drainage areas, and Chesapeake Bay tributaries. The BMP inventory expands annually, based on:
    - continual review and update of BMPs based on property boundaries that would identify BMP ownership; and
    - preliminary evaluation of MDTA-owned stormwater pond embankments to confirm dam hazard class.

  Table 6 lists the inventory of constructed ("active") BMPs by major BMP type and MDTA facility. During FY19/20, three BMPs were removed and two BMPs were added to the inventory.

Table 6: BMP Inventory as of FY20

Facility	Pond	Filtering	Infiltration	Other	Total
FMT	5	1	-	-	**6**
BHT	3	32	-	9	**44**
TJH	-	-	1	-	**1**
ICC	40	139	42	24	**245**
JFK	36	185	23	26	**270**
FSK	3	18	-	3	**24**
WPL	-	4	2	14	**20**
HWN	-	2	1	-	**3**
Point Breeze	-	3	-	-	**3**
Grand Total	**87**	**384**	**69**	**76**	**616**

MDTA continued to inventory impervious areas MDTA-wide in the NPDES geodatabase. This database tracks information such as impervious area type (e.g., building versus roadway) and MDE site development designation (redevelopment or new development). In addition, MDTA tracks stormwater features by watersheds of Chesapeake Bay tributaries. This is a proactive approach to tracking stormwater retrofit efforts that addresses Chesapeake Bay TMDL requirements.

- **Inspection –** BMPs are inspected at regular intervals. These inspection records are available in digital form at each MDTA facility.
    - BMPs – triennial inspections are performed using MDTA's inspection protocol described in *Stormwater Best Management Practices Field Inspection Manual* (January 2017). The inspections evaluate performance and overall stability of BMPs. Overall rating of A through E are assigned, where:
        - A – BMP is performing as designed, with no signs of impending deterioration.
        - B – BMP is functioning and has minor issues and is a potential candidate for maintenance.
        - C – BMP is operational but has moderate problems. Remedial action may be needed to restore performance and/or stability.
        - D – BMP is not functioning properly and has major problems. Key parameters are compromised and may require remedial action(s). The BMP may be a potential candidate for major repair or rehabilitation.
        - E - a BMP that is not functional and has significant problems. BMP deterioration may require temporary stabilization or comprehensive remedial action(s), or both. The BMP may require emergency action, restoration, enhancement, or replacement.

As necessary remedial actions are identified, then work orders are executed, and inspections are performed afterwards to track the improved condition. MDTA also has identified BMPs for enhancement to improve SWM to current standards. Where warranted, MDTA performs detailed assessments after inspections to further evaluate individual BMPs or a specific BMP type. Inspections are tracked in the NPDES geodatabase, which includes field photos. Inspection dates are also updated in the Urban BMP Database submitted to MDE.

Applicable BMPs are inspected triennially in accordance with the Dam Inspection Checklist in Maryland Pond Code 378. **Table 7** summarizes the most recent ratings from BMP inspections, including ratings from inspections conducted during FY19/20. During FY21, 192 BMPs are scheduled for inspection.

Table 7: BMP Inspection Ratings Including the Inspections Conducted in FY19/20

BMP Type	A	B	C	D	E	Total
Pond	13	35	33	5	0	86
Filtering	192	143	41	3	0	379
Infiltration	27	31	7	4	0	69
Other	27	39	10	0	0	76
Grand Total	**259**	**248**	**91**	**12**	**0**	**610**

Drainage

Drainage features were inspected using MDTA's inspection protocol. This protocol is used when screening outfalls for illicit discharges (see section 2.C, Illicit Discharge Detection and Elimination) and also as part of the drainage system preservation and site investigation program. These investigations are initiated by MDTA staff or citizen complaints. As-needed assessment reports are prepared to characterize the drainage issues and provide remedial recommendations. When corrective actions are required, remedial work orders are prepared. MDTA tracks the inspection and remedial action in the internal NPDES geodatabase.

The Outfall Rehabilitation Inspection Protocols were used during FY19/20 to identify, inspect, evaluate, and prioritize for construction of degraded outfalls within the MDTA right-of-way. The process involves combining data from the IDDE inspection, the Drainage Inspection Program, and the GIS asset inventory to identify outfalls in need of inspection for remediation. Inspectors measured the condition of the drainage structure, the level of erosion in the downstream channel, as well as the vegetative cover to assess the overall condition of the outfall. To do this, inspectors used Survey123 for ArcGIS, a customizable, off-the-shelf software for data entry that reduces redundancy in work and eliminates transcription errors. A special feature of the software makes use of the capabilities built into phone or tablet hardware for data entry using the voice-to-text attribute.

- **Maintenance -** MDTA continually conducts maintenance for BMPs requiring action. Work orders (WO) for major maintenance and rehabilitation include remedial action lists, site maps annotated with remedial actions, photographs identifying defects, and details and specifications. In addition, enhancement WOs are issued for poorly performing BMPs. BMP maintenance and repair is tracked in the internal NPDES geodatabase to manage activities for progress and cost as well as to aid in forecasting future remediation. All maintenance checklists are available to MDE during field review. **Table 8** summarizes the remedial activities performed during the past two reporting years.

Table 8: BMP Maintenance in FY19/20

Maintenance Type	Pond	Infiltration	Filtering	Other	Total
Preventative	93	-	399	-	492
Minor Repair	41	11	29	3	84
Major Repair	-	-	-	-	-
Rehabilitation	-	-	-	-	-
Enhancement	-	-	-	-	-
Total	**134**	**11**	**428**	**3**	**576**

  - Preventative BMP Maintenance – Engineering staff work closely with maintenance staff in coordinating preventative (routine) BMP maintenance. MDTA continually updates stormwater BMP maintenance manuals for each facility and the GIS enterprise. This provides maintenance staff with the current inventory of BMPs for their facility and the typical maintenance activities by BMP type. A sample maintenance manual is provided in **Appendix E**. Maintenance is also performed in accordance with the procedures detailed on MDE-approved plans. Proper techniques will prolong the service life of BMPs, minimize damage, maintain access to critical components (e.g., risers, inflow structures), and reduce the opportunity for invasive or noxious vegetative growth.
  - BMP Repair – Minor repairs include phragmites management and WOs for maintenance staff to address minor issues observed during inspections. Major repair and rehabilitation require more significant WO's typically performed by stormwater contractors. Several BMP repairs WO's were prepared in FY20. In FY19/20, inspections revealed a variety of defects requiring action, including
    - 26 BMPs needed phragmites management. These BMPs were sprayed, and the phragmites were mechanically removed.

- 15 BMPs required vegetation management, such as removing woody vegetation surrounding control structures, trimming unwanted vegetation, and maintaining access to each BMP.
- 11 BMPs required sediment and debris removal, specifically within their footprints, stone windows, and control structures.
- 26 BMPs required stabilization, specifically of check dams and side slopes.
- 8 BMPs required low-flow pipes or underdrains to be cleaned and/or repaired.

The vegetation management, sediment/debris removal, stabilization, and low-flow cleaning and repair work were performed by maintenance staff.

- Drainage Remedial – MDTA identifies, assesses, and mitigates drainage and slope stability issues MDTA-wide. Remedial WOs are prepared to repair or rehabilitate drainage features, and they include an actions list, site maps annotated with defects, site photos of defects, and details/specifications. The NPDES geodatabase tracks remedial activities. MDTA issued 42 WOs and two WOs in FY19 and FY20, respectively.

2.E.4 Provide training to stormwater program staff and to staff responsible for proper BMP design, performance, inspection, and routine maintenance. Report the number of trainings offered, topic covered, and number of attendees.

MDTA provides annual or semi-annual training for staff on BMP design and maintenance. These trainings were offered on 05/03/2019, 07/01/2019, and 04/08/2020. Inspections teams are trained annually. In FY19/20, 10 to 14 employees were trained, with 5 to 7 employees attending the training each year. Additionally, the Drainage Remediation Team also provides WOs to MDTA maintenance staff on smaller, lower priority issues in order to develop the construction expertise of facility crews.

2.E.5 Maintain and submit the Urban BMP Database in accordance with the database structure in Appendix B, Tables B.1.a, b, and c. This information shall be submitted to MDE with annual reports.

MDTA submitted an Urban BMP Database as part of the impervious area reporting requirements. This database is derived from MDTA's NPDES geodatabase that includes BMPs, storm drain systems, drainage areas, impervious surfaces, natural resources, asset inspections, and remedial actions to meet MDE's database requirements. MDTA manages spatial and attribute data related to inventory, inspections, remediation, and illicit discharge screening. The geodatabase has tables link supporting information, such as site photos, defect photos, design documents, and remedial WOs to features. The Drainage Remediation Team uses digital field tools to spot-check and update the database while inspecting drainage investigation sites.

The stormwater data is readily accessible to staff via an enterprise GIS system. This helps information sharing, eliminates multiple versions of the same data, facilitates the decision-making process, and allows additional quality control (QC) procedures to be applied to the data input in the enterprise geodatabase.

MDTA is also using ESRI's ArcGIS Online platform to share data among stormwater-specific staff. This platform offers a user interface, data visualization, and data management. BMP inspection ratings are located on a dashboard. To improve data integrity and efficiency in field collection of data, MDTA uses ESRI's ArcGIS Collector application for BMP inspections and IDDE investigations and Survey123 for SWPPP inspections.

2.E.6 Cost of implementation and summary of activities planned for the next reporting cycle.

MDTA spent approximately $312,000 and $407,000 in FY19 and FY20, respectively, on implementing this MCM. Over the next reporting cycle, MDTA will use program funding to continue BMP inspections and maintenance, to update the MDE-required Urban BMP Database, and to train employees in inspections and maintenance.

2.F Pollution Prevention and Good Housekeeping

According to Part IV.F of the Phase II Permit *"Permittees are required to develop and implement an operations and maintenance program that includes a training component to prevent and reduce pollutant runoff from municipal operations in accordance with 40 CFR § 122.34(b)(6)."*

2.F.1 Ensure that appropriate staff and contractors receive training at least annually. Topics must include spill prevention and response, proper disposal of waste, and periodic visual inspections to detect and correct potential discharges at properties owned or operated by the permittee.

MDTA employees are trained annually in spill prevention and response, proper waste disposal, and inspection of discharges during environmental block training. Committee members and staff at maintenance facilities are trained annually on the SWPPP contents and the procedures for good housekeeping and for routine inspections of their facility. As part of good housekeeping training, MDTA employees learn how to use the EMS and the Enterprise Environmental Information Management System (EEIMS), developed by OEC and OESRM. The compliance-focused EMS was developed as a tracking tool. The EMS manages environmental performance and compliance with environmental regulations. OESRM oversees the EMS program and the EMS compliance audits at maintenance facilities. The EEIMS was created to track and document compliance progress.

The environmental block training sessions held during the last two reporting years are shown in Table 9. During FY19, 74 employees received pollution prevention and good housekeeping training. However, a total of 319 employees were trained in calendar year 2019. In FY20, 356 completed the training. Sample training materials used during FY19/20 are provided in

Appendix A, as they are part of the comprehensive environmental block training discussed in Section 2.A.4.

Table 9: Pollution Prevention and Good Housekeeping Training Sessions during FY19/20

FY19 Training Dates			
07/11/2018	07/12/2018	08/16/2018	09/12/2018
09/27/2020	**Total Sessions: 5**		
FY20 Training Dates			
8/6/2019	8/7/2019	8/9/2019	8/12/2019
8/14/2019	9/9/2019	9/10/2019 (2 sessions)	9/16/2019 (2 sessions)
9/18/2019 (2 sessions)	9/26/2019	10/15/2019	10/29/2019
11/15/2019	11/18/2019	**Total Sessions: 17**	

2.F.2 Develop, implement, and maintain a good housekeeping plan for permittee owned or operated properties where any of the following activities is performed: maintenance of vehicles or heavy equipment, and handling of any of the following materials: deicers, anti-icers, fertilizers, pesticides, road maintenance materials such as gravel and sand, or hazardous materials. A standard plan may be created to address multiple properties where similar activities are conducted, provided the below items are addressed. The plan must include a) description of site activities; b) list of potential pollutants including their sources and locations on the site. The plan must consider conveyance of stormwater entering, flowing across, and leaving the site; c) written good housekeeping procedures designed to prevent discharge of pollutants off site that include regular visual inspections to detect potential discharges; d) written procedures for corrective actions to address any release, spill or leak on site and e) documentation for any discharge, release, leak, or spill, including date, findings, and response actions.

Stormwater Pollution Prevention Plans were developed by MDTA for the 11 maintenance facilities covered under the General Permit for Discharges of Stormwater Associated with Industrial Activity (12-SW-A permit). Each plan documents the prevention activities and provides a list of potential pollutants; a map of the storm drainage system, including outfalls; descriptions of the existing BMPs; and recommended good housekeeping activities. The SWPPPs also provide site-specific information such as operating procedures, list pollution prevention committee members and their roles, and provide schedules for site inspections and outfall testing. The SWPPPs are updated annually to reflect changes in the site or operations. In 2016, SWPPP-related documents also were created for the I-95 Chesapeake House and Maryland House travel plazas, although MDTA is not required to have permit coverage for these two sites.

MDTA also conducts routine inspections every quarter and annual comprehensive SWPPP inspection at all maintenance facilities to review the potential pollutant-generating activities, site conditions, and effectiveness of the BMPs. Findings from each quarter's SWPPP inspections are summarized and remedial actions are identified as needed. With the quarterly inspections, issues can be quickly identified and remediated before a larger issue arises. As required by the 12-SW-A Permit, MDTA also performs quarterly visual monitoring at outfalls of the maintenance facilities during a rain event or snowmelt. Examples of a quarterly site assessment form and a quarterly outfall visual monitoring form are provided in Appendix F. These forms are also uploaded to EEIMS. Copies of inspection forms as well as a paper copy of the SWPPP are kept in or near the office of the Chief Facility Maintenance Officer at each facility. These records are also maintained by the Environmental Engineering Division and are readily available in case of a field review by MDE.

MDTA maintains a record of all spills, leaks, discharges, and releases via EEIMS as part of the SWPPP. These spills are also documented on the SWPPP maps. **Table 10** summarizes all accidental releases recorded during FY19/20.

Table 10: Accidental Releases during FY19/20

Property Name	Date	Observations	Response
ICC E	7/9/2018	Approximately 4,000 gallons of salt brine was released when the salt brine tank valve broke due to corrosion. No waterbodies were affected.	MDTA cleaned up the spill and fixed the valve on the tank.
JFK II	7/24/2018	Approximately 30-40 gallons of diesel fuel were released when a tractor trailer overturned. No waterbodies were affected.	Sand, absorbent, and booms were placed. Street sweeper helped recover contaminated soil.
JFK I	8/7/2018	Approximately 400 gallons of gasoline were released after a Fleet Transit Inc. truck and vehicle collision. The product reached a drainage ditch. No water bodies were affected.	Gasoline was removed from the nearby ditch via vacuum truck. Contaminated soil was excavated and replaced.
FMT	8/7/2018	Approximately 11 gallons of oil were released when a truck overturned. No water bodies were affected.	MDE and HAZMAT responders arrived at the spill.
JFK II	1/17/2019	Approximately 10 gallons of motor oil were released when a tractor trailer overturned. No waterbodies were affected.	Absorbent pads, socks, and a soil berm were used.
ICC E	6/5/2019	Approximately 190 gallons of paint were released. No water bodies were affected.	Sand was placed on the paint spill and a sweeper truck removed the contaminated sand.
WPL	6/6/2019	Approximately 4-5 gallons of epoxy primer were spilled near a micro-bioretention facility when cans fell off a pallet. No water bodies were impacted.	Absorbent was placed and the leaking cans were sealed in drums.

Property Name	Date	Observations	Response
FMT	6/13/2019	A small amount of diesel fuel was released when a box truck collided with the rear of a stopped tractor trailer. No water bodies were affected.	Absorbent and sand were applied to the spill.
JFK I	9/12/2019	Approximately 1 gallon of motor oil leaked from an open container. No water bodies were impacted.	Sand was placed on the slick roadway and was vacuumed by a sweeper truck.
JFK I	9/16/2019	Approximately 8 gallons of oil were released from a leaking MDTA truck. No water bodies were affected.	Absorbent was deployed to contain the spill. Sand was placed and swept up by a vacuum truck.
JFK II	11/21/2019	Approximately 75-100 gallons of diesel fuel was released when a tractor trailer hit a guardrail. No water bodies were affected.	MDE responded to the incident. First Call Environmental removed the impacted soil.
JFK II	12/4/2019	Approximately 50-80 gallons of diesel fuel spilled when a truck hit debris in the roadway. The product did not impact any drains or waterbodies.	MDE responded and coordinated with a contractor to excavate the area.
JFK II	1/13/2020	Approximately 10 gallons of motor oil was released when a tractor trailer overturned. No water bodies were affected.	Absorbent was applied by a HAZMAT team and MDTA.
JFK II	1/28/2020	Approximately 130 gallons of diesel fuel spilled when a saddle tank was punctured.	Absorbent, pads, and sand were applied. First Call Environmental conducted the soil remediation.
JFK II	5/11/2020	Approximately 125 gallons of diesel fuel was released due to a leak in a tractor trailer fuel tank. The nearby soil and grass were contaminated, but the spill did not reach any water bodies.	Sand and absorbent were applied.

2.F.3 Quantify and report pollution prevention efforts related to the following activities: a) number of miles swept and pounds of material collected from street sweeping and inlet cleaning programs, as applicable; b) good housekeeping methods for pesticide application such as integrated pest management plans or alternative techniques; c) good housekeeping methods for fertilizer application such as chemical storage, landscaping with low maintenance/native species, and application procedures; d) good housekeeping methods for snow and ice control such as use of pretreatment, truck calibration and storage, and salt dome storage and containment; and e) other good housekeeping methods performed by the permittee not listed above.

MDTA has implemented a variety of pollution prevention efforts including:

- **Street Sweeping / Inlet Cleaning –** MDTA conducts street sweeping and inlet cleaning at maintenance facilities and along highways. These activities prevent

pollutants from reaching nearby water bodies. Sweeping machines and vacuum trucks systematically remove sediment and debris, which is then dewatered and temporarily stored at MDTA maintenance facilities before it is hauled off-site for proper disposal.

MDTA prioritizes street sweeping in areas that accumulate high volumes of pollutants such as intersections, exits, and roadway shoulders. Bridges are also given high priority due to the drains and accumulation around barrier walls. Other roadways and parking lots are also swept, though may be swept less frequently than high pollutant potential areas. Some MDTA facilities try to sweep in the evenings when traffic volumes are lower or there are road closures.

Records are kept on the total amount of waste removed. **Table 11** lists the weight of road sweeping debris collected in FY19 and FY20.

Table 11: Summary of Street Sweeping Sediment Disposal for FY19/20

Facility	FY19			FY20		
	Miles Swept	**Inlets Cleaned[1]**	**Tons removed[2]**	**Miles Swept**	**Inlets Cleaned[1]**	**Tons removed[2]**
JFK I / N Region	200	1560	303.53	200	1560	305.28
FMT	30	699	0	30	699	223.05
BHT	70	756	493.55	70	756	124.29
ICC	77	1047	125.93	77	1047	188.27
WPL	21	35	19.84	21	35	5.35
FSK	41	249	37.11	41	249	55.90
Totals:	**439**	**4,346**	**979.96**	**439**	**4,346**	**902.15**

[1]This column represents the number of inlets at each facility that are cleaned. Because MDTA sweeps inlets twice a year, the total number of inlets cleaned is twice this value.
[2] MDTA tracks the mass of sweeper waste removed from both street sweeping and inlet cleaning collectively.

- **Waste Disposal –** MDTA staff deposit waste in the appropriate receptacle (recycling bin or trash can). Housekeeping personnel remove materials from interior receptacles and place them in vendor-provided containers located outside. A vendor collects material from the external containers on each campus. Hazardous waste disposal, including disposal of universal waste, follows the SOPs provided in **Appendix F**. Street sweeping waste is placed into piles or dumpsters at the facilities that store sweeper waste. MDTA's contractor collects a sample for testing from the sweeper waste before its removal. Once the lab data are received, the vendor takes the material to a facility where it is “cleaned” and then recycled or reused.
- **Pesticide and Fertilizer Application -** All MDTA facilities except for WPL and HWN have a current State of Maryland public agency permit to apply pesticides. WPL and HWN currently contract pesticide application services. MDTA has at least one individual who is certified in pesticide application at each of the facilities with a

pesticide permit. **Table 12** lists these employees, and a sample certification is provided in **Appendix F**.

Table 12: MDTA Employees with State of Maryland Pesticide Application Permits

MDTA Facility	Certified Employee
JFK II, W&I, TJH	Jim Grove and Charles Marcum (herbicides only)
JFK I	Ricky Gibson
FSK	John Monk
BHT	Chuck Klinglehofer and Robert Lowe
FMT	Sherri Michaels
ICC	Amy Faulk

When applying pesticides, MDTA employs the following procedures:

- Follow instructions on pesticide packaging related to mixing, application, and storage.
- Keep spill kits nearby when transferring or mixing pesticides.
- Keep application equipment clean and free of chemical buildup.
- Apply pesticides only in dry weather.
- Never mix, apply, or store pesticides near a storm drain.

Similarly, MDOT MDTA follows good housekeeping practices when applying fertilizers. These procedures include:

- Follow instructions on fertilizer packaging related to mixing, application, and storage.
- Keep spill kits nearby when transferring or mixing fertilizers.
- Never apply fertilizers to frozen ground.
- Keep application equipment clean and free of chemical buildup.
- Apply fertilizers only in dry weather.
- Never mix, apply, or store fertilizers near a storm drain.

- **Snow and Ice Control** - MDTA follows good housekeeping practices when applying snow and ice control materials. These procedures include:
  - Minimize spills by not overloading salt spreading trucks and equipment.
  - Use the least amount of salt necessary to achieve safe walking/driving conditions.
  - Store salt in a covered dome with barriers blocking the exit to prevent migration of salt outside where it can come into contact with stormwater.

- Establish snow storage areas that are not located near storm drains. Ideal snow storage areas are located on pervious areas where snowmelt can infiltrate.
- Sweep excess salt and sand from paved areas after the last snow.

2.F.4 Submit in the NOI a list of properties owned and operated by the permittee where the activities listed in the MCM are performed and indicate which are covered under the Maryland General Permit for Stormwater Discharges Associated with Industrial Activity. Provide an update in annual reports if the status of industrial activity permit coverage changes for any property.

In December 2014, MDTA submitted an NOI for permit coverage under the reissued 12-SW-A Permit for 10 facilities with maintenance-related activities, except for the ICC West Maintenance Facility, which was submitted in November 2018. MDTA continues to update the SWPPPs for each facility required under this permit, as well as the procedures and processes designed to meet the permit requirements. **Table 13** lists the MDTA facilities with an industrial activity permit.

Table 13: MDTA Facilities with General Industrial Activity Permits (12-SW-A Permit)

Facility	Municipality
I-95 J.F. Kennedy Memorial Highway:	-
JFK Maintenance Facility #1	Harford Co.
JFK Maintenance Facility #2	Cecil Co.
Truck Weigh and Inspection Station	Cecil Co.
US-40 Thomas J. Hatem Memorial Bridge – Maintenance Facility	Cecil Co.
I-95 Fort McHenry Tunnel – Maintenance Facility	City of Baltimore
I-895 Baltimore Harbor Tunnel – Maintenance Facility	City of Baltimore
I-695 Francis Scott Key Bridge – Maintenance Facility	Baltimore Co.
US-50 W.P. Lane Memorial (Bay) Bridge – Maintenance Facility	Anne Arundel Co.
US-301 Gov. Harry W. Nice Memorial Bridge – Maintenance Facility	Charles Co.
Intercounty Connector/ MD 200 – East Operations	Prince George's Co.
Intercounty Connector/ MD 200 – West Operations	Montgomery Co.

2.F.5 Cost of implementation

MDTA spent approximately $100,000 and $260,000 in FY19 and FY20, respectively, on implementing this MCM. MDTA will continue to fund this program in future reporting cycles to provide training to staff, perform good housekeeping practices, and update the SWPPPs.

Appendix A: Public or Personnel Education and Outreach Supporting Documentation

Waste Management and Resource Conservation and Recovery Act (RCRA) Training

Maryland Department of Transportation
Office of the Environment, Safety, and Risk Management (OESRM)
2019

1

Things to remember….

- Please…
  - Silence electronic devices
  - STAY AWAKE!
  - Ask questions

Do Not Be Like
—This Guy—



2

Topics of Discussion

- What is RCRA and what does it have to do with you?
- Waste Segregation at MDTA
  - Non-Hazardous Wastes & Recyclables
- What is Hazardous Waste?
  - Waste Characterization
- Hazardous Waste Management
  - Satellite Accumulation Areas
  - Hazardous Waste Storage Areas
- What is Universal Waste?
- MDTA's Hazardous & Universal Wastes
- Hazardous & Universal Waste Disposal
- Orphan Wastes
- Other Hazardous Waste Requirements
  - Inspections
  - Contingency Plans
  - Training
- Contact Information

3

Why are You Here?

- 2009 MDTA entered Voluntary Disclosure Agreement with EPA to perform Environmental Audit
  - Benefit = leniency on violations
  - RCRA violations identified, among others
- MDTA operates as Large Quantity Generator (LQG)
  - Training employees is one requirement as LQG
- Environmental Regulatory Liability
  - MDTA
  - Individuals

4

Resource Conservation and Recovery Act (RCRA)

- RCRA gives the EPA authority to control Hazardous Waste from "**cradle to grave**"
  - 40 CFR 262 Hazardous Waste regulations
  - 40 CFR 273 Universal Waste regulations
- This includes hazardous waste requirements for
  - Generators
  - Transporters
  - Treatment facilities
  - Storage facilities
  - Disposal facilities

5

RCRA – Cradle to Grave

MDTA is liable for hazardous waste **FOREVER**

So…

100 years from now, if contamination results from facility where MDTA sent its hazardous waste for disposal, MDTA (and all other organizations whose waste was placed at that site) may become liable for cleanup costs associated with damages

6

SPILL PREVENTION, CONTROL, and COUNTERMEASURE (SPCC) / GENERAL SPILL RESPONSE

Maryland Transportation Authority
Office of the Environment, Safety, and Risk Management (OESRM)
2019

This training is provided in general accordance with 40 CFR 112 Section 311(j)(1)(C) of the Clean Water Act as amended by the Oil Pollution Act of 1990

1

Things to remember…

- Contact OESRM for copies of information from today
- Turn off or silence cell phones
- STAY AWAKE!
- Please participate



2

Today's Discussion

- What is the SPCC rule
- Why are you here?
- SPCC Plan requirements
- General spill response information
- Resources
- Contact information

3

Did You Know?

- A single drop of solvent can contaminate 75,000 gallons of water
- Water is easy to contaminate but difficult and expensive to clean up
- Contaminated water deters new businesses and industry from buying properties/creating development

4

Why Do I Need This Training?

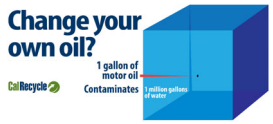
Federal regulation requires **all** MDTA "oil-handling" personnel receive **annual** training:

- Basic understanding of pollution control rules and regulations
- Know the basics of your facility's SPCC Plan
- Know how to prevent discharges
- Know and follow discharge procedures
- Know where to find your facility's SPCC Plan

5

Why are You Here?

- As part of your job functions, you:
  - Perform maintenance on vehicles or equipment containing oil
  - Utilize vehicles or equipment that contain oil
  - Pump or transfer oil to equipment or vehicles
  - Otherwise handle oil
  - Must know how to respond, if a spill/release occurs



6

Does the SPCC Rule Apply to MDTA?

YES!

EPA's SPCC regulations apply to facilities with a reasonable expectation of a release to navigable waters of the U.S.

- More than 1,320 gallons above ground oil storage capacity

- or -

- More than 42,000 gallons "completely buried" storage capacity



7

What's Considered "Oil" under this Rule?

- Fuel oil
- Petroleum products
- Sludge
- Oil refuse
- Oil mixed with other wastes
- Other oils, as defined



8

SPCC Plan: Overview

MDTA facilities fall under the category of:
"Industrial… or public facilities using or storing oil"
So, an SPCC Plan is required

Components of the SPCC Plan include:

- Operating procedures that prevent oil spills
- Control measures that prevent oil spills
- Countermeasures to contain, cleanup, and mitigate effects of spills

9

SPCC Plan: Required Components

- Potential spill scenarios
- Engineering controls to prevent spills
- Procedures to prevent spills
- Training and recordkeeping requirements
- Inspection requirements
- Description of site security

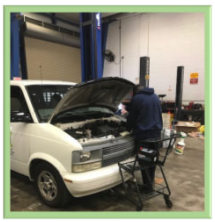


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Potential Oil Spill Sources

Oil Storage Equipment

- Fixed Storage Containers and Piping
  - Aboveground Storage Tanks (ASTs)
  - Underground Storage Tanks (USTs)
- Small Quantity Storage
  - Drums (55 gallon or larger)



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Potential Oil Spill Sources

Oil Storage Equipment (cont'd)

- Portable Storage Containers
  - Bed tanks
  - Portable generators
- Oil Filled Operational Equipment (OFOE)
  - Transformers
  - Stationary generators
  - Vehicles
  - Heavy equipment



12

SPCC Plan: Required Components

- Potential spill scenarios
- Engineering controls to prevent spills
- Procedures to prevent spills
- Training and recordkeeping requirements
- Inspection requirements
- Description of site security

13

Potential Oil Spill Scenarios

Most oil spills occur during active operations

- Mechanical failure
  - Line break
- Container failure
  - Weathering/Degradation
  - Accidental impact



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Potential Oil Spill Scenarios

Most oil spills occur during active operations (cont'd)

- Oil and chemical handling/usage
  - Petroleum products
  - Non-hazardous waste
  - Hazardous materials
  - Hazardous waste
- Fuel transfers
  - Fuel delivery
  - Fueling vehicles or equipment



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SPCC Plan: Required Components

- Potential spill scenarios
- Engineering controls to prevent spills
- Procedures to prevent spills
- Training and recordkeeping requirements
- Inspection requirements
- Description of site security

16

Engineering Controls & Prevention

Engineering Controls

- Overfill alarms and mechanisms
- Visual gauges
- Secondary containment
  - Required for liquids
- Protecting containers from weathering
  - Semi-permanent covering
  - Disposable covering
  - Maintaining indoors

Spill Prevention

- Sticking fuel tanks
- MDTA representatives present at fuel deliveries
- Keep containers/lids closed
- Use drip pans or deploy spill pads before leaks occur
- Pay attention while performing the operation
- Practice good housekeeping
- Follow established procedures

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Spill Prevention: Procedures

MDTA SOPs for Proper Materials Management	Located on the MDTA Intranet
Fuel Dispensing (vehicles & equipment)	S-OPS-ENVF-A-0014-01
Tank Gauging (over 2,000 gallons)	S-EHS-ENVF-A-0021
BHT Spill Response (tunnel thruway)	S-EHS-ENVM-0018
Notification of Spill	S-EHS-ENVF-U-0015
HVAC Recovery	S-EHS-ENVF-A-0009
Compressed Gas Cylinder Management	S-EHS-ENVF-A-0001
Hazardous Materials Management	S-EHS-ENVF-A-0002
Hazardous Waste Management	S-EHS-ENVF-A-0003
Universal Waste Handling	S-EHS-ENVF-A-0007
Fluorescent Bulb Crushing	S-EHS-ENVF-A-0020
Maintenance – Aerosol Can Management	S-EHS-ENVF-A-0026
Aerosol can Management Recycling	S-EHS-ENVF-U-0016
Motor Vehicle Refrigerant Recovery	S-EHS-ENVF-A-0005

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Spill Prevention: Fueling Operations

Contractor Deliveries

- Must occur during business hours
- Contractors **must** cleanup spills and overfills
  - Including product released to spill buckets
- MDTA personnel must remain with contractor during delivery
- MDTA must maintain fuel delivery receipts



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Spill Prevention: Fueling Vehicles

MDTA Employees fueling vehicles

- Remain outside vehicle and with the nozzle while fueling
- Use the "hold-open" latch provided on the fuel nozzle
  - **Do not** insert an object to keep in open position
- Turn pump off when finished
  - **Before removing nozzle** from vehicle



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Spill Prevention: Fueling Equipment

MDTA Employees fueling equipment

- Remain with the equipment while fueling
- Place portable equipment on the ground before fueling
- Fill portable containers/tanks to only 90% capacity
- Use the "hold-open" latch provided on the fuel nozzle
  - **Do not** insert an object to keep in open position
- Turn pump off when finished
  - **Before removing the nozzle** from equipment

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Reminders: Fueling Operations

MDTA's Fuel Dispensing SOP:

- MDTA employees **SHALL NOT**:
  - Use cell phone while fueling
  - Smoke, light matches, or use lighters while fueling
  - "Top off" tanks or equipment
- MDTA employees **SHALL KNOW**:
  - Know the locations of spill kits at the facility
  - Know the location of the breaker box -- ASTs and USTs
- MDTA employees shall remain with vehicle or equipment while dispending fueling

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SPCC Mapping: JFK I Maintenance



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SPCC Plan: Required Components

- Potential spill scenarios
- Engineering controls to prevent spills
- Procedures to prevent spills
- Training and recordkeeping requirements
- Inspection requirements
- Description of site security

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Training and Recordkeeping

- Training
  - Required every year
- SPCC Plan updates required
- Records maintained in accordance with *Standardized Environmental Recordkeeping* SOP
  - Inspection records
  - Training records
  - Testing records/data

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SPCC Plan: Required Components

- Potential spill scenarios
- Engineering controls to prevent spills
- Procedures to prevent spills
- Training and recordkeeping requirements
- Inspection requirements
- Description of site security

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Inspections

- Inspection of oil containers (by facility)
  - Must be performed weekly
  - CFMO designates employee to conduct inspections
  - Follow SOP: Routine Facility Environmental, Health and Safety Inspections # S-OPS-ENVF-A-0012-02
    - Use attached checklist
    - Must be uploaded to EEIMS
  - Report deficiencies to OESRM
  - Restock spill kits, as necessary
    - Contact OESRM for budget item
- Quarterly (by OESRM)

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Testing & Monitoring

- Third Party activities
  - ASTs and USTs are monitored at regular intervals to prevent releases
  - USTs and ASTs are tested by certified personnel
- MDTA activities
  - Tank gauging (weekly) – follow SOP
  - Sticking tank to detect water (monthly)



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SPCC Plan: Required Components

- Potential spill scenarios
- Engineering controls to prevent spills
- Procedures to prevent spills
- Training and recordkeeping requirements
- Inspection requirements
- Description of site security

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SPCC Plan: Site Security

- MDTA facilities are equipped with the following security measures:
  - Restricted/Locked site access to campus (some facilities)
  - Video surveillance
  - Fill ports on ASTs and USTs are pad locked
  - Hazardous waste storage areas are pad locked
  - Hazardous materials stored indoors
    - MDTA buildings require badge access (generally)
    - Contractors and visitors are escorted by MDTA personnel

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General Spill Response

Spill classification and how to respond

31

Spill Response: General

- Types of Releases
  - Hazardous Materials
  - Hazardous Wastes/ Universal Wastes
  - Non-Hazardous Wastes
- Releases may occur as
  - Spill
  - Explosion
  - Fire



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Spill Response: Coordinators

Emergency Response Coordinators (ERC)

ERC = Chief Facility Maintenance Officer (CFMO)

Responsibilities of an ERC:

- Respond quickly
- Familiar with the facility
- Have authority to carry out SPCC (and/or Contingency Plan)
- Activate emergency alarm systems
- Gather information about emergency
- Arrange for cleanup, using available resources
- Provide information to and coordinate with others involved:
  - MDTA Police
  - OESRM
- Communicate with MDTA senior management

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Spill Response

- Spill Classification
  - Major
  - Minor
- Detailed procedures in the SPCC Plan
- Responses must be performed in accordance with
  - SPCC Plan ***and***
  - RCRA Contingency Plan (Integrated Contingency Plan)

All Releases Must Be Cleaned Up Immediately!

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Spill Classification

Minor Spill

- Less than 3 gallons released
- Does **not** reach
  - soil/vegetation
  - sewer system
  - surface water
  - storm water system
- Minimal safety risk
  - No fire or explosion risk

Major Spill (any one of these makes it "major")

- Greater than 3 gallons released
- Release has reached
  - soil/vegetation
  - sewer system
  - surface water
  - storm water system
- Hazard to safety or environment
- Requires resources above facility capabilities

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Minor Spill Response: MDTA Staff

- Person who discovers the spill **must** clean it up!
- Identify source of release and stop it
- Assess the need for PPE
- Assess proximity to waterway, vegetation, etc.
  - Is the spill heading in that direction?
  - If yes, install protective barrier to protect it
- Use appropriate tools/equipment for cleanup
- Perform cleanup activities
- GO BACK! and cleanup the spill response materials

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Minor Spill Response: MDTA Staff

- Is the cleanup material a waste?
  - Can it be reused?
- Waste = proper container for disposal
- Notify a Maintenance Supervisor
- Fill out Discharge Notification Form
  - Give to Facility Environmental Coordinator
  - Uploaded to EEIMS
- OESRM will investigate further, if needed



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Minor Spill Response: How to Perform Cleanup

- Prevent spreading
  - ACT QUICKLY but safely
  - Get assistance from coworkers nearby
- Use sorbent material to collect free liquid
  - Create a barrier around spill first
  - Apply additional absorbent from the outside inward
- Allow absorbent time to absorb
- For fires: appropriately rated fire extinguisher



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Spill Kit Contents

- PPE: coveralls, gloves, safety glasses and/or face-shields
- Drums, containers, etc. for contaminated material
- Sorbent material: pads, socks, pellets
- Non-sparking shovel, broom, dust pans
- Disposable bags and ties
- Warning signs, cones, etc.



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Major Spill Response

- Evacuate area
- Notify OESRM and CFMO
  - Will notify all agencies on call list in SPCC Plan and/or Contingency Plan
  - Will contact spill response contractor
- Begin cleanup or containment operations only if safe and trained by MDTA to do so
- Complete Discharge Notification Form



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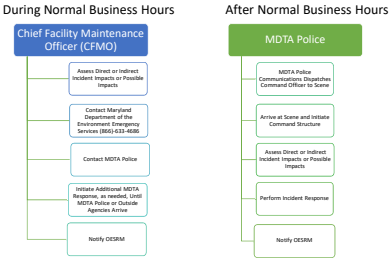
Release Reporting

If necessary, be prepared to report the following information:

- Location of release
- Time of release
- Type of material released
- Estimated quantity released
- Cause of release, if known
- Flow direction
- Potential for release to reach water bodies or soils (or did it already?)
- Description of any injuries
- Description of response measures, if any

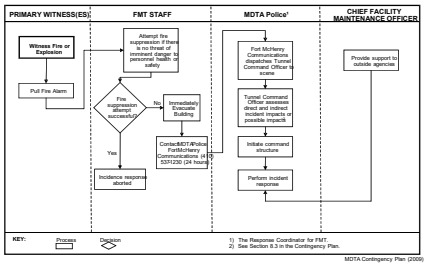
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Major Spill Notifications



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Response Procedure for Fire or Explosion



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Use of Emergency Equipment

- Fire extinguishers
  - Pull the pin
  - Aim at base of the fire
  - Squeeze the lever slowly
  - Sweep from side to side
- Fire alarm system pull station
  - Pull the lever to activate the fire alarm
  - An audible alarm
- Building paging system
- Use of hand-held devices
  - Radios (hand-held and in vehicles)
  - Cell phones



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Resources and Information

- SPCC Plan
  - Electronic version – EEIMS
  - Electronic version – Google Earth GIS layer
  - Hard Copy – on site at facility
- MDTA Intranet
  - SOPs
  - Discharge Notification form
  - Contact information for OESRM
    - Email addresses
    - Office phone numbers
    - Cell phone numbers
- Contact OESRM-Environmental

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OESRM Environmental Contacts

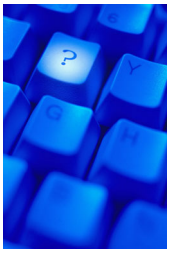
Paul Truntich, Director of OESRM
410-537-7665 and ptruntich@mdta.state.md.us

Alisha Bennett, Environmental Manager
410-537-7667 and adurgam@mdta.state.md.us

Rob Thompson, Environmental Analyst
410-537-7660 and rthompson6@mdta.state.md.us

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Questions?



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Section Quiz

1. All MDTA personnel can clean up any spills that arise.
   a. True b. False (circled)

If you have access to a telephone, who do you report a spill to FIRST?
Maintenance Supervisor, CFMO, OESRM

Only properly trained personnel are permitted to perform clean up and disposal activities.

Facilities that have an aboveground storage capacity greater than 1,320 gallons are required to develop an SPCC Plan.

Do materials stored outside require secondary containment?
a. Yes (circled) b. No

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Section Quiz

6. A major spill is any spill quantity that reaches soil or water.
   a. True b. False
7. A minor spill is only a spill of less than 1 gallon.
   a. True b. False

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Connections

Special Earth Day Edition!

In This Issue

April 22, 2019

- MDTA's 2019 Earth Day Event
- News
- Earth Day Articles
- Around the MDTA

MDTA'S 2019 Earth Day Event

The MDTA's Annual Earth Day Fair will be held at Police Headquarters on Thursday, April 25 from 9 a.m. - 2 p.m. Check the Intranet for more information.

Come interact with booth representatives from various aspects of the environmental field to get answers to some of your questions and learn new information. OESRM will be giving away free snowballs to fair attendees. A food truck will be on-site from 11 a.m. - 1 p.m, so bring your cash and your appetite!

In addition to all this fun, the day will kick off with the announcement of the MDTA's two facility recycling contest winners and the winner of the MDTA's annual recycled art contest. This year, the MDTA's fair coincides with Bring Your Child to Work Day. OESRM extends the invitation to attend the fair to children who accompany their family member to work on this day. We hope to see you there!



SAVE THE DATE!

MDTA Day and Annual Employee Awards
Friday, June 7
More details to follow ...

News



On April 18, MDTA **Acting Executive Director John O'Neill** (left) and MDTA **Police Chief Jerry Jones** (right) were pleased to honor sworn and civilian members of the MDTA Police who distinguished themselves during 2018. Among those honored was Baltimore City resident **Off. Renato Guarnaccia**, a member of the MDTA Police since July 2009, who was named MDTA Police Officer of the Year. He earned this honor after being selected as Detachment Officer of the Month five times in 2018 for the Tunnel Command Detachment. Off. Guarnaccia had over 1,800 law enforcement actions resulting in numerous traffic and criminal arrests. In addition to naming the 2018 Officer of the Year, the MDTA Police presented officers and civilians with more than 100 awards, including Awards of Excellence, Lifesaving Awards, Law Enforcement Supervisor of the Year, Motor Carrier Inspector of the Year, Dispatcher of the Year and Chief's Commendations, among others. Congratulations to all who were honored!

•

Congratulations to the following employees whose names were drawn for raffle prizes at the 2019 Wellness Fair held April 17. The winners are **D. Parish**, **Jimmie Nesmith**, **Rich Schwinn**, **Shawn Evans**, **Carah Hall** and **Kevon Dunn**.

•

IMPORTANT CHANGE: The MDTA's Office of Human Resources and Workforce Development has moved! It is now located on the first floor of the Point Breeze Complex at 2310 Broening Highway in Baltimore.



CHANGING Maryland for the Better

Larry Hogan, Governor — Boyd K. Rutherford, Lt. Governor
A Biweekly Newsletter for Maryland Transportation Authority Employees
Stay in touch, stay informed, stay connected!

JOIN US -- Earth Month Field Trips

OESRM has arranged five field trips this year to help celebrate that Every Day is Earth Day! Supervisor approval is required. EventBrite registration links will be opened for each field trip approximately one month prior to the trip. Employees will have access to the registration link for about three weeks before it's closed. Please check your email for the web link to sign up for the trips. Space is limited, so sign up as soon as possible.

Patapsco Wastewater Treatment Plant
Tuesday, April 30, 2019

Thank you to the employees who took advantage of OESRM's table at the Go Orange Breakfast on April 10. **This field trip is full.**

Water is a big deal! We use it every day in many ways: brush our teeth, flush toilets, wash dishes, launder our clothes and drink it. The U.S. Geological Survey (USGS) reports that we consume an average of 100-125 gallons per day per person. That's a lot of flushing! But where does all the water we use go? What happens to it when it gets there? Employees taking this tour will have to wonder no more, as they learn how the plant treats wastewater it receives, so that the water can ultimately be returned to the Patapsco River and Chesapeake Bay without adverse effects to aquatic life and these ecosystems.

Green Street Academy
Tuesday, May 21, 2019

Green Street Academy (GSA) is a public charter school located in West Baltimore serving children in grades 6 - 12. In 2016, a $23 million dollar renovation project was completed on this 145,000 square feet school building that formerly housed the Gwynns Falls Junior High School. The renovation project has earned the highest achievable rating issued by the U.S. Green Building Council for construction projects, which is the Leadership in Energy and Environmental Design (LEED) Platinum certification. The renovation of this school building, originally constructed in 1925, is the only school project in the State to achieve LEED Platinum certification.

Employees will tour a campus that earned a 2019 Best of Green Schools Award, which encompasses an urban farm atmosphere. Join us as we learn more about this site from the designers and developers involved with creating this school in an effort to promote sustainability in the urban space of Baltimore City.



Soil Safe
Tuesday, June 4, 2019

As part of routine maintenance activities, the MDTA's Division of Operations conducts street sweeping along our roadways and in our campus parking lots. Street sweeping is not only an activity where unsightly materials are collected. It's also a part of the MDTA's stormwater protection efforts. The MDTA's street sweeping operations collect trash and sediments from our facilities. But what happens to that material once it's picked up from the MDTA? Take a field trip with us and find out!

Employees will take tour of the largest treatment facility of its kind in the United States; and it's right here in Prince George's County, Maryland! Visit Soil Safe's nearly 300-acre facility, where petroleum-impacted soils are delivered for treatment and reuse.

Battle Creek Cypress Swamp Sanctuary
Tuesday, June 25, 2019

Employees will visit a local natural sanctuary. Nestled in a portion of the 100-acre Maryland park is the only bald cypress tree stand west of the Chesapeake Bay. Pack your lunch and take a field trip with us to visit this beautiful Maryland treasure!

Employees will participate in a guided walking tour of the sanctuary grounds. Stroll along the 1/4-mile boardwalk through the lush greenery of the park, while you take in the sounds and smells of nature. Following the tour, participants will be able to visit the on-site nature center where you can independently learn about the natural and cultural landscapes of Calvert County.

Veteran Compost
Tuesday, July 16, 2019

If you attended the MDTA's Earth Day fair a couple of years ago, you may remember meeting a representative from the University of Maryland Extension Center who introduced employees to the concept of vermicomposting. Vermicomposting is the process of composting materials using worms. Maryland is home to a veteran-owned composting facility, which is the only commercial worm composting operation in the State! We will visit Veteran Compost's 30-acre farm that is powered by wind energy.

See the Intranet for additional information as the field trip dates get closer. Please be sure you sign up using the web links provided.

2018 MRA Recycling Rates Unveiled

The Maryland Recycling Act (MRA) requires all State Agencies to recycle at a rate of 30% but in no case less than 15%. Since 2009, MDTA's Office of Environment, Safety and Risk Management (OESRM) has worked with employees to carry out its recycling program for MRA materials: cardboard, paper, bottles and cans, rubber, fluorescent lamps, printer/toner cartridges, electronics, and lead acid and household-type batteries. All of MDTA's facilities are now recycling these materials.

Although other materials from our maintenance and automotive shops don't count toward the MRA recycling figure, MDTA shops remain dedicated to recycling. Our automotive and roadway maintenance shops recycle scrap metal, concrete, sweeper dirt, sewage sludge, wastewater, wood, and used oil. Together, the combined efforts of office staff and maintenance/automotive personnel have resulted in the recycling of 1,647 tons of materials in calendar year 2018.

We appreciate all of your efforts to recycle. The MDTA's recycling rate for the calendar year 2018 was 22.6%. That's 6% more than our 2017 figure. We were able to surpass the "minimum" required waste reduction rate, but we're still aiming high for that 30% mark! We know you're working hard to push the MDTA's overall recycling rate higher and higher each year. We appreciate your efforts!

MDTA Environmental Management System (EMS) Implementation Update

During the last year, the MDTA EMS Team met monthly and focused on meeting the Environmental Objectives (EOs) set to reduce environmental risks, updating EMS procedures and developing EMS awareness training. The MDTA EMS Team is comprised of representatives from OESRM, Operations, OEC and Planning and Program Development.

Three EOs were set and action plans were developed to accomplish them.

1. Ensure compliance with hazardous waste management and disposal regulations at facilities and construction sites. The action plan for this EO was completed and involved:
   - Creating and delivering hazardous waste training to automotive and shop personnel, as well as to construction inspectors;
   - Creating and placing informational posters at shops and construction sites;
   - Creating one-page hazardous waste information for bid packages; and
   - Communicating with hazardous waste disposal contractors regarding notifying MDTA personnel on scheduling waste pickups.
2. Ensure environmental compliance relating to mechanical services, specifically during fueling, at construction sites. The action plan for this EO was completed and involved:
   - Developing language to include in bid packages relating to SPCC, fuel storage and materials management;
   - Training construction inspectors on spill response/ spill prevention; and
   - Institutionalizing OESRM attendance at pre-construction meetings to remind construction contractors of their environmental responsibilities.
2. Ensure Oil Water Separators (OWS) and wash bays are in compliance and functioning properly. Accomplishments to date:
   - Preparing a complete inventory/list of OWSs and Wash bays and identified requirements for each;
   - Preparing OWS O&M Manuals; and
   - Preparing OWS training materials.

Additional EMS accomplishments this past year included:

- Updating 12 EMS Procedures to meet the updated ISO 14001 EMS Standards in accordance with MDOT requirements;
- Preparing EMS Awareness Training and supplemental materials to be rolled out organization-wide in 2019;
  - Design and production of an EMS lanyard that contains basic EMS awareness information.
- Preparing a checklist to be used in the first internal EMS audit to be conducted in 2019.

The EMS Team recently selected the next two EOs to work on in 2019 and is currently developing action plans:

- The study of Road Salt Reduction/Salt Brine Expansion; and
- Mechanical Services (Fueling) at Facilities (focusing on issues with other state agencies using MDTA fueling facilities).

Can't Get Enough About Earth Day and MDOT's Environmental Initiatives?

Make sure to visit:
http://www.mdot.maryland.gov/newMDOT/Environmental_Programs/index.html
Twitter: https://twitter.com/MDOTNews/
Linked in: https://www.linkedin.com/showcase/mdotenvironment/

FMT'S New Sweeper Dirt Dewatering Pad

The Fort McHenry Tunnel campus is getting a new sweeper dirt dewatering pad. This project, which also includes the new salt barn and storage bins, will be completed in Summer 2019.

The dewatering pad (shown below) is a 75'x26' concrete structure onto which sweeper dirt can be deposited from the trucks. The sweeper material is given time to dry out on this pad. The liquid waste is disposed of through a sewer line connection that goes into a sanitary lift station on the site. The dried sweeper dirt is sampled before it is transported for disposal to determine levels of petroleum contamination.



The dewatering pad at FMT will be used by street sweepers from FMT, BHT and FSK. Crews from these three facilities clear debris from about 130 miles of roadway every couple of months. On average, this results in more than 400 tons of dirt and debris collected each year! The dewatering pad ensures that polluted runoff from this material does not make its way into our stormwater or our waterways.

If you're interested in seeing what happens to the MDTA's sweeper dirt once it leaves our facilities, join OESRM on its field trip to the Soil Safe facility in Brandywine, MD. For more information, see the Field Trip section of this newsletter.

The first two employees who submit their completed "Games" to OESRM will win a prize! All responses to all of the games must be complete and correct in order to be declared a winner. Members of OESRM are not eligible to win prizes. Entries must be submitted to Alisha Bennett: **adurgam@mdta.maryland.gov**, hand delivered to 2310 Broening Highway, or faxed to 410-537-7659. **The deadline for submissions is Monday, May 6, 2019.**

Earth Day Quiz

Directions: Choose the correct answer for each question. There is only one correct answer for each question.

1. What group won the very first Recycled Art Contest back in 2015?
a. Division of Engineering
b. Division of Procurement
c. Operations Maintenance – BHT
d. Operations Tolls – FMT

2. What field trips are being offered this year?
a. Soil Safe tour
b. Cypress Swam Sanctuary tour
c. Veteran Compost tour
d. All of the above

3. MDTA's recycling rate for CY18 was about…
a. 15%
b. 23%
c. 26%
d. 30%

4. What did OESRM give away at MDTA's 2018 Earth Day Fair to fair attendees?
a. Lunchboxes with goodies
b. Rain barrels
c. Colorado Blue Spruce saplings
d. Money

5. What day is MDTA holding its Earth day fair?
a. April 20
b. April 23
c. April 25
d. April 30

6. I can put my plastic grocery bag in all except which one?
a. MDTA's recycling containers
b. The receptacles at local stores for plastic bags
c. MDTA's trashcans
d. My desk drawer (to reuse later)

7. In 2017, MDOT (as a collective agency) achieved a higher waste diversion rate than the Maryland Department of the Environment (MDE)? (hint: check MDE's All Star Recycling Newsletter on their web site)
a. True
b. False



8. In the same newsletter, which State agency was listed with the highest 2017 waste diversion rate?
a. Comptroller of Maryland
b. Subsequent Injury Fund
c. MDOT
d. MES

9. According to the State's 2016 statewide waste characterization study, data from the following areas were included in the report except…
a. Prince George's County
b. Washington County
c. Baltimore City
d. Allegany County

10. The State's waste characterization study identified the "most prevalent disposed material in both residential and commercial waste streams" to be…
a. Paper board
b. Cardboard, kraft paper
c. Carpet rugs
d. Food waste

Word Scramble

Directions: Unscramble the words. Numbers 2 and 8 contain two separate words.

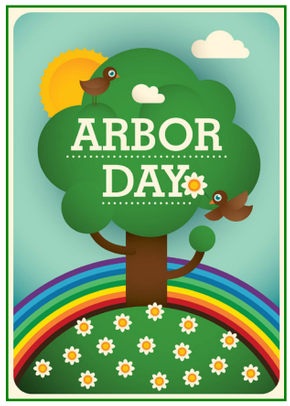
1.	_____	nomietlvanrne
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3.	_____	decrue
4.	_____	lycpuec
5.	_____	neroiidvs
6.	_____	sreeu
7.	_____	gerylncic
8.	_____	eatrw lanec
9.	_____	psmwa
10.	_____	toopscm

Matching

Directions: Match the item to the correct container that should be located at your MDTA facility. Write the letter of the items for disposal in the corresponding box under the correct container.

Items for disposal/recycling	Containers at MDTA
A. shredded paper	recycling container
B. household battery	scrap rubber dumpster
C. scrap tire	trashcan
D. food container	scrap metal dumpster
E. facial tissue/paper towel	
F. notebook/binder	
G. bottles and cans	
H. cardboard	
I. whole paper	
J. cereal box and/or treat box	
K. plastic bag from within the treat/cereal box	
L. plastic grocery bag	
M. eating utensils	

Arbor Day 2019



Arbor Day is a national event celebrated on the last Friday of April, annually. Although each state determines its own Arbor Day, the national day to celebrate is April 26. Maryland celebrates Arbor Day on the first Wednesday of April, which is deemed the ideal time for tree planting based on typical regional conditions. This year, it fell on April 3.

A couple of years ago, OESRM gave away Colorado Blue Spruce tree saplings to Earth Day fair attendees. The MDTA understands the importance trees play in our daily lives. The Maryland Department of Natural Resources manages the Tree-mendous Tree planting program in an effort to "... restore tree cover on public land and community open space" throughout the state. Your community, local schools and proprietors of public/open spaces can contact the Forest Service in order to help facilitate tree planting in your community.

For those of you who don't want to get your hands dirty planting a tree, but think it's a great idea, you can contact the Maryland Department of Natural Resources and "gift" a tree in someone's honor or as a thoughtful gift. For more information on gifting trees, read here: **http://dnr.maryland.gov/forests/Pages/treemendous/giftoftrees.aspx**. Considering the human and environmental benefits gained from having trees around, trees are the gift that definitely keeps on giving!

Find Opportunities to Pay It Forward

Find opportunities to Pay It Forward in your community or a neighboring community. Earth Day doesn't have to be a topic limited to one day or month, annually. The MDTA encourages its employees to find opportunities to help others throughout the year. If you're searching for a way to help, try the Corporation for National & Community Service at **https://www.nationalservice.gov/** and Volunteer.gov at **https://www.volunteer.gov/**.



Keep your eyes open throughout the year for information on the MDTA's upcoming public service project. Much like our last volunteer day of service, OESRM is looking forward to partnering with our local neighbors to make serving our community an MDTA-family affair!

Your Recycling Makes a Difference!

Through your 2018 recycling efforts, the MDTA single-handedly contributed to the conservation of approximately 320 trees; 3,045 gallons of oil; 32,161 kilowatt (kW) hours of electricity; and 96,363 gallons of water by recycling 60.18 tons of paper and cardboard.

By recycling 109 tons of scrap metal, we contributed to the conservation of another 8,284 gallons of oil and a whopping 1,293,176 kW hours of electricity.

With your help, we recycled 34.42 tons of bottles and cans, which contributed to an additional conservation of approximately 7,460 kW hours of electricity and 1,271 gallons of oil.

Through the MDTA's ACDR unit, we recycled 0.71 tons of electronics, which contributed to an additional conservation of approximately 56,544 kW hours of electricity.

When waste materials are diverted away from landfills, that extends the life of the local landfills (by conserving space) and it helps reduce the need for natural resource consumption.

Source: http://www.montgomerycountymd.



OESRM-Environmental for Support

Your OESRM-Environmental personnel are here to encourage your participation in the MDTA's environmental programs.

Don't have enough recycling containers in your office area for paper, bottles or printer/toner cartridges? Contact OESRM for resources.

Have you been looking for that little blue box to recycle that battery from your office's remote control, and you just can't find it? Contact OESRM!

Did you make it through this cold and flu season by spraying every surface (and everyone) with Lysol and now you have a stockpile of empty aerosol cans on your desk? Contact OESRM and we'll connect you with the person on your campus who can make those cans disappear.

Have a bunch of awkward or unused items that you think can be recycled? Contact OESRM and we'll help responsibly dispose of or recycle the materials.

Did your facility perform a bit of "spring cleaning" in their down time? Contact OESRM so we can help you figure out proper disposal methods for the items.

Is your shop running low on spill response materials? Contact OESRM and we'll see that you get the supplies you need.

If you're wondering what you can and cannot recycle in your facilities "new" green recycling containers, be sure to check out the short video included in the 2018 Recycling Revamp slideshow for help. Call us at 410-537-7667 or stop by our offices at the MDTA HQ building, 2310 Broening Highway for assistance.



Connections

Calendar Items

MDTA's Earth Day Fair
Thursday, April 25

Take Your Daughters and Sons to Work Day
Thursday, April 25

Article Ideas?

If you have an article idea, please contact **Kerry Brandt**, Division of Communications, at kbrandt@mdta.maryland.gov. The Division of Communications has final determination on the printed material that appears in this publication.

Larry Hogan
Governor

Boyd K. Rutherford
Lt. Governor

Maryland Transportation Authority

Pete K. Rahn
Chairman

Authority Members
Katherine Bays Armstrong
Peter J. Basso
Dontae Carroll
William H. Cox, Jr.
William C. Ensor, III
W. Lee Gaines, Jr.
Mario J. Gangemi, P.E.
John von Paris

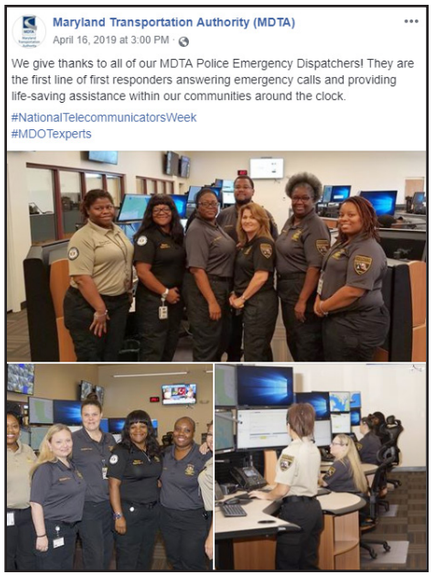
John J. O'Neill, III
Acting Executive Director

Kerry E. Brandt
Managing Editor and **Layout/Design**

Connections is a publication of the MDTA Division of Communications, 2310 Broening Highway, Baltimore, MD, 21224.

This document can be provided in an alternative format to qualified individuals with disabilities. Please call our office at 410-537-1017 or 711 (MD Relay). Visit us at mdta.maryland.gov or e-mail mdta@mdta.maryland.gov.

Police Headlines







Around the MDTA

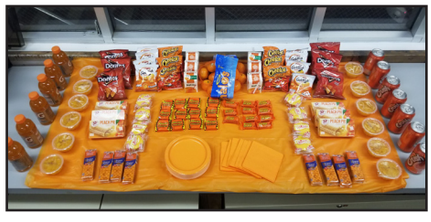
Congratulations to *E-ZPass* Operations' **Simon Najar** and JFK CARA Lead **Angela Voros**, who received customer kudos.

•

The MDTA took the time to "Go Orange" and support the men and women who are out on our roadways making a difference! Each year in the spring, National Work Zone Awareness Week is held to bring national attention to motorist and worker safety and mobility issues in work zones. The 2019 National Work Zone Awareness Week was held April 8-12.

At the MDTA, we hosted a "Go Orange Day Breakfast" on April 10 at the Point Breeze Complex. The Nice Bridge also participated on that day with their own goodies (top photo). which will take place Wednesday,





2019 Law Enforcement Torch Run

To Benefit Special Olympics *Maryland*

MDTA Maryland Transportation Authority

Maryland Transportation Authority Police





Hats
$15

Ultra Soft Cotton Shirts
$15

To Purchase a T-Shirt and/or Hat Contact:

Sr. Officer Jason Perry - (Police Headquarters/ Academy / Point Breeze)
Sr. Officer's Rashawna Boykin and Jermaine Raley - (BWI/TM Airport Detachment)
Sgt. Brian Martin - (Port of Baltimore Detachment)
First Sergeant Timothy Hughes - (All other Detachments / Divisions / Facilities)

Shirts and hats will be available for sale on Wednesday, May 15 -- 11 a.m. – 1 p.m. Point Breeze Lobby (2310 Broening Highway) You may pay via cash or check made payable to Special Olympic Maryland. All proceeds go to Special Olympics Maryland.

Please consider the environment before printing this publication.

Illicit Discharge Detection and Elimination (IDDE)

What is an illicit discharge?

A discharge to or from a storm drain that contains pollutants and/or pathogens – if it did not fall from the sky, it should NOT go in the storm drain

Common indicators of illicit discharges at outfalls or inlets:

- **Indicators in flowing outfalls and potential sources:**
  - **Odor**: sewage, gasoline, chemical
  - **Cloudy or colored discharges**:
    Cloudy/milky white: cement, paint, grout
    Yellow/brown: grease
    Gray: sewage
  - **Rainbow sheen**: oil or fuel
  - **Suds or foam:** sewage, car washing, washing machines
- **Illegal dumping**
- **Accumulated trash**
- **Stained, dead, stressed vegetation**
- **Pipes and hoses that are discharging**
- **Staining and deposits near outfall or inlet**

Maryland Transportation Authority

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Maryland Transportation Authority

Illicit Discharge Detection and Elimination (IDDE)

If you see a potentially illicit discharge

Gather information:

- Location
- What was discharged if you can identify it
- Physical characteristics: odor, color, floatables, etc.
- Volume
- Vegetation/wildlife condition
- Source and possible culprit
- Photos of discharge and inlet or outfall and possible clues to source – illustrate what has occurred with photos

Report the discharge:

- Call 911first if discharge could be dangerous
- Send email and photos to **Joyce Rebar** at **jrebar@mdta.state.md.us**

REMEMBER: Safety first! Discharges could be hazardous to you and the environment

Maryland Transportation Authority

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Maryland Transportation Authority

MDTA OEC Water Sampling

Ensuring Our Waterways Stay Clean

WATER SAMPLING





Permit requirement: Water sampling for pollutants is required under MDTA's Maryland stormwater permit. MDTA must sample their stormwater annually to keep high levels of pollutants out of the Chesapeake Bay and connected waterways.

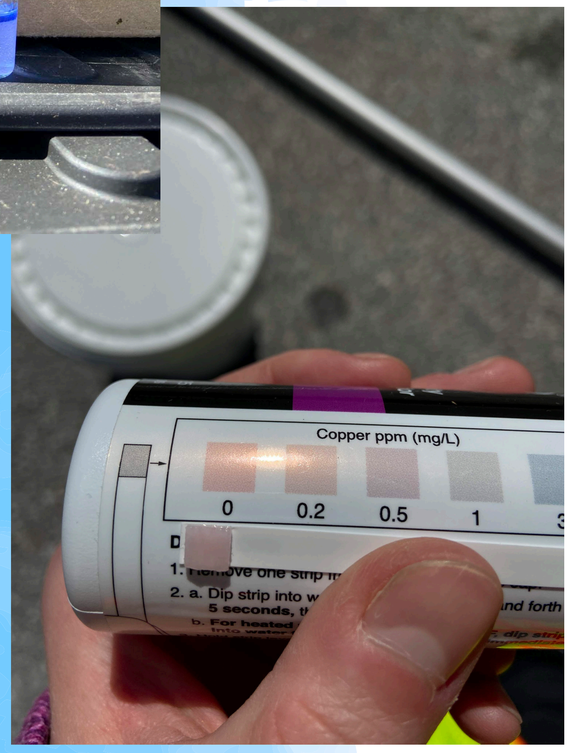
What is sampling? Pollutant sampling involves testing the stormwater runoff for various pollutants and observing physical characteristics of the samples to determine the quality of the water. We also test to make sure we don't have any illicit discharges leaving our sites.



What is being tested? During sampling, we typically test for sediment, oil, nutrients, detergents, copper, and other contaminants depending on operations conducted at the site. MDTA conducts many industrial activities, so they have a higher potential for sediment and oil.

Why test?: Contamination can kill aquatic life, sicken swimmers, clog streams, and can cause bad water quality. By sampling the water coming from MDTA properties annually, MDTA is helping to keep the Chesapeake Bay healthy.





MDTA
Maryland Transportation Authority

MDTA OEC Landscape Mitigation

Protecting Our Natural Resources for Future Generations



Compliance is necessary: When construction projects impact natural resources such as forests and trees, mitigation may be required. Meeting mitigation requirements set forth by laws such as Maryland Roadside Tree Law and Maryland Reforestation Law is necessary for successful project delivery.



Types of mitigation: Landscape mitigation plantings can occur on-site after construction has been completed to compensate for impacted resources. Mitigation can also occur in the form of "banks" which can be used to offset future development.

What is the inspection process? Mitigation planting inspections occur several times a year by MDTA staff to ensure the establishment of newly planted trees and the continued growth of older sites. If cared for correctly, successful mitigation sites will one day become healthy forests.



LANDSCAPE MITIGATION

Why mitigate? There are many benefits to planting trees near transportation projects, including the reduction of sediment and toxicants reaching our waterways through runoff, overall air quality improvement through CO_2 reduction, increased roadway aesthetics, and creation of wildlife habitat.





MDTA
Maryland Transportation Authority

MDTA
Maryland Transportation Authority

What is MDTA doing to protect Maryland's waters?

Testing Stormwater Runoff



Planting Trees



Sweeping Roads and Parking Lots



Installing Green Practices to Treat Stormwater



Educating employees about stormwater pollution



Stenciling Storm Drain Inlets



Stormwater Pollution Prevention Plan (SWPPP) Inspections

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What is the annual SWPPP inspection?

You may have noticed people walking around your site recently. Each MDTA facility has a SWPPP, which tells us what potential pollutants could be at the site and what MDTA is doing to prevent them from getting into the stormwater runoff. A SWPPP inspection is performed annually at each MDTA facility to identify changes at the site or problems to fix. A SWPPP is required by MDTA's Stormwater Discharge Permit issued by MDE.

Why is the SWPPP inspection important?

By conducting annual SWPPP inspections, MDTA is keeping track of areas on our sites that have the potential to pollute Maryland waters like the Chesapeake Bay and our local streams. MDTA maintains these areas to keep employees safe and to prevent any leaks or spills from occurring.

What do the inspectors look for?

During the annual inspection, inspectors walk around with the SWPPP and the site map, which shows the pollutant sources on site. The inspectors compare the pollution controls listed in the SWPPP to the map and the site conditions and recommend changes if the controls aren't working properly.



Stained pavement



Damaged salt dome

What does MDTA do after an inspection?

Based on the results of an inspection, MDTA corrects any problems, and makes changes to the SWPPP and map to reflect site conditions. MDTA also performs maintenance on items identified as being in poor condition during the inspection. Once the plan is updated and maintenance is conducted, MDTA documents the work in case MDE performs their own inspection.



Cloggged stormdrain inlet



Excessive trash



Properly Functioning Stormwater Management Pond

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Why should we care about water quality? What can we do about it at home?



Water quality impacts a variety of living things, including animals, bugs, plants, and humans. So, water pollution can affect YOUR quality of life.

Here are several activities that may be impacted by polluted water:

- Boating – water may smell badly due to dead fish or rotting vegetation, and your boat can be damaged by floating or partially submerged debris
- Fishing – fish and other aquatic life may die or could be too sick for humans to eat
- Crabbing – crabs can die when their habitats become clogged with sediment
- Swimming – the water may smell badly or make swimmers sick

If you want to do your part in preventing polluted stormwater runoff from reaching the Bay, here are some things you can do at home:

- Wash your car on the grass or at a car wash
- Collect rainwater using rain barrels and reuse water in your garden
- Plant a rain garden to filter water and attract pollinators like butterflies and bees
- Manually pull weeds instead of using herbicides



Car wash



Rain barrels

- Conduct car maintenance in your garage and use drip pans and absorbent to contain any spills before they reach the storm drain
- Only allow rain down the drain - do not dump oil, grease, trash, or cigarette butts into your neighborhood storm drain
- Properly dispose your trash and recycling



Rain garden



Pulling weeds



Car maintenance in garage



Only Rain Down the Storm Drain



Properly dispose of trash and recycling

Tell a friend! Spread the word about stormwater pollution prevention

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Illicit Discharge Detection and Elimination (IDDE) Testing

What is an illicit discharge?

An illicit discharge is any contaminated flow into or out of a storm drain that occurs during a period of dry weather. Storm drains are meant for stormwater, so if it isn't raining, they should be dry!

What causes an illicit discharge?

An illicit discharge could be caused by a variety of sources, such as a bad pipe connection (i.e. sewer), a spill, or illegal dumping of liquids.



Illicit discharge

What is IDDE Testing?

IDDE Testing is required annually by MDTA's stormwater permit issued by MDE. Stormwater testers travel around MDTA's highways, roadways, and sites during dry weather to check storm drains for flow. If there is flow, the water is tested for a variety of contaminants like detergent, chlorine, and sediment.



Water testing and sampling

What should you do if you see an illicit discharge?

If you see water flowing from a storm drain during dry weather, take note of the smell and color of the discharge. If possible, take pictures and note any other details. Then, notify Joyce Rebar at jrebar@mdta.state.md.us with the information you have gathered. OESRM will investigate and eliminate the discharge



Illegal Dumping



1

Housekeeping Items

- Please silence phones and electronic devices
- Safety moment
- Training agenda
  - o Stormwater Pollution Prevention
  - o Illicit Discharge Detection and Elimination
  - o SWM at Home
- Active participation is encouraged





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Safety Moment – Turn Around, Don't Drown!

6 inches of fast-moving water can **knock over** an **adult**.

Only **12-18 inches** of flowing water can carry away **most vehicles including large SUVs**.



Tips to keep you safe during flooding:

- Plan ahead and know the risks, check weather before leaving the house
- Get to higher ground, and avoid parking near streams or low areas
- Avoid already flooded areas, and do not drive through high water
- Never cross barriers placed by local emergency officials

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Training Purpose

- Environmental protection
- Personal and public safety
- Laws and regulations





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Why is Stormwater Runoff a Problem?

- Quantity
- Quality



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Chesapeake Bay Watershed

A watershed is an area of LAND that drains to a particular river, lake, bay or other body of water.



64,000 square miles

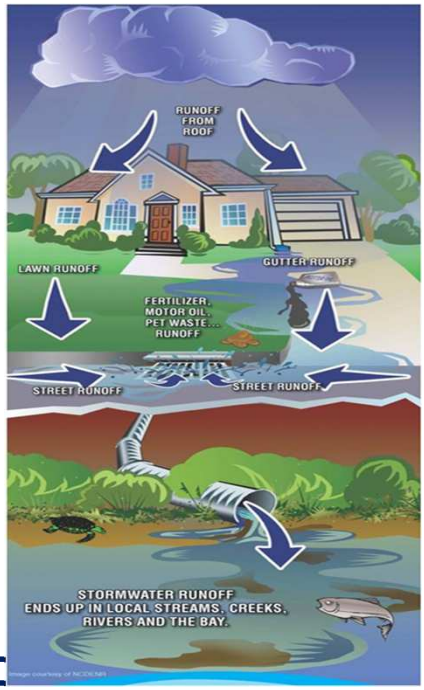
We all live in a watershed. Some watersheds, like that of your local stream or creek, are small. Others, like the Chesapeake Bay watershed, are very large.

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Stormwater Pollution

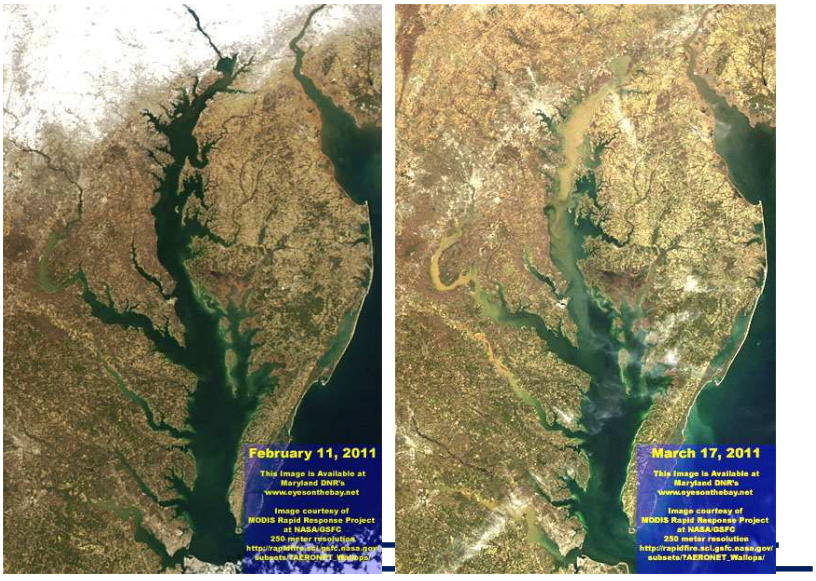
- When it rains, some of the water soaks in the ground.
- Unfortunately, most stormwater flows across hard surfaces like roads, roofs and parking lots, collecting pollution along the way, and reaching our streams.



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Pollution Effects on Local Water Resources



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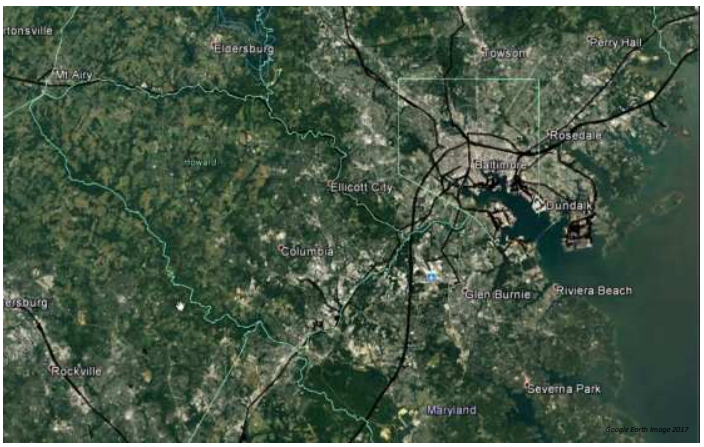
Why is Stormwater Pollution Prevention Important?

- Runoff quality affects important natural resources like the Chesapeake Bay
- Your site activities and materials have the potential to contaminate runoff
- EPA or MDE could audit your site for compliance
- MDTA could receive large fines and penalties

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Stormwater Pollution / Spill Impacts



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Stormwater is <u>not treated</u> before it enters surface water – what goes into storm drains eventually flows to the Potomac, Patuxent and Patapsco Rivers and Chesapeake Bay!

Spills have an immediate local impact and the potential to create severe impacts downstream

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Key Responsibilities for MDTA Employees

- Protect Maryland's water resources
- Set a good example for the public
- Know how to identify potential environmental problems
- Report problems so they can be corrected
- Support MDTA's environmental initiatives/goals

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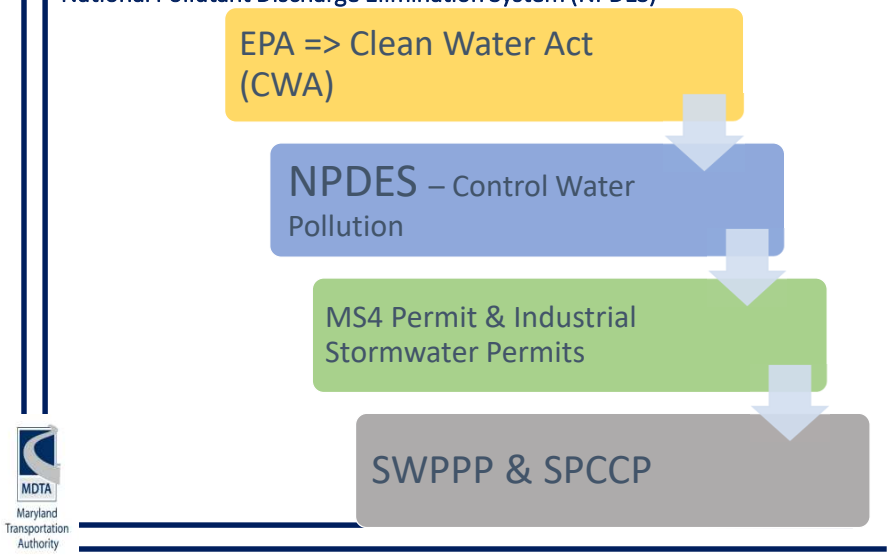
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Compliance Requirements

National Pollutant Discharge Elimination System (NPDES)



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MDTA Stormwater Permit – Industrial Activities

- Maryland General Discharge Permit 12-SW Permit requires MDTA to:
  - ✓Develop a stormwater pollution prevention plan (SWPPP)
  - ✓Manage runoff
  - ✓Provide annual employee training
  - ✓Eliminate non-stormwater discharges
  - ✓Minimize exposure
  - ✓Perform good housekeeping
  - ✓Perform regular maintenance
  - ✓Implement spill prevention and response procedures
  - ✓Implement erosion and sediment controls

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MDTA Stormwater Permit for MS4s

- **MS4: Municipal separate storm sewer systems**
- Requires certain measures
  - Illicit discharge detection and elimination (IDDE)
  - Pollution prevention and good housekeeping for municipal operations
  - Annual training

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SWPPP Components

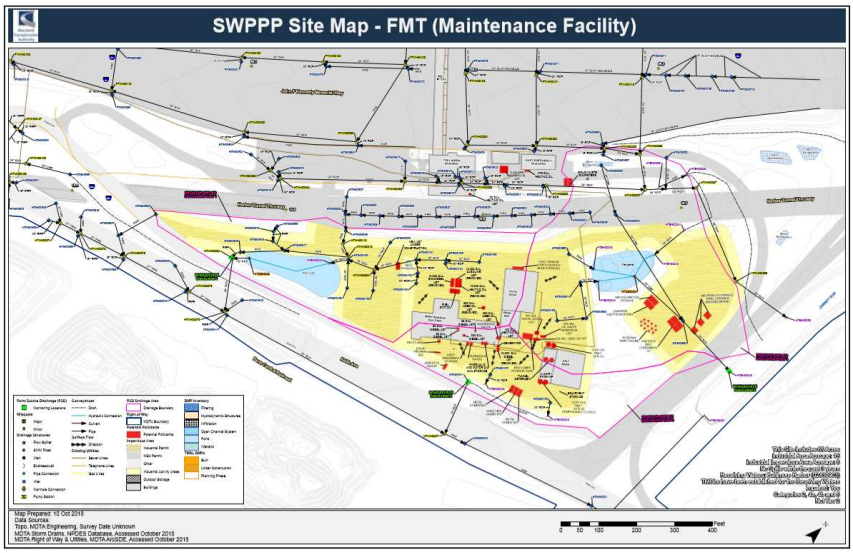
- **SWPPP**: StormWater Pollution Prevention Plan
- P2 Team: Pollution Prevention Team
- Potential pollutant sources
- Stormwater control measures


Stormwater Pollution Prevention Plan
for:
Maryland Transportation Authority
SWPPP Contacts:
SWPPP Preparation Date:
Prepared by:
AECOM

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SWPPP Map



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Example of SWPPP Inspection

- FMT - 6/12/2019 SWPPP inspection

Good:

- All chemicals/oil properly stored on secondary containment
- Micro-bioretention in great condition
- Spill kits stocked and spread site-wide

Room for Improvement:

- Oil stains noted site-wide
- Some trash site-wide
- West Wet pond could use phragmites and trash removal


Oil Stains


Phragmites in Pond

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Common Industrial Pollutants



Bacteria



Heavy Metals



Fertilizers



Pesticides



Petroleum and Oil



Sediment

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Potential Pollutant Sources

Industrial Activity	Associated Pollutants	
Vehicle Fueling	• Biodiesel aboveground storage tank (AST): 1,000 gal.	• Biodiesel underground storage tank (UST): 10,000 gal. • Gasoline AST: 1,000 gal.
Vehicle Maintenance	• Oil • Used oil filters • Gas filters • Grease	• Dirt • Antifreeze • New/used batteries
Vehicle Washing	• Oil/water separator • Salt	• Oil • Grease
Salt Storage	• Roadway salt	
Waste Disposal	• Garbage • Solid waste • Used tires • Recycling- • Electrical components	• Metal • Asbestos • Hazardous waste • Construction debris
Tunnel/Toll Booth Cleaning	• Dirt	• Tunnel detergent
Landscape Maintenance	• Fertilizer	• Pesticides
Storage Tanks	• Magnesium chloride (MgCl) ASTs: (4) 5,000 gal.; (2) are temporarily closed • Used oil UST: 500 gal.; 550 gal. • Wastewater UST: 550 gal. • Diesel AST: 50 gal.; 58 gal.; (2) 60 gal.; 300 gal.	• Heating oil AST: 20 gal.; 100 gal.; (2) 275 gal.; 2,000 gal.; 4,000 gal. • Heating oil UST: (2) 8,000 gal.; 10,000 gal. • Oil/water separator UST: 500 gal. • Liquid Propane AST
Material Storage	• New lamps • Used bulbs • New/used absorbent	• Motor/hydraulic oil cans/drums • Antifreeze drums
Maintenance Exterior Storage	• Sand	





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Comprehension Check

Stormwater discharges at an MDTA facility are covered under what type of permit?

a) Solid and liquid waste disposal permit
b) Sanitary Sewer permit
c) Non Potent Discharge Ecosystem Streams Permit
d) National Pollutant Discharge Elimination System permit

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Stormwater Video

https://www.youtube.com/watch?v=F1hHosLDGfo



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Comprehension Check

Name three potential pollutants that could enter the storm drain system from an MDTA facility.

Now, name a potential impact for those pollutants once they enter the storm drain.

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Pollution Control Measures (BMPs)

- Minimize Exposure
- Good Housekeeping
- Spill Prevention and Response
- Equipment and Material Storage
- Vehicle/Equipment Fueling
- Vehicle/Equipment Washing
- Vehicle/Equipment Maintenance
- Erosion and Sediment Control
- Salt Storage

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Minimize Exposure

- Vehicle maintenance performed indoors
- Covered storage:
  - o Salt dome
  - o Vehicle and equipment storage
- Canopy over fueling area
- Drip pans and vehicle positioning



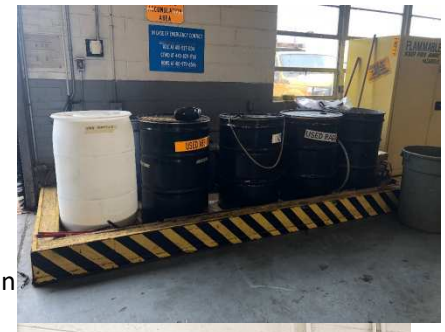
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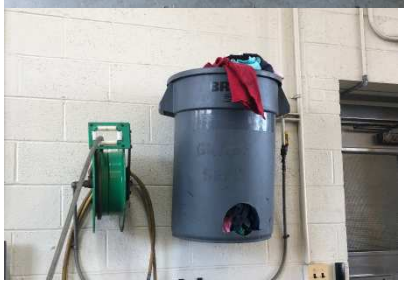
Prevent rain from coming into contact with pollutants or potential pollutant sources!

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Good Housekeeping

- Maintain neat, orderly work areas
- Conduct regular inspections
- Promptly clean up spills using dry methods
- Store wastes, garbage and maintenance materials indoors or in closed containers





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Vehicle/Equipment Maintenance and Storage

- Perform maintenance indoors
- Use drip pans under leaky vehicles
- Drain and dispose of fluids
- Use dry clean-up methods (absorbents)
- Cover vehicles/equipment awaiting maintenance, or store indoors

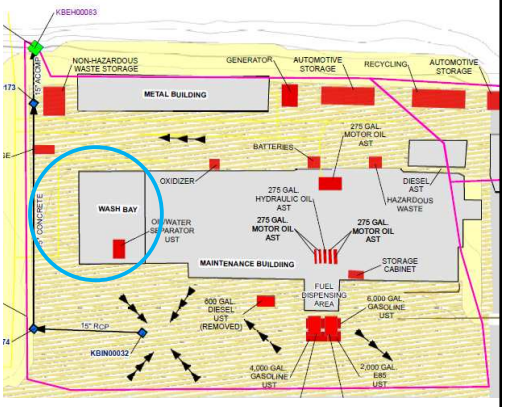


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Vehicle/Equipment Washing

- Perform all washing at the designated vehicle wash area for your facility
- Properly position vehicle so wash water stays within the wash bay
- Clean up accumulated debris when you are done

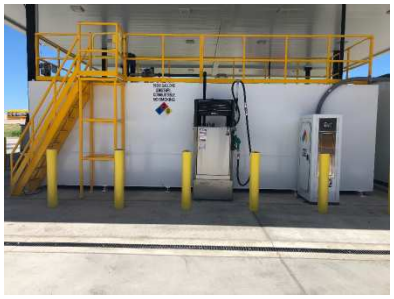


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Vehicle/Equipment Fueling

- MDTA S-OPS-ENVF-A-0014-01 – Dispensing Fuel into Equipment and Portable Fuel Storage Containers
- Do not leave vehicle unattended
- Do not top off tank
- Use spill kit for incidental spills and leaks; dispose of absorbents properly
- Report spills immediately



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Erosion and Sediment Control

- Maintain erosion and sediment controls, including ponds
- Conduct regular inspections to identify areas that need maintenance or additional controls
- Notify your manager if you notice an eroded area



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Salt Storage

- Salt dome provides coverage from exposure
- Use straw bales or other materials to keep excess salt inside
- Excess salt must be covered and cleaned up after use



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Structural BMPs to Manage Runoff

Effective for removing sediment, nitrogen and phosphorus

- Wet ponds
- Dry ponds
- Bioretention
- Bioswales
- Sand filters
- Underground filters



Micro-bioretention



Wet Pond

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Comprehension Check

Name one BMP used at an MDTA facility…

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Comprehension Check

How long are NPDES permits effective? (permit term)

a) 5 years
b) 10 years
c) 2 years
d) 1 year

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Monitoring and Inspection Requirements

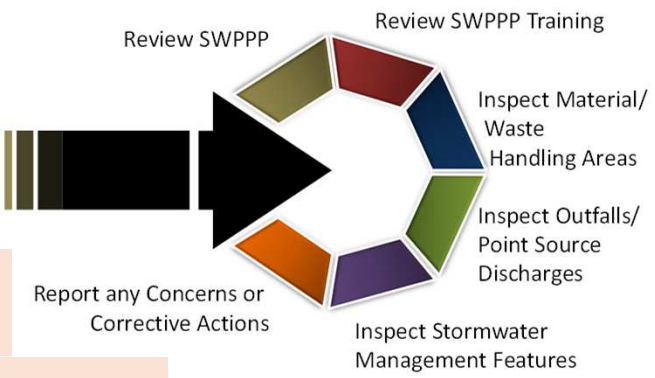
- Sector-specific inspections (weekly and monthly)
- Routine facility inspections (quarterly)
- Stormwater visual inspections (quarterly)
- Comprehensive site compliance evaluation (annually)

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Compliance Requirements SWPPP Inspection

Inspection Checklist



Deficiencies noted within 24 hours

Corrective action within 14 days

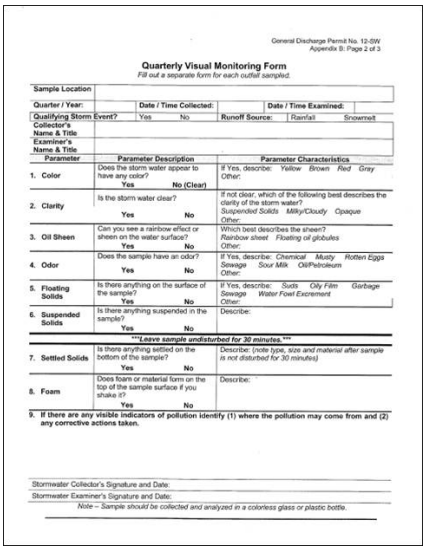
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Compliance Requirements
Visual Outfall Assessments



- Color
- Clarity
- Oil Sheen
- Odor
- Solids
- Foam



General Discharge Permit No. 12-SW
Appendix B: Page 2 of 3

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location			
Quarter / Year:	**Date / Time Collected:**	**Date / Time Examined:**	
Qualifying Storm Event?	Yes No	**Runoff Source:**	Rainfall Snowmelt
Collector's Name & Title			
Examiner's Name & Title			

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the storm water appear to have any color? Yes No (Clear)	If Yes, describe: *Yellow Brown Red Gray* Other:
2. Clarity	Is the storm water clear? Yes No	If not clear, which of the following best describes the clarity of the storm water? *Suspended Solids Milky/Cloudy Opaque* Other:
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? Yes No	Which best describes the sheen? *Rainbow sheet Floating oil globules* Other:
4. Odor	Does the sample have an odor? Yes No	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk Oil/Petroleum* Other:
5. Floating Solids	Is there anything on the surface of the sample? Yes No	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement* Other:
6. Suspended Solids	Is there anything suspended in the sample? Yes No	Describe:
	Leave sample undisturbed for 30 minutes.	
7. Settled Solids	Is there anything settled on the bottom of the sample? Yes No	Describe: *(note type, size and material after sample is not disturbed for 30 minutes)*
8. Foam	Does foam or material form on the top of the sample surface if you shake it? Yes No	Describe:

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.**

Stormwater Collector's Signature and Date:

Stormwater Examiner's Signature and Date:

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

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SWPPP Exercise

What's wrong with this picture?

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SWPPP Exercise





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SWPPP Exercise





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SWPPP Exercise





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SWPPP Exercise





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SWPPP Exercise





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SWPPP Exercise



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SWPPP Exercise

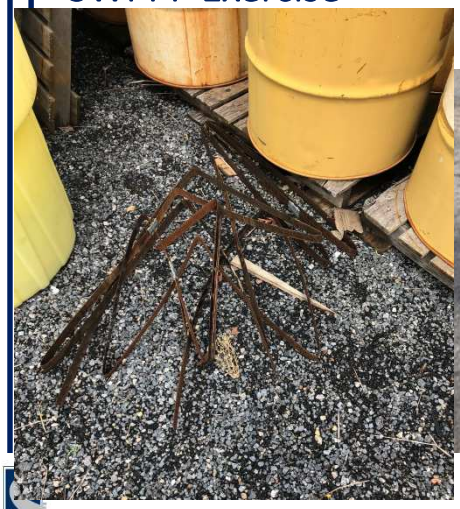




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SWPPP Exercise





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SWPPP Exercise





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SWPPP Exercise

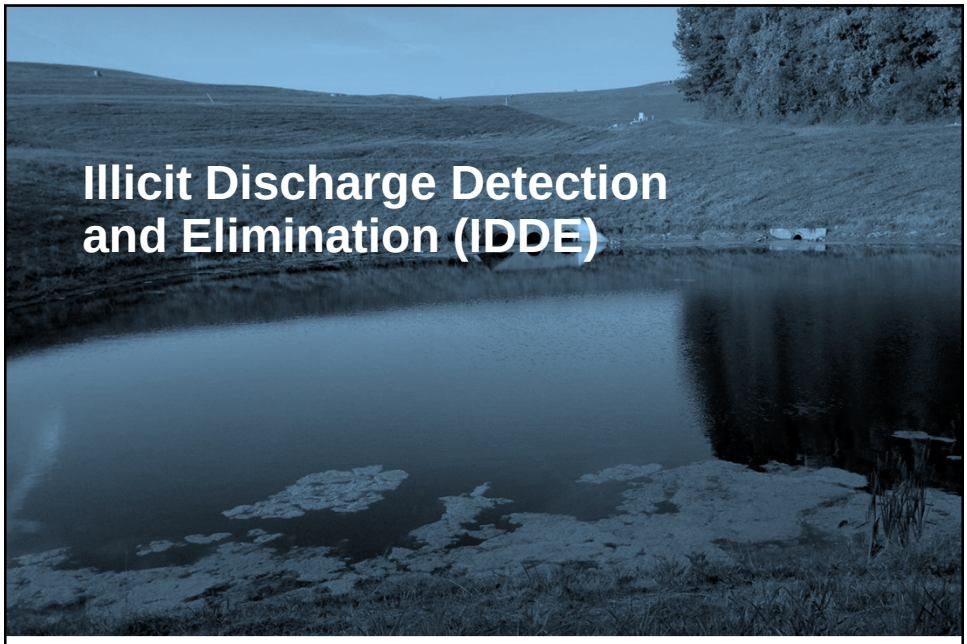




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What is an Illicit Discharge?

- **Illicit discharge:** dry-weather discharge to or from a storm drain that contains pollutants and/or pathogens
- Storm drains should only flow during and immediately after storms – **dry-weather flow means something isn't right!**
  - Dumping or spills
  - Illegal business operations
  - Illicit connections
  - Improper storage
  - Inadequate sediment and erosion controls



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Allowable Non-stormwater Discharges

- Residential car washing
- Air conditioner condensate
- Water from firefighting activities and fire sprinkler maintenance
- Foundation or footing drainage
- Uncontaminated groundwater or spring water
- Landscape and irrigation watering (only if herbicides, pesticides, and fertilizers were applied in accordance with approved labeling)
- Dechlorinated swimming pool water

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Common Indicators of Pollution

- Cloudy/milky white: cement, paint, caulk, or grout
- Rainbow sheen: oils
- Yellow/brown: grease
- Gray: sewage



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What to Look For and Report



Illegal dumping



Trash

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What to Look For and Report

Rainbow sheens



Sheen easily fractures with a stick?

- Non-petroleum (likely caused by bacteria)



Sheen quickly reforms after being broken apart?

- Petroleum

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What's Wrong with this Picture?





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What's Wrong with this Picture?





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What's Wrong with this Picture?



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Things to Note

- Odor
- Color and clarity
- Volume
- Floatables (e.g., trash, sewage, suds)
- Vegetation/wildlife condition (e.g., excessive growth, fish kills)
- Look for an obvious source
- Notice if there are patterns
- Take photos that tell the story



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IDDE Training Video – Part 2

https://www.youtube.com/watch?v=Qmyh_rL4Ks0

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What To Do Next

- Report suspected illicit discharges to MDTA by phone or email
  - Environmental Engineering - Joyce Rebar: jrebar@mdta.state.md.us
- MDTA will investigate suspected illicit discharges

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Stormwater Pollution Prevention at Home

- Pick up after your pets
- Use car washes that recycle water
- Perform oil changes offsite or property dispose of used oil
- Install a green infrastructure technique:
  - o Rain barrel
  - o Rain garden
  - o Conversation landscaping
  - o Tree canopy
  - o Permeable pavers
  - o Green roof







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Spill Response Procedures

STEP 1: OBSERVE THE SPILL

Stay upwind. Do not walk through vapors, fumes, and smoke.

STEP 2: SECURE THE SPILL SCENE

Keep people away from the spill.

STEP 3: CHARACTERIZE THE SPILL (if possible)

Use clues from the scene (e.g. color, odor, placards) to identify the spill.

- What is it?
- How much spilled?
- Major or minor spill?

Major

- > 3 gallons *or,*
- Spill has reached environment or drains *or*;
- Safety risk

Minor

- < 3 gallons *and*
- Spill has not reached environment or drains *and*
- No safety risk

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- No safety risk

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Spill Response Procedures

IF MAJOR:	IF MINOR:
Step 4: Report the Spill Notify: AOC 410-537-1234 and • CFMO and OESRM during normal business hours • MDTA Police dispatch if after hours 410-537-7777 • 911 if life-threatening **Step 5: Clean up Spill** • If safe to do so and trained by MDTA, Follow Step 5 for minor spill **Final Step: Documentation** Complete Discharge Notification Form and give to OESRM	**Step 4: Report the Spill** Notify Maintenance Supervisor **Step 5: Clean up Spill** • Get necessary PPE and equipment • Stop source of spill • Clean up spill • Properly dispose of contaminated materials **Final Step: Documentation** Complete Discharge Notification Form, give to OESRM, upload to EEIMS

REMEMBER: SAFETY FIRST!

ALWAYS USE THE PROPER SAFETY AND PERSONAL PROTECTIVE EQUIPMENT

Maryland Transportation Authority

Spill Response Procedures

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Final Step: Documentation
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Notify Maintenance Supervisor

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Waste Segregation at MDTA

Hazardous/ *Universal Wastes**	Industrial Wastes	Recycling Materials	General Refuse/Trash
• Aerosol cans • Aerosol can residue • Flammable products • Gasoline and gas filters • Herbicides/Pesticides • Some industrial fluids • *Fluorescent lamps, CFLs, etc.** • *Light ballasts** • *Batteries** • *Mercury-containing equipment** • *Electronic equipment** • *Equipment containing refrigerant** • *Transponders** • Discarded compressed gas cylinders • Waste fuel, fuel mixtures	• Used rags • Used absorbent • Used oil filters • Used diesel filters • Used grease • Floor sweepings (vent buildings) • Used antifreeze • Blasting grit • AST/UST spill bucket liquids	• Scrap rubber • Scrap metal • Used oil • Some industrial fluids • Printer/Toner cartridges • Paper products • Aluminum and bi-metal cans • Plastic and glass bottles • Cardboard • Sweeper dirt	• Everything else… • It's not a hazardous waste • It's not a universal waste • It's not an industrial waste • It's not a recycling material

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Industrial Wastes at MDTA

- Non-hazardous wastes generated by "industrial processes"
- Not permitted to be thrown in general refuse/trash
- Handling and storage:
  - **Must label containers with contents**
  - Keep containers closed
  - Liquids must be stored with secondary containment
  - DO NOT mix waste streams
- OESRM bears costs for transport and disposal of industrial wastes

Industrial Wastes
- Used rags
- Used absorbent
- Used oil filters
- Used diesel filters
- Used grease
- Floor sweepings (vent buildings)
- Used antifreeze
- Blasting grit
- AST/UST spill bucket liquids

8

Recycling Materials at MDTA

- Non-hazardous waste
- Environmentally-preferred method of 'disposal' = recycling
- Maryland Recycling Act (MRA) requires State agencies to:
  - Recycle certain materials (**blue**)
  - Achieve waste reduction goal of 30%
    - Annually reported in All StAR report
    - Annually report at MDOT *Excellerator*
- Handling and storage:
  - **Must label containers with contents**
  - Deposit materials in appropriate containers
  - Do not remove MDTA's property for personal financial gain

Recycling Materials
- **Scrap rubber**
- Scrap metal
- Used oil
- Some industrial fluids
- **Printer/toner cartridges**
- **Paper products**
- **Aluminum and bi-metal cans**
- **Plastic and glass bottles**
- **Cardboard**
- Sweeper dirt

9

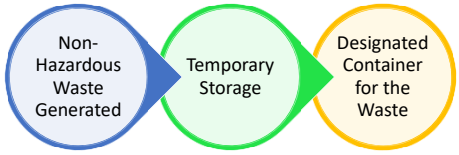
General Refuse/Trash

- Think before you toss it!
- It belongs in the trash only if you know:
  - …it's not a hazardous waste
  - …it's not a universal waste
  - …it's not an industrial waste
  - …it's not a recycling material
- Disposing of hazardous or regulated wastes in the trash is a regulatory violation
- **DO NOT BRING YOUR WASTES FROM HOME** to MDTA for disposal
- Facility is responsible for paying fees associated with trash collection

General Refuse/Trash
- Everything else…
  - It's not a hazardous waste
  - It's not a universal waste
  - It's not an industrial waste
  - It's not a recycling material

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Non-Hazardous Waste Pathway

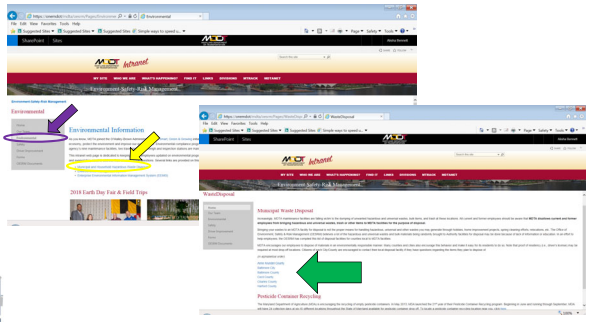


- Industrial wastes
- Recycling materials
- Refuse/Trash

- Must be stored in compliance with OSHA standards (e.g., do not block exits, do not create fire hazard, etc.)

- All containers must be properly marked!

11



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Let's Recap!

- Used absorbent, used rags, used motor oil filters are all industrial wastes (non-hazardous)…
  - **TRUE**
- What are examples of recycling materials generated by Operations Maintenance?
  - **Scrap metal, scrap rubber, used oil, paper, cardboard, bottles, cans, aerosol cans, printer/toner cartridges**
- Industrial wastes can be thrown in the trash, as long as it's not hazardous.
  - **FALSE**

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What is a Hazardous Waste?

- Potential harm to people and/or the environment
- Hazardous wastes are regulated by
  - EPA *via RCRA* (environment)
  - DOT (transport)
  - OSHA (worker safety)

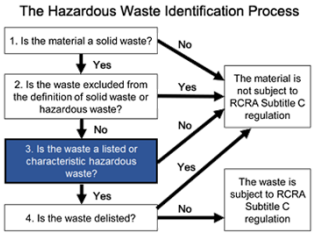


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What is a Hazardous Waste?

Steps in the hazardous waste identification process:

- Is it a "solid waste"?
- Is it excluded from the RCRA regulations?
- Is it a "listed" hazardous waste?
- Does it exhibit a characteristic of hazardous waste?



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Characteristics of Hazardous Waste

Has <u>at least one</u> hazardous characteristic:

- **T**oxic
- **R**eactive
- **I**gnitable
- **C**orrosive

Remains a **hazardous material** until ready for disposal. Then, it becomes a **hazardous waste**.



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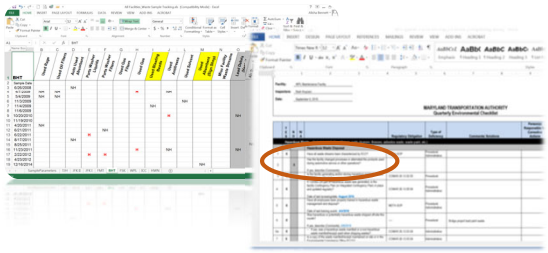
Waste Characterization

- RCRA (40 CFR 262.11) requires that any person who produces or generates **a waste** must determine if that waste is hazardous
- Determination may be accomplished
  - RCRA list of hazardous waste
  - Generator knowledge
    - Obtain SDS for product
  - Sampling waste
    - OESRM collects sample
- Changes to waste stream = sampling
  - Let OESRM know
- Hazardous waste streams for each facility have been identified by OESRM



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Waste Characterization Data at MDTA



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Hazardous Waste Management

- CFMO notifies OESRM if new hazardous material is being used
  - HEMS/HEMT and/or Supervisors/Tech IVs must tell CFMO
- CFMO must notify OESRM when "spring cleaning" or the like are performed
  - Coordinate with OESRM for proper waste disposal
- CFMO (or designee) must provide SDS for any wastes being offered, when applicable
- OESRM will determine if material/waste stream is hazardous and identify appropriate method of storage and disposal
- Follow *Hazardous Waste Management SOP*

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Hazardous/Universal Wastes at MDTA

Hazardous Wastes	Universal Wastes
• Aerosol cans[1] • Aerosol can residue • Flammable products • Gasoline[2] and gas filters • Herbicides/Pesticides • Some industrial fluids • Discarded compressed gas cylinders • Waste fuel, fuel mixtures	• Fluorescent lamps, CFLs, etc. • Light ballasts • Lead-acid and household batteries • Mercury-containing equipment • Electronic equipment • Equipment containing refrigerant • Transponders

1 – Aerosol cans that have been de-pressurized may be deposited in the scrap metal recycling container.
2 – Where possible, MDTA attempts to send used gasoline for recycling.

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Hazardous/Universal Waste Pathway

Hazardous Waste Generated	Universal Waste Generated
⇩	⇩
Satellite Accumulation Area (SAA)	SAA – at each facility
⇩	⇩
Hazardous Waste Storage Area (HWSA)	Deliver UW to FMT "light trailer"

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Satellite Accumulation Area (SAA)

- Must be **at or near point of generation**
- **No more than 55 gallons** at a time
  - Yes, you may have more than one SAA at your shop
  - Drum of solids: leave *at least* 1" headspace
  - Drum of liquids: leave *at least* 3" headspace
- SAA must be inspected weekly in accordance with Routine *Facility Environmental Inspection SOP*
- No storage limits apply to SAAs
- When container is filled, secure the lid; then, transfer to Hazardous Waste Storage Area (HWSA)

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SAA – Labeling & Signage

- The SAA must be marked
  - The words "Satellite Accumulation Area" must be posted
  - Emergency contact number(s) must be posted
- **Each container** of hazardous waste in the SAA must be labeled
  - The words "Hazardous Waste"
  - Type of waste must be indicated (e.g., "gasoline," "lead weights," etc.)



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Hazardous Waste Storage Area (HWSA)

- May be separate from point of generation
  - HWSA may be located outside or in another room from point of generation
- Hazardous wastes/HWSA
  - Must be maintained under cover or indoors
  - Must have adequate ventilation (if indoors)
  - Must have secondary containment
  - Must be locked to restrict access

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HWSA – Requirements

- A spill kit must be near the HWSA
- A fire extinguisher must be near the HWSA
- HWSA must be inspected every week
  - Follow the *Routine Facility Environmental Inspection SOP*
  - Inspections must occur, even when no hazardous waste is being stored in the HWSA
- **CFMO (or designee) must notify OESRM the same day hazardous waste is placed in the facility's HWSA**
  - Within 90 days, MDTA must have the waste removed

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HWSA – Labeling & Signage

- The HWSA must be marked
  - The words "Hazardous Waste Storage Area" must be posted
  - Emergency contact number(s) must be posted
- **Each container** of hazardous waste in the HWSA must be labeled
  - Type of waste must be indicated (e.g., "gasoline," "lead weights," etc.)
  - Accumulation start date
    - The date the waste container was placed in the HWSA



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Hazardous/Universal Waste Pathway

SAA	HWSA
At or near point of generation	On campus
No holding time	90 days

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General Waste Management Practices

- General Practices
  - Keep containers closed when not adding material
  - All containers **MUST** have a label
  - Check condition of containers
    - Leaks, corrosion, signs of damage
  - **DO NOT stack drums**
  - Liquid hazardous wastes should be stored with secondary containment
    - 110% Rule
    - Check to make sure secondary containment units are empty



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Compatibility of Hazardous Wastes

- Contact OESRM if you're unsure
- Do not mix hazardous wastes (e.g., antifreeze and used oil)
- Prevent contact between incompatible hazardous wastes
- Be sure the containers being used are compatible with wastes being stored



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Disposal of Empty Containers

- Disposal is only allowed if it is "**RCRA Empty**"
  - All waste has been removed through common industry practices ***and***
  - Less than 1 inch of residue remains
  - **Remove, cross out, or paint over existing labels/ markings**
    - Label or mark container to denote "RCRA Empty"



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Universal Waste

- Universal Wastes are a subset of hazardous waste
  - Exhibit hazardous waste characteristics
  - Regulations less stringent
- MDTA facilities are Small Quantity Handlers (SQH)
  - < 11,000 lbs. of UW
- Follow the *Universal Waste Handling SOP*



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Universal Waste Management

- Each MDTA facility shall establish and manage appropriate UW storage areas
  - Must comply with MDTA's SOP and this training
  - Applicable wastes: batteries (any and all); light fixtures and bulbs/lamps (any and all kinds); mercury-containing equipment
  - Pesticides shall be managed as a hazardous waste
- Universal wastes shall be moved to the appropriate 'temporary' universal waste storage area **as they are generated/immediately**
  - FMT is the central depot for delivery of select items that will become identified as UW for disposal (ballasts, lamps, bulbs, electronics)

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Universal Waste Storage

- Must be stored to prevent spill or release
  - The CFMO will ensure that the appropriate containers are available for the storage of UW
  - OESRM may be consulted for container verification
- Containers must be kept closed, except when adding or removing waste
- Container must be compatible with the material being stored within





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Universal Waste – Labeling

- UW Containers (or the storage area) must be marked:
  - The words 'Universal Waste' must be posted
    - On each individual container
    - On the UW Storage area, as a whole
  - Type of Waste must be listed (i.e. batteries, light bulbs)
  - Accumulation start date
- Within 365 days (or 1 year), MDTA must have the UW removed



What's wrong with this picture?

34

Broken Lamp Management

- **Broken lamps must be managed as hazardous waste**
- Mercury spill kits at each MDTA facility where UW are generated
  - If not, contact OESRM
- Use mercury spill clean up kit
  - Place waste in drum
  - Label drum a hazardous waste
    - Follow hazardous waste protocols



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Hazardous Waste Disposal

- OESRM is responsible for arranging transport and disposal of hazardous wastes
  - It is your job to inform your supervisor and OESRM of hazardous waste generation
  - OESRM (410) 537-7650
  - OESRM bears cost of hazardous waste transport and disposal

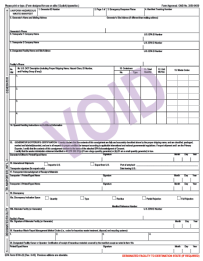




36

Hazardous Waste Manifests

- Manifests may only be signed by authorized individuals
  - US DOT trained personnel
- Generator number must be on manifests
  - Applies to parts washers wastes
- MDTA verifies information on manifest is correct
- MDTA verifies driver has appropriate credentials



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Orphan Wastes

- If a container of unknown origin and/or unknown contents is found on your maintenance campus
  - **Do not open it**, report this to OESRM
- Unidentified roadside waste?
  - **DO NOT bring this waste back to your shop**
  - Follow *Roadside Waste Management SOP*



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Hazardous Waste Reduction

- Environmentally Preferable Purchasing (EPP) practices strongly encouraged
  - Prior to purchasing, employees should consult MDTA's "do not buy" list
    - Chlorinated Solvents
- Maryland Green Act (2010)
  - Green Purchasing Requirements
  - Credit card purchases and purchases off Contract
  - Consider "life cycle" of product, including disposal
  - Seek less/non-hazardous alternative, when possible
- When a new hazardous material is purchased, CFMO shall notify OESRM
  - Facility must maintain Safety Data Sheet (SDS)

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Other Hazardous Waste Requirements

- MDTA facilities are managed as "Large Quantity Generators" (LQG) of Hazardous Waste:
  - Conduct weekly inspections
  - Create Contingency Plans for every facility
  - Conduct training
  - Abide by holding time restrictions
  - Abide by storage restrictions
- As a generator of hazardous waste, MDTA is required to submit biennial hazardous waste reports
  - Documents all hazardous waste shipments for previous year
  - Reporting alternating years – Engineering and OPS wastes'

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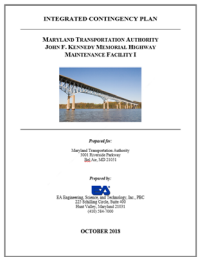
Weekly Inspections

- Follow the *Routine Facility Environmental Inspections SOP*
- Performed by the individual facilities
  - **Maintenance Technician/Supervisor**: responsible for filling out the weekly inspection checklist and uploading appropriate forms and documentation to EEIMS
    - This person is appointed by CFMO
  - **CFMO**: responsible for any corrective actions necessary and for closing out these tasks in EEIMS
  - **OESRM**: provides support throughout this process

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Contingency Plans

- Facility-specific
- Action to take during unplanned discharge/release
- Arrangements with local police, fire and hospitals
- Emergency Response Coordinators' contact information
- Lists available emergency equipment
- Evacuation plan


INTEGRATED CONTINGENCY PLAN

MARYLAND TRANSPORTATION AUTHORITY
JOHN F. KENNEDY MEMORIAL HIGHWAY
MAINTENANCE FACILITY I

OCTOBER 2018

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Waste & Materials Management SOPs

MDTA SOPs for Proper Materials Management	Located on the MDTA Intranet
HVAC Recovery	S-EHS-ENVF-A-0009
Compressed Gas Cylinder Management	S-EHS-ENVF-A-0001
Hazardous Waste Management	S-EHS-ENVF-A-0003
Universal Waste Handling	S-EHS-ENVF-A-0007
Fluorescent Bulb Crushing	S-EHS-ENVF-A-0020
Maintenance – Aerosol Can Management	S-EHS-ENVF-A-0026
Aerosol can Management Recycling	S-EHS-ENVF-U-0016
Motor Vehicle Refrigerant Recovery	S-EHS-ENVF-A-0005
Roadside Waste Management	S-EHS-ENVF-A-0006

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MDTA Recycling & Waste Removal — OESRM-Environmental

Recycled Materials	Vendor Name	Procedure	Contact	Info
"Office-type" products	BFI/Republic	Pre-set pickup schedule	Issues with service, call OESRM	Paper, cardboard, bottles/cans
Sweeper dirt	ACV Environmental /Clean Venture	Contact vendor directly for P/U	Contact info on email	Issues with service, contact OESRM
Scrap metal	Montgomery Scrap	Contact vendor directly for P/U	Must email for P/U	Issues with service, contact OESRM
Scrap rubber	Aston Contracting	Contact vendor directly for P/U	Must email for P/U	Issues with service, contact OESRM
Used oil	Clean Harbors/Safety Kleen	Contact vendor directly for P/U	Must email for P/U	Issues with service, contact OESRM
Lead-acid batteries	Varies	Returned as "core" for exchanges	Follow universal waste SOP	Only applies to intact lead-acid batteries
Household-type batteries		Blue box recycling unit; picked up at facility by UPS	Follow instruction sheet; contact OESRM for additional boxes	Includes Ni-cad, Lithium ion, alkaline, etc.
Painter/Toner cartridges		Any box used to collect; picked up at facility by UPS		
Auto Shop Wastes	**Vendor Name**	**Procedure**	**Contact**	**Info**
Used absorbent	Drum wastes as they are generated; OESRM will arrange for pickup of full drums			
Used rags	Same as above			
Used antifreeze	Same as above			
Used gas filters	Hazardous waste SOP – contact OESRM when drum is full; OESRM will arrange for pickup of full drums			
Used/Bad fuel oil	Drum wastes as they are generated; OESRM will arrange for pickup of full drums			Anything except used motor oil, gasoline is hazardous waste (contact OESRM when drum is full)
Aerosol can puncture residue	Hazardous waste – contact OESRM when drum is full; OESRM will arrange for pickup of full drums			
Asbestos waste	Drum/bag wastes as they are generated; OESRM will arrange for pickup of full drums and/or material in sea containers (HEMTs, HEMSs, and SATs should be following the two applicable MDTA SOPs for brake work)			
Motor oil/Diesel filters*	Drum wastes as they are generated; OESRM will arrange for pickup of full drums			Anything except gasoline filters may be

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		combined (see above for gas filters)
Aerosol cans	Aerosol cans get punctured then recycled. Please follow applicable SOP.	
"Misc" Wastes	**Vendor Name**	**Procedure**	**Contact**	**Info**
Unidentified wastes/Surplus or old product	Set material aside, contact OESRM for further instruction (see also the applicable SOP, there's a form that must be submitted to OESRM)			
Vent building wastes (BHT)	Drum wastes as they are generated; OESRM will arrange for pickup of full drums			
Old pesticides/herbicides	Hazardous waste – contact OESRM; OESRM will arrange for pickup of full drums			
Fluorescent lamps* (FMT)	Use of the bulb crusher located at FMT must be compliant with the SOP.			
Billing Information				
For recycling materials and services, OESRM pays for these invoices/services. If you receive an invoice, please forward it to OESRM for payment processing				
For printer/toner cartridge recycling and for household-type battery recycling, these are no fees associated with scheduling the pickup via UPS. The label you print is a pre-paid label.				
For unpleasant waste pickups/services, OESRM pays for these invoices/services. If you receive an invoice, please forward it to OESRM for payment processing				
For hazardous waste pickups/services, OESRM pays for these invoices/services. If you receive an invoice, please forward it to OESRM for payment processing				
If you have issues with regular trash/general refuse this contact is not managed through OESRM. Please contact MDTA Facilities Operations for service modifications or issues (Skip Harrison 7-5686).				

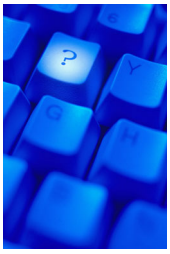
If you have questions or need information, give us a call or stop by our offices. OESRM's goal, with its partners in Operations, is to ensure the success of MDTA's Environmental Management System (EMS). We can do this by supporting you.

Paul Truntich, OESRM Director 410-537-7665 or ptruntich@mdta.maryland.gov
Alisha Bennett, Environmental Manager 443-256-6180 or aburgam@mdta.maryland.gov
Robert Thompson, Environmental Analyst 443-478-0128 or rthompson6@mdta.maryland.gov
Barbara Krupiarz, Environmental Analyst 443-463-1097 or bkrupiarz@mdta.maryland.gov
Rebecca Price, Environmental Analyst 410-571-0440 or rprice@mdta.maryland.gov

* Diesel and motor oil filters may be crushed at your facility, then drained, then deposited in your "used oil" fifteen drum. Under no circumstances should gasoline filters be mixed with other oil filters.
* All light bulbs, fluorescent lamps, CFLs, HIDs, light ballasts, etc. must be managed at the facility in compliance with the Universal Waste SOP (hyperlinked above) and then delivered to the FMT "Light Trailer" for removal.

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Questions?



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OESRM – Environmental Contact Information

Paul Truntich, Director of OESRM
410-537-7665 and ptruntich@mdta.state.md.us

Alisha Bennett, Environmental Manager
410-537-7667 and adurgam@mdta.state.md.us

Rob Thompson, Environmental Analyst
410-537-7660 and rthompson6@mdta.state.md.us

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Section Quiz

1. To ensure containers do not leak due to expansion of its contents, a container should only be filled to __90__ % of its maximum capacity.
2. The maximum quantity of hazardous waste that may be collected at a satellite accumulation area at any time is __55__ gallons.
3. Containers must be kept __closed__ except when adding or removing hazardous waste.
4. When do you label the accumulation start date on a hazardous waste drum at a satellite accumulation area?
   a. When you have 55 gallons or more of waste
   b. When you start accumulating the waste
   c. When you move it to the HWSA
   d. Both a and c
5. When does the accumulation start date begin for **universal waste**?
   a. When you start accumulating waste
   b. When you reach the maximum volume limit
   c. When you move it to the 90-day storage
   d. Both b and c

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Section Quiz

6. Universal waste may only be accumulated for up to one year once the accumulation start date begins.

   a. Hazardous b. Universal c. Non-hazardous d. Aerosol

7. Hazardous waste drums may be stacked on top of each other inside of the 90-day Storage Building

   a. True b. False

8. Even though broken lamps release a small amount of mercury, they can still be disposed of with regular garbage.

   a. True b. False

How often are you are allowed to bring waste from home to your facility?

a. Always b. Sometimes c. Never

If you find an unknown drum on the side of the road during active duty, call OESRM and do not bring back to your facility.

a. True b. False

MDTA Maryland Transportation Authority

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Appendix B: Public or Personnel Involvement and Participation Supporting Documentation

Attention: Students Grades 4 through 12

E·STEM
ENVIRONMENTAL EDUCATION
SCIENCE • TECHNOLOGY
ENGINEERING • MATH

Come and join your friends...

Earth Day Commemoration and Environmental STEM Event!

When: **Thursday, April 11, 2019**
5:00 p.m. – 7:00 p.m.

Where: **Sollers Point Multi-Purpose Center**
323 Sollers Point Road
Dundalk, MD 21222

Through an interactive presentation and fun hands-on activities, you will learn about caring for your environment, including the waterways leading to the Chesapeake Bay, and Environmental STEM opportunities. Food will be provided.

Your parents are encouraged to call **443-857-9279** or email **hlackslegacy@gmail.com** to reserve your seat.

The event is proudly sponsored by The Henrietta Lacks Legacy Group and the Environmental Division of the Maryland Transportation Authority's Office of Engineering and Construction.

Henrietta Lacks Legacy Group
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MDTA
Maryland Transportation Authority











MARYLAND DEPARTMENT OF TRANSPORTATION

2019 ANNUAL ATTAINMENT REPORT

On Transportation System Performance

Implementing the Maryland Transportation Plan & Consolidated Transportation Program









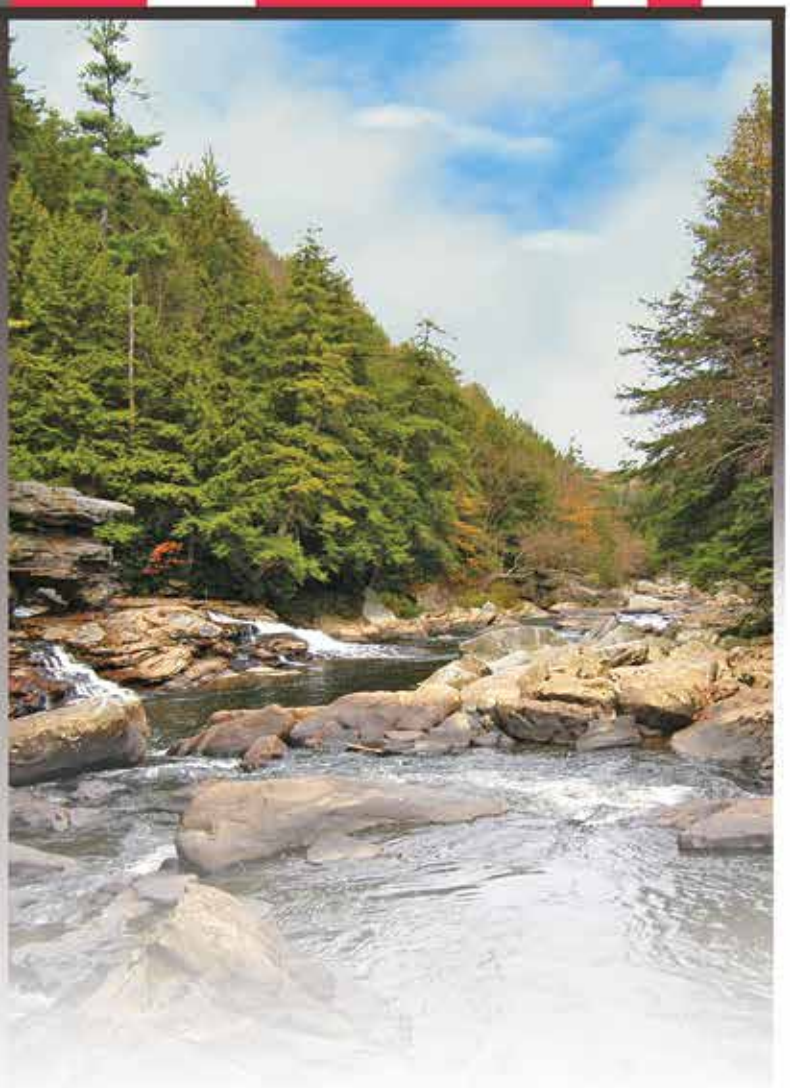
Larry Hogan
Governor

Boyd K. Rutherford
Lt. Governor

Pete K. Rahn
Secretary

Goal: Ensure Environmental Protection and Sensitivity

Deliver sustainable transportation infrastructure improvements that protect and reduce impacts to Maryland's natural, historic and cultural resources



OBJECTIVES:

- **Protect and enhance the natural, historic and cultural environment through avoidance, minimization and mitigation of adverse impacts related to transportation infrastructure, including support for broader efforts to improve the health of the Chesapeake Bay**
- **Employ resource protection and conservation practices in project development, construction, operations and maintenance of transportation assets**
- **Implement initiatives to reduce fossil fuel consumption, mitigate Greenhouse Gas (GHG) and improve air quality**

In implementing its policies, programs and projects, MDOT has shown continued commitment to minimizing adverse impacts on the environment, conserving natural resources and integrating sustainability into various aspects of transportation systems. MDOT and its TBUs recognize that the protecting of natural resources and conducting business in an environmentally responsible manner are among the core elements of their overall mission. Among the ways to reduce effects of transportation and the built-environment include effective planning, interdisciplinary approaches to project development, sustainable operations and maintenance procedures.

MDOT's commitment to environmental protection influences a wide variety of plans, projects and initiatives and is present in the day-to-day operations of the TBUs. Examples of the far-reaching environmental initiatives of the Department include the MDOT MPA Innovative and Beneficial Reuse of Dredged Material Initiative, the Port of Baltimore Dray Truck Replacement Program, MDTA's Police Headquarters Shoreline Cleanup and MDOT SHA's tracking of Bay Restoration projects.

MDOT's TBUs often work in close coordination on environmental projects to comply with various laws and ensure a successful outcome of the planned projects. One such project, which won the MDOT's 2018 Environmental Excellence Award, is the Broad Creek Stream Restoration project, which was a unique collaboration between MDOT SHA, MDOT MVA and the South River Federation. The project was designed and built to offset the impacts of impervious surfaces in the watershed through restoration of three outfalls and 2,800 linear feet of stream channels.

Interagency coordination efforts, including Maryland's Green Infrastructure Plan and Chesapeake Bay Restoration priorities, have successfully facilitated coordinating transportation with land use, natural features and other components to help ensure that transportation improvements have minimal or mitigated impacts to the environment.

MDOT is demonstrating leadership and vision by installing solar photovoltaic systems on sites owned by MDOT's TBUs that are being considered for development. MDOT is the first State DOT to establish a comprehensive solar program looking at all of its facilities for potential installation of solar. MDOT makes a continued commitment to environmental compliance, continuous improvement of its environmental performance through established processes and adherence to sustainable practices, while maintaining outreach and communication about its environmental activities with the public.

MDOT ENVIRONMENTAL INITIATIVES

- **MDOT MAA:** MDOT MAA is investing in clean and innovative technology, including the procurement of 20 new electric buses for shuttle bus operations at the BWI Marshall Airport.
- **MDOT TSO:** MDOT's Renewable Energy Master Contract for sites owned by MDOT business units is to be considered for photovoltaic system development. More than 874 facilities, including agency buildings, parking garages and parking lots can potentially be considered for solar installation. MDOT TSO issued six Master Services Agreements (MSA) for qualified contractors to design, construct, commission, finance, operate and maintain renewable energy facilities at MDOT locations throughout Maryland.
- **MDOT MTA:** As part of MDOT MTA's bus replacement program, the delivery of 172 40-foot clean diesel buses was completed in FY 2017 and an additional 140 buses have been ordered for delivery in FY 2018 and FY 2019 for its transition to cleaner fuel vehicles and improved air quality.
- **MDTA:** MDTA continues to implement an active environmental management program through the deployment of Electric Vehicle (EV) charging stations.
- **MDOT MPA:** With a Diesel Emissions Reduction Act (DERA) grant from the U.S. Environmental Protection Agency, MDOT MPA continues to replace dray trucks, and helped the Canton Railroad install idle-reduction technology in six switcher locomotives that operate at the Port, thereby reducing emissions from transportation in and around the terminals.
- **MDOT MVA:** MDOT MVA continues its energy conservation efforts including management of its carbon footprint, mitigation of emissions and reducing facility energy consumption by 20% by FY 2020, while providing comfortable cooling and heating temperatures aligned with Maryland's Energy Code.
- **MDOT SHA:** MDOT SHA completed a statewide coastal vulnerability assessment. Data from the vulnerability assessment is being integrated into planning and programming to ensure resilient and reliable transportation. Vulnerability assessment data is available for counties to utilize and has been incorporated into county reports that will provide roadway vulnerability information for all state and locally maintained roads. The completed data is available in a viewer with free access for county planners and emergency services, and is being integrated into asset management systems and project planning. Pilot studies were completed to determine methodology for assessing vulnerability to flooding in non-coastal locations and is being implemented in FY 2019. National Environmental Policy Act (NEPA) review for MDOT SHA projects now includes screening for locations subject to future sea level inundation. MDOT SHA achieved its highest percentage of recycled asphalt pavement usage in asphalt mix in CY 2017, using 455,554 tons in MDOT SHA construction projects.





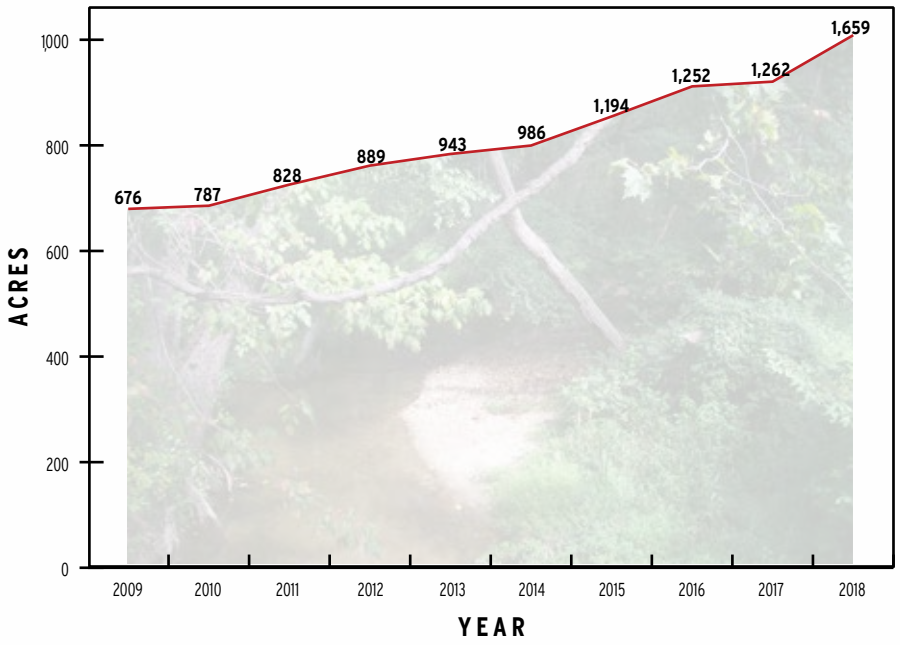
OBJECTIVE:

Protect and enhance the natural, historic and cultural environment through avoidance, minimization and mitigation of adverse impacts related to transportation infrastructure, including support for broader efforts to improve the health of the Chesapeake Bay

ACRES OF WETLANDS OR WILDLIFE HABITAT CREATED, RESTORED OR IMPROVED*



MDOT agencies are in compliance with the various permits that are granted to construct projects needed to improve the transportation system on land and offshore.



* This measure now includes data provided by MDOT MPA, MDOT SHA and MDTA.

Why Did Performance Change?

- MDOT SHA and MDTA create wetlands to mitigate the unavoidable environmental impacts from transportation projects that impact sensitive areas, consistent with compliance requirements
- MDOT MPA made significant progress in improving water quality by installing engineered stormwater treatment technologies that remove a variety of stormwater pollutants at cargo terminals

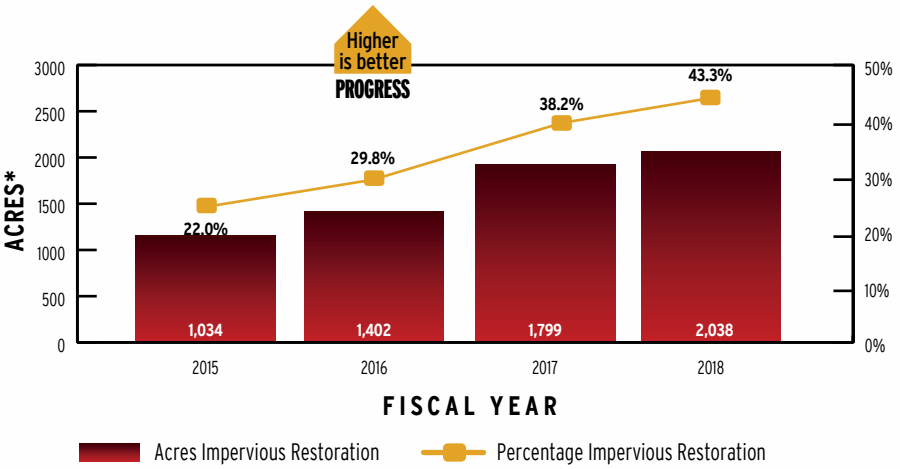
What Are Future Performance Strategies?

- Long term mitigation efforts include Hart-Miller Island North Cell restoration, Masonville's eastern uplands and the Poplar Island Expansion
- The Environmental Strategic Plan will drive future programs and initiatives such as including developing a clean air strategy for the terminal based on emerging technologies and programs; implementing a "trash-free port" pilot program
- Award a stormwater improvements contract to remove a variety of stormwater pollutants at four terminals: Seagirt, Masonville, Fairfield and South Locust Point

WATER QUALITY TREATMENT TO PROTECT AND RESTORE THE CHESAPEAKE BAY



This measure tracks MDOT SHA compliance with achieving impervious surface reduction as required by the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. This measure reports the acres of impervious surface treatment associated with Bay restoration projects to determine overall progress toward the 20% goal during their five-year permit term.



Target: 4,709 Acres by October 2020
* Number of Acres each year are rounded.

Why Did Performance Change?

- MDOT SHA treated a cumulative 9% of MDOT's impervious surface not previously treated
- Continued implementation of stormwater management and total maximum daily load (TMDL) improvements to reduce pollution entering local waterways and ultimately the Chesapeake Bay

What Are Future Performance Strategies?

- MDOT SHA's Full Delivery Stream Restoration projects will deliver over 150,000 linear feet of stream restoration (1,500 MS4 restoration credit acres) when completed
- MDOT SHA is using a contracting approach to increase efficiency across the project implementation activity spectrum

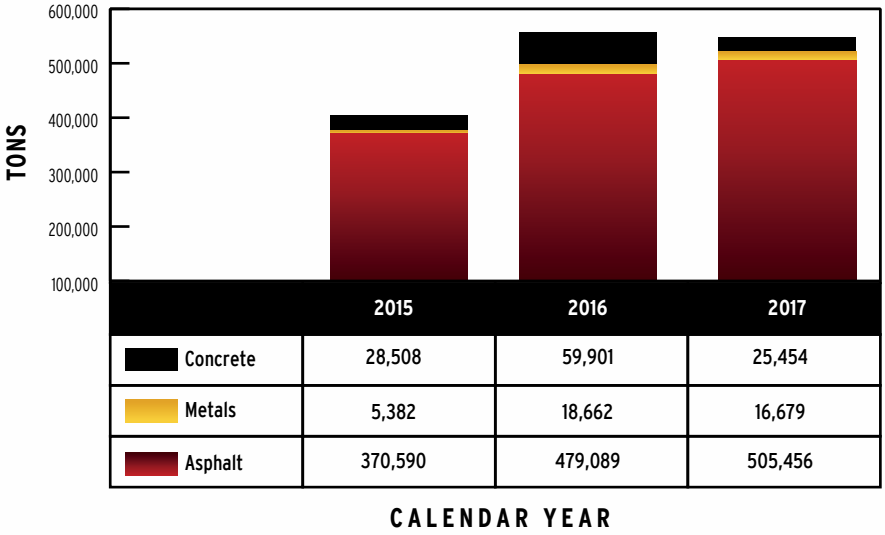
OBJECTIVE:

Employ resource protection and conservation practices in project development, construction, operation and maintenance of transportation assets

RECYCLED/REUSED MATERIALS FROM MAINTENANCE ACTIVITIES AND CONSTRUCTION/DEMOLITION PROJECTS*



Maryland's Department of the Environment (MDE) has established a "Zero Waste" Action Plan. This measure tracks the reduction of the TBU's impact on solid waste landfill through recycling/reuse of metal, asphalt and concrete. Due to the number and type of construction/demolition activities and projects, we recognize that there may be variability among reporting periods and TBUs.



* Due to the number and type construction/demolition activities and projects, there is variability among reporting periods and TBUs.

Why Did Performance Change?

- MDOT SHA achieved the highest percentage of Recycled Asphalt Pavement (RAP) usage in asphalt mix in CY 2017
- MDOT SHA contractors can now choose recycled concrete-graded aggregate base (RC-GAB) instead of conventional GAB material provided the material specifications are met

What Are Future Performance Strategies?

- MDOT SHA will partner with the aggregate industry to devise methods and plans to encourage production and use of more RC, and will coordinate with the pavement design group to recommend increasing recycling road projects where applicable
- The TBUs established plans to recycle and/or reuse their solid waste metal, asphalt and concrete and will establish central data collection mechanisms and procedures, requiring contractors to segregate, collect, weigh and recycle these materials

UTILITY ELECTRICITY USE & RENEWABLE ENERGY GENERATION

MDOT is committed to reducing electricity consumption through efficiency measures and renewable energy sources to help Maryland reach its clean energy and GHG reduction goals. Reducing energy consumption and generating renewable energy can save Maryland taxpayers money, generate revenue and decrease harmful air emissions. MDOT measures both the consumption of utility energy and the amount of renewable energy generated by MDOT.

MEGAWATT HOURS IN THOUSANDS (FY)	2013	2014	2015	2016	2017
Electricity Use	396	393	383	384	364
Renewable Energy Generation	1.88	1.525	1.759	1.998	1.629



Why Did Performance Change?

- TBUs completed a comprehensive Energy Plan that details its energy-consuming facilities, existing and future energy conservation strategies, and future energy conservation goals
- Continued to implement energy conservation measures that upgrade lighting, HVAC units, windows and roofs
- MDOT contractors will design, construct, commission, finance, operate and maintain photovoltaic (PV) facilities at MDOT locations throughout Maryland

What Are Future Performance Strategies?

- MDOT's Energy Managers Workgroup continues to meet bimonthly to discuss current trends and challenges, share best practices and determine ways to responsibly leverage MDOT resources
- Continue to increase capacity for renewable energy generation by constructing new solar PV facilities

OBJECTIVE:

Implement initiatives to reduce fossil fuel consumption, mitigate greenhouse gases and improve air quality

TRANSPORTATION-RELATED EMISSIONS BY REGION



MDOT plans, programs and projects continue to meet federal and State requirements for air quality. MDOT efforts also result in GHG emissions reductions, which assist the State in meeting its GHG goals.

		CALENDAR YEAR				
PERFORMANCE MEASURE	REGION	2008	2011	2014	2017	% CHANGE 2005-2014
Volatile Organic Compound (VOC) Tons per Day	Baltimore	52.8	45.5	41.3	25.9	-51%
	Washington	44.2	39.2	35.4	23.9	-46%
	Other	25.8	20.7	21.1	13.4	-48%
Nitrogen Oxide (NOx) Tons per Day	Baltimore	107.8	89.5	79.5	53.7	-50%
	Washington	84.0	74.4	63.3	45.3	-46%
	Other	52.7	44.4	44.2	32.8	-38%
Carbon Monoxide (CO) Tons per Day	Baltimore	541.9	445.1	431.8	365.0	-33%
	Washington	433.4	363.6	352.6	335.5	-23%
	Other	273.2	202.4	229.1	180.1	-34%
Particulate Matter (PM2.5) Tons per Day	Baltimore	4.6	3.5	3.4	2.2	-52%
	Washington	3.6	2.9	2.7	1.9	-48%
	Other	1.9	1.4	1.5	1.1	-44%

* All emission estimates developed as part of the USEPAs National Emissions Inventory (NEI). The NEI is published every three years.
** All Washington data represents Maryland's share of emissions in the Washington region non-attainment areas, including Charles, Frederick, Montgomery and Prince George's counties.



Why Did Performance Change?

- MDOT MAA procured 20-60' articulated shuttle buses powered by Compressed Natural Gas (CNG) for transportation between the BWI Marshall Airport terminal and the Consolidated Rental Car Facility
- MDOT continued to invest in projects promoting alternative methods of transportation; in 2018, $17 million was set aside for 43 bicycle and pedestrian projects
- MDOT MTA and Locally Operated Transit Systems (LOTS) continue to update and renew their bus fleets to maintain the average age of the fleet, resulting in reduced emissions, fuel consumption and noise
- Coordinated with local businesses, public stakeholders and rideshare companies to address diverse emissions reductions strategies such as telecommuting, carpool lot locations and congestion mitigation
- With DERA grants, replaced more than 173 dray trucks that routinely call at the Seagirt Marine Terminal

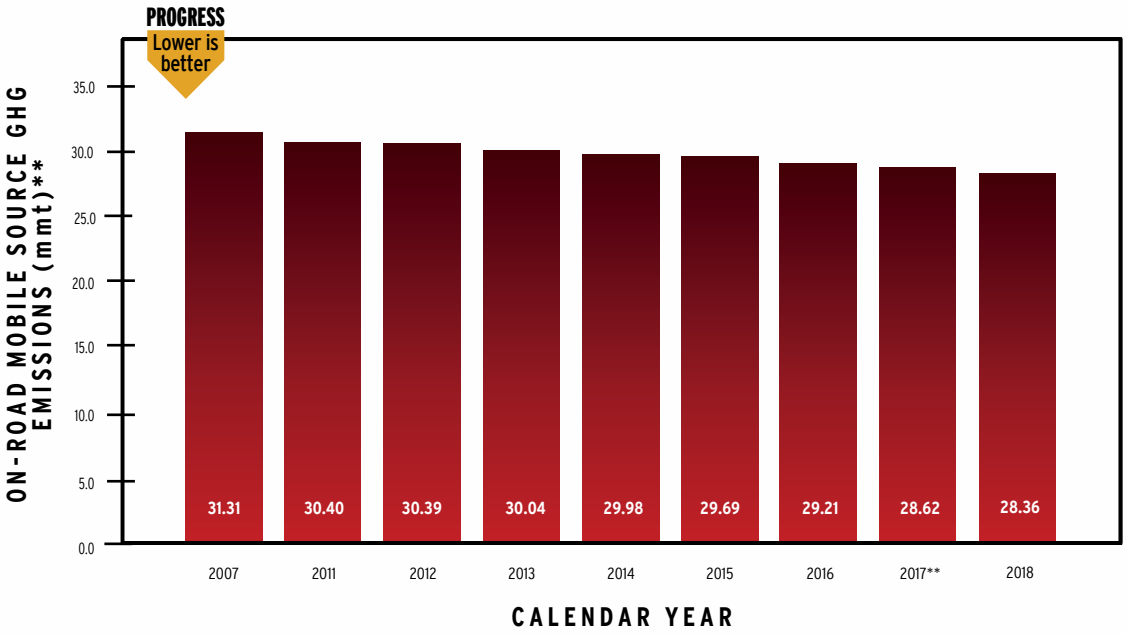
What Are Future Performance Strategies?

- The FY 2018–FY 2023 CTP set aside $3.310 billion for transit projects that will increase transit reliability and contribute to emissions reductions, including two recent successful Transportation Investment Generating Economic Recovery (TIGER) grant recipients for Bus Rapid Transit (BRT)
- The MDOT MTA has developed and awarded the first few statewide Transit Innovation Grants aimed at incorporating innovative transit-related investments to modernize Maryland's transit
- MDTA will continue to update its toll facilities to be all-electronic and reduce the amount of time spent idling in payment lines
- MDOT developed a Corridor Priority Tool to evaluate truck volumes, freight density, intermodal connections and bottlenecks to identify Maryland's critical urban and rural freight corridors and to prioritize freight-related projects
- MDOT MAA is looking to procure inductive electric shuttle buses using the Volkswagen settlement grant opportunity

TRANSPORTATION-RELATED GHG EMISSIONS

MAKING PROGRESS

Maryland has made substantial progress in combating air pollution and GHG emissions, with transportation policies and investments playing a key role in these improvements. MDOT programs supporting fuel and vehicle technology improvements, transportation demand management (TDM), transit and projects that reduce roadway congestion, all support air quality goals.



Target: 25% below 2006 emissions by 2020. For on-road transportation, the goal equals 23.5 mmt CO2e in 2020 and 40% below 2006 emissions by 2030*

* The MDOT selected GHG emission reduction goal is consistent with the statewide target set in the 2009 Greenhouse Gas Reduction Act and the subsequent 2016 Greenhouse Gas Reduction Act reauthorization.

** MMT CO2e stands for million metric tons of carbon dioxide equivalents, the standard unit of measurement for GHG emissions. Emissions are calculated using the most recent data and version of EPAs MOVES model available at time of analysis. MOVES2014a is used for analysis year 2016, 2017, and 2018. 2017 annual VMT revised to reflect actual MDOT SHA reported 2017 HPMS VMT.

Why Did Performance Change?

- On-road transportation GHG emissions continue to decrease in Maryland as the efficiency of the on-road vehicle fleet improves even as vehicle miles traveled (VMT) growth continued in 2017 and 2018
- MDOT SHA's Coordinated Highways Action Response Team (CHART) program continues to yield substantial GHG reductions associated with the efficient management of incidents, traveler information and other on-road infrastructure technologies that reduce delay
- MDOT's design-build approach to improve reliability and reduce congestion along the I-270 corridor will utilize innovative technology to manage congestion and reduce GHG emissions
- As part of its continued effort to refine its TDM approach, MDOT, in 2017, initiated a listening campaign of commuters and residents and held interviews of large employers to understand motivating factors and barriers to maximizing the use of TDM options

What Are Future Performance Strategies?

- MDOT MPA will initiate a study to determine carbon sequestration in the created wetland/coastal ecosystems at Hart Miller Island
- MDOT SHA completed a statewide coastal vulnerability assessment; pilot studies to determine methodology for assessing vulnerability to flooding in non-coastal locations were completed, which are being implemented in FY 2019
- MDOT is leading implementation of the bicycle and pedestrian priority area (BPPA) program, supporting localities in designating areas and developing plans leading toward implementation of network improvements in these areas



OBJECTIVE:

Implement initiatives to reduce fossil fuel consumption, mitigate greenhouse gases and improve air quality

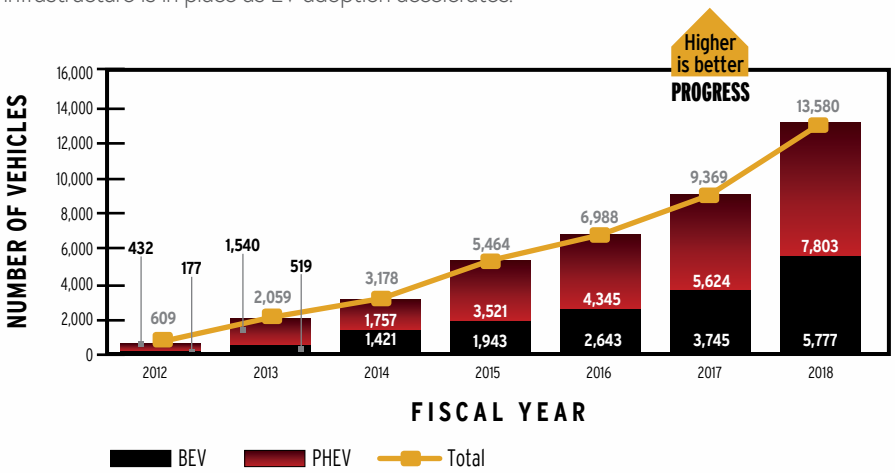
TOTAL ELECTRIC VEHICLES (EVS) REGISTERED IN MARYLAND AND TOTAL PUBLICLY AVAILABLE EV CHARGING INFRASTRUCTURE

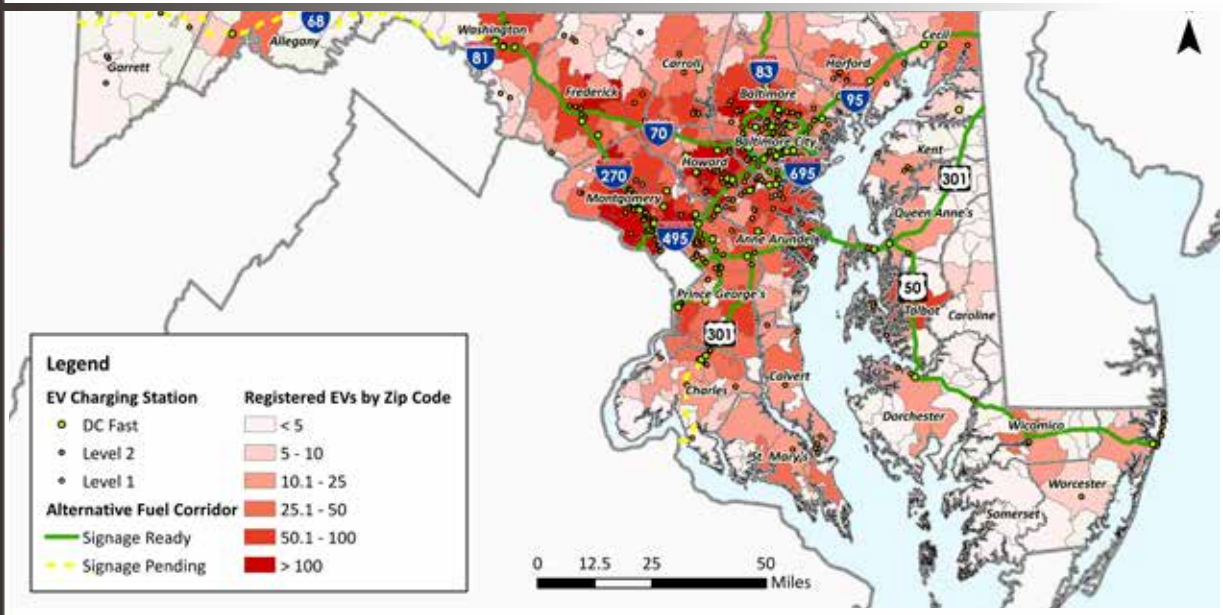




Maryland has a goal of 60,000 EV registrations in the State by 2020 and 300,000 by 2025. These goals represent a key component of ensuring that Maryland meets our GHG emission reduction goal of 40% from 2006 levels by 2030.

Drivers in Maryland are encouraged to buy EVs through tax benefits and rebates, leading to an increase in EVs across the state. The installation of electric vehicle supply equipment (EVSE) will continue to be critical in addressing range-anxiety and ensuring that adequate EV charging infrastructure is in place as EV adoption accelerates.





Why Did Performance Change?

- The Maryland EV Excise Tax Incentive was renewed during the 2017 Legislative Session, making EVs more financially accessible to more Maryland residents by offering a tax rebate of up to $3,000 for the purchase of an EV
- MDOT successfully submitted and received additional designation of alternative fuel/electric vehicle corridors under the Fixing America's Surface Transportation (FAST) Act; the new corridors include US 301, I-83, I-81, and I-695 and were added to the four existing corridors I-95, US 50, I-270 and I-70/I-68
- MDOT continued a direct EV outreach campaign throughout 2018 and has engaged 3,600 Marylanders across 12 Counties. The outreach campaign is designed to educate Marylanders on the benefits/advantages of EVs and to dispel any commonly held misbeliefs surrounding EVs and EVSE

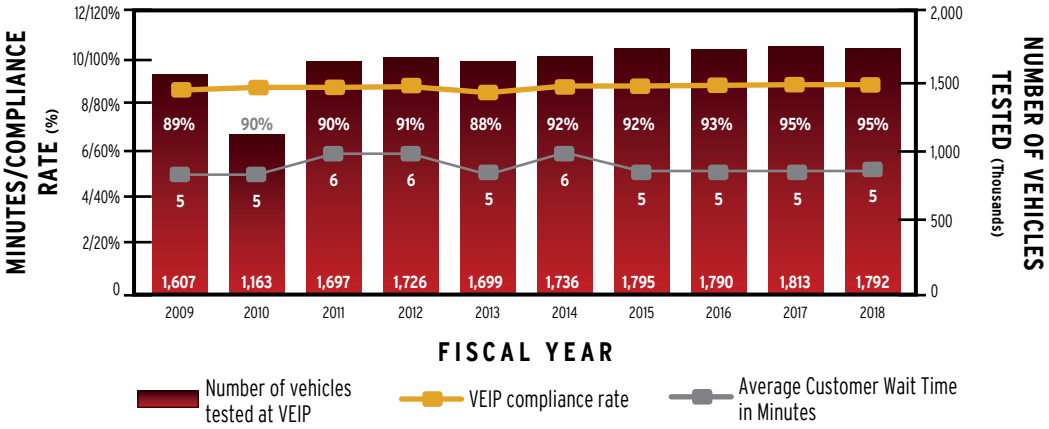
What Are Future Performance Strategies?

- MDOT will continue to lead the Electric Vehicle Infrastructure Council (EVIC) to promote and incentivize EV adoption and EVSE installation
- Maryland will continue to participate in State and region-wide efforts to install signage along our EV charging corridors

COMPLIANCE RATE AND NUMBER OF VEHICLES TESTED FOR VEHICLE EMISSIONS INSPECTION PROGRAM (VEIP) VERSUS CUSTOMER WAIT TIME

ON TRACK

Monitoring the VEIP testing compliance rate ensures system effectiveness and identifies vehicles exceeding allowable standards. Tracking the average wait time at VEIP stations ensures that the 15-minute average wait time requirement is met. Timely and efficient customer service helps the state meet federal clean air standards by identifying polluting vehicles and encouraging regular vehicle maintenance. In 2018, MDOT MVA implemented a recommendation from the Governor's Regulatory Reform Commission's 2016 report, extending initial VEIP inspections for new vehicles by one year, saving Maryland taxpayers money while maintaining critical environmental protections.



* 2018 data is preliminary and subject to change. 14 counties offer VEIP tests: Anne Arundel, Baltimore, Baltimore City, Carroll, Harford, Howard, Queen Anne's, Cecil, Washington, Calvert, Charles, Frederick, Montgomery and Prince George's.

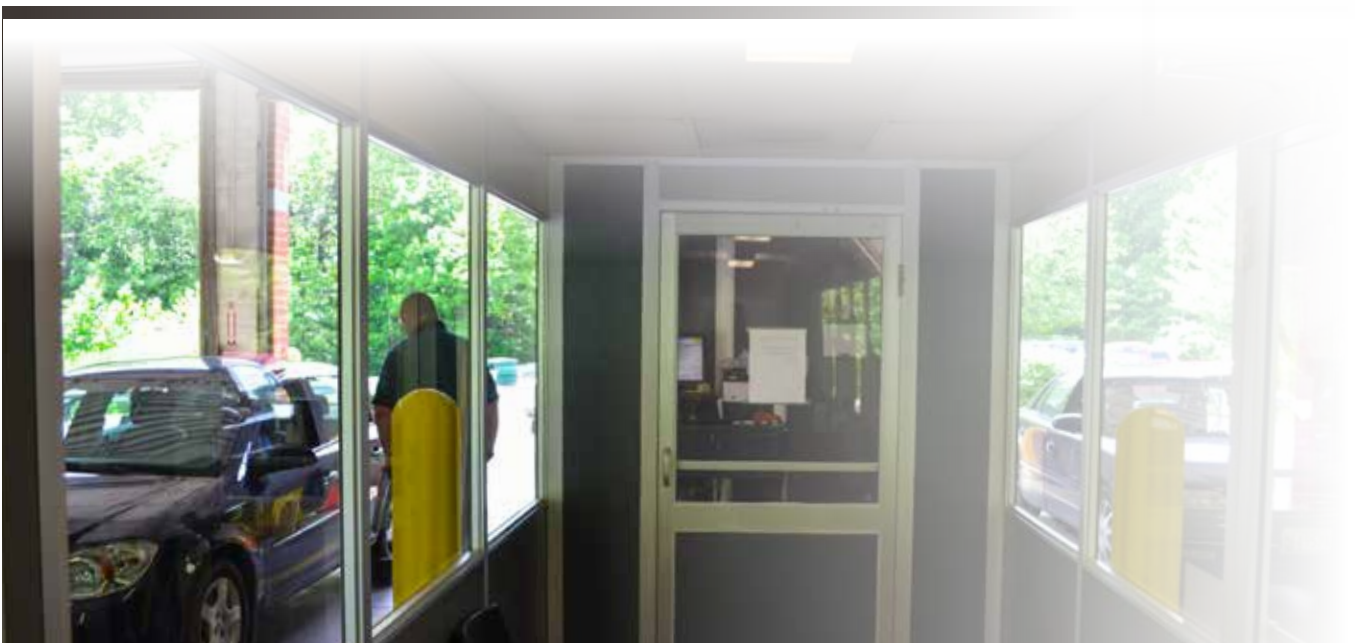


Why Did Performance Change?

- MDOT MVA sent e-mails to customers needing to have their vehicle's emissions inspected
- MDOT MVA modified VEIP kiosk screens for more flexibility to accept late fee payments and process VEIP test for vehicles beyond their expiration date
- MDOT MVA coordinated with VEIP kiosk support to secure two dedicated technicians who were allowed to access the system remotely and auto correct software

What Are Future Performance Strategies?

- Continue to monitor performance of the installed vehicle emissions self-serve kiosks and research emerging technologies for future changes to the program
- Add a cable to the On Board Diagnostics (OBD) device at the VEIP kiosk to improve connectivity
- Install Spanish language option at select VEIP kiosks



MARYLAND DEPARTMENT OF TRANSPORTATION





Implementing the Maryland Transportation Plan and Consolidated Transportation Program

2020 Annual Attainment Report

On Transportation System Performance

/ Larry Hogan, Governor
/ Boyd K. Rutherford, Lt Governor
/ Gregory Slater, Acting Transportation Secretary



GOAL: Ensure Environmental Protection and Sensitivity



Deliver sustainable transportation infrastructure improvements that protect and reduce impacts to Maryland's natural, historic, and cultural resources

OBJECTIVES:

- **Protect and enhance the natural, historic, and cultural environment through avoidance, minimization, and mitigation of adverse impacts related to transportation infrastructure, including support for broader efforts to improve the health of the Chesapeake Bay**
- **Employ resource protection and conservation practices in project development, construction, operations, and maintenance of transportation assets**
- **Implement initiatives to reduce fossil fuel consumption, mitigate Greenhouse Gas (GHG), and improve air quality**

MDOT has demonstrated its continued commitment to minimizing adverse impacts on the environment, conserving natural resources, and integrating sustainability into various aspects of transportation systems at the policy, program, and project levels of implementation. MDOT and each Transportation Business Unit (TBU) recognize that the protection of natural resources and conducting business in an environmentally responsible manner are among the core elements of their overall mission. They continue to reduce effects of transportation and built-environment by way of effective planning, interdisciplinary approach to project development, sustainable operations, and maintenance procedures.

MDOT's commitment to environmental protection influences a wide variety of plans, projects, and initiatives and is present in the day-to-day operations of the TBUs. Examples of the far-reaching environmental initiatives of the department include the MDOT MPA Innovative and Beneficial Reuse of Dredged Material Initiative, the Port of Baltimore Dray Truck Replacement Program, and MDOT SHA's Bay restoration projects, implemented to meet regulatory requirements. MDOT MPA was honored for its continued commitment and stewardship of wildlife habitat through outreach and educational programming. The American Association of Port Authorities (AAPA) has honored MDOT MPA for its 10-year stewardship of community education and outreach programs at Masonville Cove, an urban wildlife habitat area along the Patapsco River.

All MDOT TBUs incorporate environmental Best Management Practices (BMPs) as part of the Chesapeake Bay Restoration efforts. To effectively reduce pollution in stormwater runoff from highway projects, MDOT SHA developed a Bay Restoration viewer that allows the public to view completed and proposed highway projects implementing BMPs such as tree planting, removing impervious areas, stream restoration, etc.

Interagency coordination efforts including Maryland's Green Infrastructure Plan and Chesapeake Bay Restoration priorities have facilitated better alignment between transportation, land use, and natural features to minimize or mitigate impacts to the environment. MDOT continues to collaborate with other regional, State, and local agency partners in exploring regional policies to reduce carbon emissions and other pollutants from the transportation sector and improve transportation systems as part of their ongoing participation in the Transportation and Climate Initiative (TCI).

MDOT continues to lead the way in renewable energy by demonstrating leadership and vision in implementing the installation of solar photovoltaic systems on sites owned by MDOT's TBUs to be considered for development. It has become the first State DOT to generate jobs in the process of adding solar power to MDOT's facilities.

MDOT makes a continued commitment to environmental compliance, enhances improvement of its environmental performance through established and innovative processes and adherence to sustainable practices, while maintaining outreach and communication about its environmental activities with the project stakeholders and the general public.



MDOT ENVIRONMENTAL INITIATIVES

MDOT MAA: MDOT MAA has ordered an additional 20 clean diesel heavy-duty transit shuttle buses (15 40-foot and five 60-foot buses) to be used at the BWI Marshall Airport to replace older vehicles on shuttle routes between terminals, airport parking facilities, and the BWI Marshall Airport Rail Station.

MDOT TSO: MDOT issued Master Services Agreements (MSAs) to six qualified contractors to design, construct, commission, finance, operate and maintain photovoltaic (PV) energy facilities at MDOT locations throughout Maryland generating 1.8 megawatts. The MSAs provide MDOT with the flexibility of developing PV energy systems quickly and efficiently. The GHG benefit has increased by 10% over the last year and resulted in 15 metric tons of reductions.

MDOTs leadership of the Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC) continues to build opportunities, financial incentives, and promotion of the purchase of electric vehicles (EVs) and the installation of electric vehicle supply equipment (EVSE) to support the State's EV goals. As of July 31, 2019, there are a total of 21,359 EVs registered in Maryland, of which 11,492 are Battery Electric Vehicles (BEVs) and 9,867 are Plug-in Hybrid Electric Vehicles (PHEVs).

MDOT MTA: As part of the MDOT MTA bus replacement program, 140 buses were delivered in FY 2018 and FY 2019, with 350 additional clean diesel buses expected for delivery in the FY 2019–FY 2024 period.

MDTA: MDTA continues to implement an active environmental management program through the deployment of EV charging stations. In 2019 MDTA initiated construction of EV charging stations at the Baltimore Harbor Tunnel and Fort McHenry Tunnel customer service centers and initiated a feasibility study for EV charging stations at MDTA facilities.

MDOT MPA: MDOT MPA has replaced 173 Drayage Trucks with an ongoing goal to replace 50 trucks per year. They continue to progressively pursue Diesel Emission Reduction Act (DERA) grants to replace or repower diesel engines, marine vessels, and cargo handling equipment, thereby reducing emissions from transportation used at and around the port. It also helped the Canton Railroad install idle-reduction technology in six switcher locomotives that operate at the Port.

MDOT MVA: MDOT MVA continues its energy conservation efforts including management of its carbon footprint, mitigation of emissions, and reducing facility energy consumption by 20% by FY 2020, while providing comfortable cooling and heating temperatures aligned with Maryland's Energy Code. MDOT MVA has conducted an energy audit at Beltsville, Glen Burnie, Easton, Hagerstown, Largo, and Westminster sites and expects temperature adjustments and new conservation devices will reduce MDOT MVA's carbon footprint.

MDOT SHA: MDOT SHA implemented new water quality improvement projects that treated 265 acres of previously untreated impervious surfaces. MDOT SHA continued progress toward its FY 2020 restoration goal of treating 20% of its impervious surface not previously treated by stormwater management controls, reporting 15% treated in its FY 2019 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) annual report to the Maryland Department of the Environment (MDE).



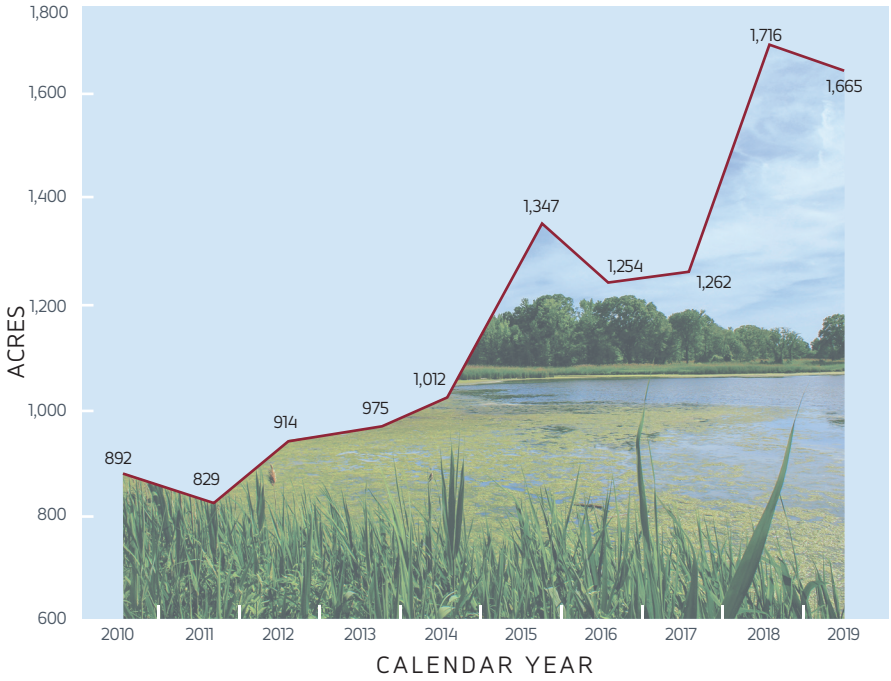
OBJECTIVE:

Protect and enhance the natural, historic, and cultural environment through avoidance, minimization, and mitigation of adverse impacts related to transportation infrastructure, including support for broader efforts to improve the health of the Chesapeake Bay

ACRES OF WETLANDS OR WILDLIFE HABITAT CREATED, RESTORED, OR IMPROVED*



MDOT agencies are in compliance with the various permits that are granted to construct projects needed to improve the transportation system on land and offshore.



*This measure now includes data provided by MDOT MPA, MDOT SHA, and MDTA cumulatively.

Why Did Performance Change?

- Installed a trash interceptor at the Dundalk Marine Terminal to prevent trash from entering via the storm drain system into the Patapsco River
- Partnered with Blue Water Baltimore to plant 1,000 trees in Baltimore City and received credits for Total Maximum Daily Load (TMDL) reduction/restoration

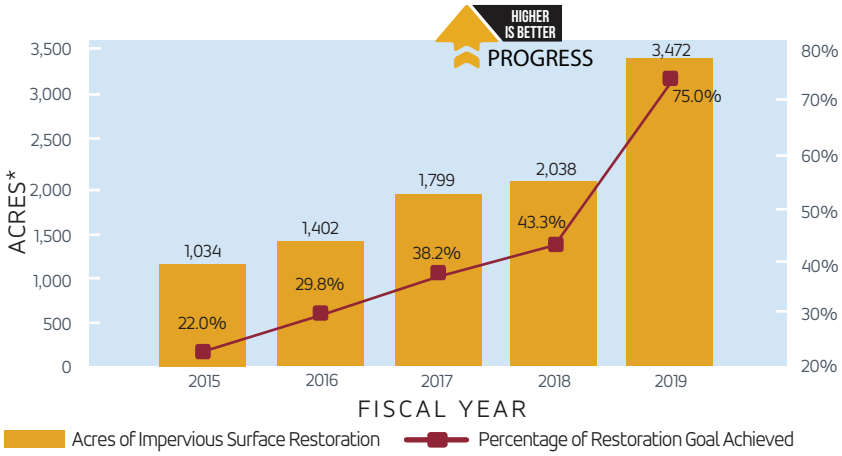
What Are Future Performance Strategies?

- Develop a clean air and water strategy for the terminal based on emerging technologies and programs
- Implement a "trash-free Port" pilot program with a tenant at the Port
- Initiate a study to determine carbon sequestration in the created wetland/coastal ecosystems at Hart Miller Island; a Storm Water Improvements contract will be awarded to remove a variety of stormwater pollutants at four terminals: ICTF, Masonville, Fairfield, and South Locust Point Marine Terminal
- The MDOT MPA is planning two projects to reduce the TMDL of pollutants going into the Bay; one is Mercedes pond at Masonville and the other is in partnership with the Maryland Zoo

WATER QUALITY TREATMENT TO PROTECT AND RESTORE THE CHESAPEAKE BAY



This measure tracks MDOT SHA compliance with achieving impervious surface restoration as required by the NPDES MS4 permit. This measure reports the acres of impervious surface treatment associated with Bay restoration projects to determine overall progress toward the 20% restoration goal during the current five-year permit term.



Target: 4,621 Acres by October 2020

* Number of Acres each year are rounded.

Why Did Performance Change?

- MDOT SHA continued implementation of stormwater management and TMDL improvements to reduce pollution entering local waterways and ultimately, the Chesapeake Bay
- MDOT SHA has restored 3,471.6 acres as of FY 2019, which is nearly 75% of its goal of restoring 4,621 acres by October 2020

What Are Future Performance Strategies?

- MDOT SHA is piloting new technology/applications to better track and coordinate inlet cleaning to improve efficiency of those maintenance operations and ultimately increase the amount of pollutants removed before they enter natural systems
- MDOT SHA is investigating and developing approaches to empower local citizen stewardship groups to increase the reach of MDOT watershed restoration resources

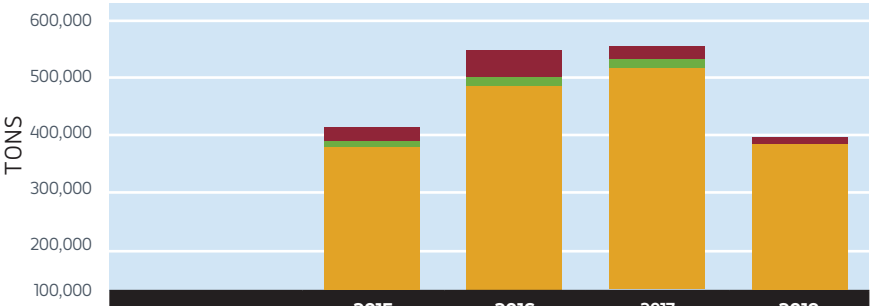
OBJECTIVE:

Employ resource protection and conservation practices in project development, construction, operations, and maintenance of transportation assets

RECYCLED/REUSED MATERIALS FROM MAINTENANCE ACTIVITIES AND CONSTRUCTION/DEMOLITION PROJECTS*



MDE has established a "Zero Waste" Action Plan. This measure tracks the reduction of the TBU's impact on solid waste landfill through recycling/reuse of metal, asphalt and concrete. Due to the number and type of construction/demolition activities and projects, we recognize that there may be variability among reporting periods and TBUs.



	2015	2016	2017	2018
Concrete	28,508	59,901	25,454	10,180
Metals	5,382	18,662	16,679	0
Asphalt	370.590	479,089	505,456	382,838

CALENDAR YEAR

*Due to the number and type of construction/demolition activities and projects, there is variability among reporting periods and TBUs.

Why Did Performance Change?

- The use of recycled asphalt materials in Hot Mix Asphalt (HMA) in CY 2018 was 23%, which is consistent with usage in previous years (20%-22%); the variations in the tonnages per year reflect the changes in the yearly tonnage of asphalt mix placed
- The tonnage of recycled concrete-graded aggregate base (RC-GAB) used in CY 2018 (10,180 tons) was greater than the average for the period 2012-2018 (8,997 tons); this may be attributed to having two qualified plants producing RC-GAB (instead of only one in 2018)

What Are Future Performance Strategies?

- MDOT SHA specification encourages the use of recycled concrete and asphalt in construction and will continue to partner with the industry to identify areas where improvements can be made to increase the use of recycled materials to construct roads that meet the safety, system preservation, and environmental needs of Maryland's communities
- Coordinate with pavement and highway design group to recommend placing more recycling road projects where applicable and explore the possibility of using more RC-GAB in road maintenance projects

UTILITY ELECTRICITY USE AND RENEWABLE ENERGY GENERATION



MDOT has prioritized improving air quality, increasing the usage of renewable energy sources, and improving water quality for all current infrastructure and future projects. With these initiatives, MDOT can reduce electricity consumption, supporting Maryland as it moves toward its clean energy and GHG reduction goals. Reducing energy consumption and generating renewable energy benefits all Maryland residents, saving taxpayers money, generating economic revenue, and decreasing air pollutants. MDOT measures the consumption of utility energy, as well as the amount of renewable energy generated by MDOT.

MEGAWATT HOURS IN THOUSANDS (FY)	2014	2015	2016	2017	2018
Electricity Use	393	383	384	364	379
Renewable Energy Generation	1.525	1.759	1.998	1.629	1.431



Why Did Performance Change?

- MDOT issued MSAs to six qualified contractors to design, construct, commission, finance, operate, and maintain PV energy facilities at MDOT locations throughout Maryland; the MSAs provide MDOT with the flexibility of developing PV energy systems quickly and efficiently
- MDOT MAA is replacing outdated HVAC units and converting airfield lighting to LED where appropriate and is in the process of incorporating energy saving and sustainability considerations into development and tenant design standards

What Are Future Performance Strategies?

- MDOT continues to expand its Renewable Energy Program and has installed solar, wind, and geothermal energy systems at a number of MDOT facilities
- MDOT's Solar Program has recently established a Renewable Energy Development Contract, which will allow a number of PV systems to be installed on MDOT properties and many of these facilities will run on solar power; this contract can be used by Maryland State agencies, counties, municipalities, and non-profits to install PV systems on their own properties

OBJECTIVE:

Implement initiatives to reduce fossil fuel consumption, mitigate greenhouse gases, and improve air quality

TRANSPORTATION-RELATED EMISSIONS BY REGION*



MDOT plans, programs, and projects continue to meet federal and State requirements for air quality by reducing vehicle emissions, improving air quality for Maryland residents. MDOT programs encourage more participation in the shared mobility economy, more usage of transit and EVs, and more safety and support for people riding bikes and walking.

		CALENDAR YEAR				
PERFORMANCE MEASURE	REGION	2008	2011	2014	2017	% CHANGE 2005-2014
Volatile Organic Compound (VOC) Tons per Day	Baltimore	52.8	45.5	41.3	25.9	-51%
	Washington**	44.2	39.2	35.4	23.9	-46%
	Other	25.8	20.7	21.1	13.4	-48%
Nitrogen Oxide (NOx) Tons per Day	Baltimore	107.8	89.5	79.5	53.7	-50%
	Washington**	84.0	74.4	63.3	45.3	-46%
	Other	52.7	44.4	44.2	32.8	-38%
Carbon Monoxide (CO) Tons per Day	Baltimore	541.9	445.1	431.8	365.0	-33%
	Washington**	433.4	363.6	352.6	335.5	-23%
	Other	273.2	202.4	229.1	180.1	-34%
Particulate Matter (PM2.5) Tons per Day	Baltimore	4.6	3.5	3.4	2.2	-52%
	Washington**	3.6	2.9	2.7	1.9	-48%
	Other	1.9	1.4	1.5	1.1	-44%

* All emission estimates developed as part of the USEPAs National Emissions Inventory (NEI). The NEI is published every three years.

** All Washington data represents Maryland's share of emissions in the Washington region non-attainment areas, including Charles, Frederick, Montgomery, and Prince George's counties.



Why Did Performance Change?

- MDOT continues to implement emission-reduction strategies in non-attainment areas to foster transportation alternatives to single occupancy vehicles, including bicycle and pedestrian projects, transit improvements, and travel demand management strategies, such as telecommuting, alternative work schedules, and carpooling, promoted through our Commuter Choice Maryland Program
- Motor vehicle emissions continue to decrease through the U.S. Environmental Protection Agency (EPA) Tier 3 Motor Vehicle Emission and Fuel Standards Program; the standards began in 2017 and will reduce ozone pollutants (NOx and VOC) by 80%, fine particulates (PM2.5) by 70%, and sulfur in gasoline by 60%
- Through the Congestion Mitigation and Air Quality (CMAQ) program, MDOT invested $48.1 million in FY 2018 on 22 projects including smart signal systemization, guaranteed ride home programs, transit improvements, and bicycle and pedestrian projects that all have emissions reductions benefits
- MDOT MPA continues to coordinate with MDE on the acquisition and implementation of GRANTS to replace drayage truck engines and cargo handling equipment at the Port of Baltimore

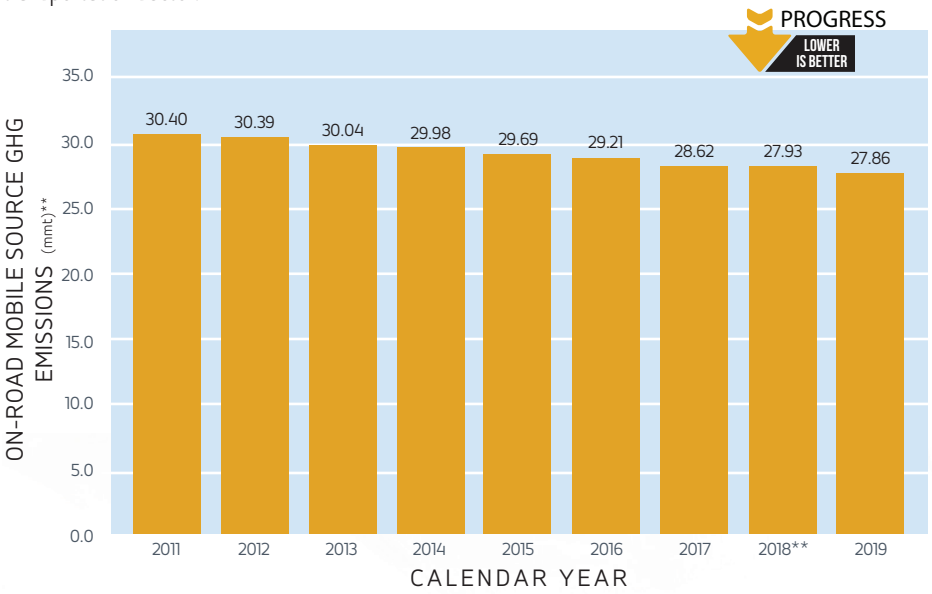
What Are Future Performance Strategies?

- MDOT MTA will continue to administer the Statewide Transit Innovation Grant (STIG) aimed at incorporating innovative transit-related investments to modernize Maryland's transit options
- MDTA will continue to update its toll facilities to be all-electronic and reduce the amount of time spent idling in payment lines
- Maryland will invest more than $9.0 million in FY 2020 grants to support 37 bicycle and pedestrian safety and connectivity across the State
- Through the Volkswagon settlement opportunity, MDOT will coordinate with MDE to implement diesel emission reduction measures, including an MDOT MAA investment in electric shuttle buses

TRANSPORTATION-RELATED GREENHOUSE GAS (GHG) EMISSIONS

MAKING PROGRESS

Many of MDOT's programs, policies, and investments support short- and long-term GHG reduction goals. MDOT is an active participant in the Maryland Commission on Climate Change and is working closely with the MDE, as well as other stakeholders, on mitigating GHG emissions from the transportation sector.



Target: 25% below 2006 emissions by 2020. For on-road transportation, the goal equals 23.5 mmt CO2e in 2020 and 40% below 2006 emissions by 2030*

* The MDOT selected GHG emission reduction goal is consistent with the statewide target set in the 2009 Greenhouse Gas Reduction Act and the subsequent 2016 Greenhouse Gas Reduction Act reauthorization.

** MMT CO2e stands for million metric tons of carbon dioxide equivalents, the standard unit of measurement for GHG emissions. Emissions are calculated using the most recent data and version of EPAs MOVES model available at time of analysis. MOVES2014a is used for analysis year 2016, 2017, 2018 and 2019. 2018 annual VMT revised to reflect actual MDOT SHA reported 2018 HPMS VMT.



Why Did Performance Change?

- MDOT MTA continues to work with Maryland's metropolitan planning organizations (MPOs), major employers and universities to expand transportation emission reduction and monitoring (TERM) programs, aimed at providing commuters and students access to financial incentives and information to support ridesharing and transit use
- On-road transportation GHG emissions continue to decrease in Maryland as the efficiency of the on-road vehicle fleet improves, even as vehicle miles traveled (VMT) growth continues
- MDOT SHA's Coordinated Highways Action Response Team (CHART) program utilizes Intelligent Transportation System (ITS) technologies to enhance travel, reduce traffic congestion, and address capacity inefficiencies that contribute to GHG reductions; this includes the deployment of cameras, traffic detectors, weather sensors, dynamic message signs, traffic websites, and telecommunications infrastructure networks
- MDOT's leadership of the ZEEVIC continues to build opportunities, financial incentives, and promotion of the purchase of EVs and the installation of EVSE to support the State's EV goals

What Are Future Performance Strategies?

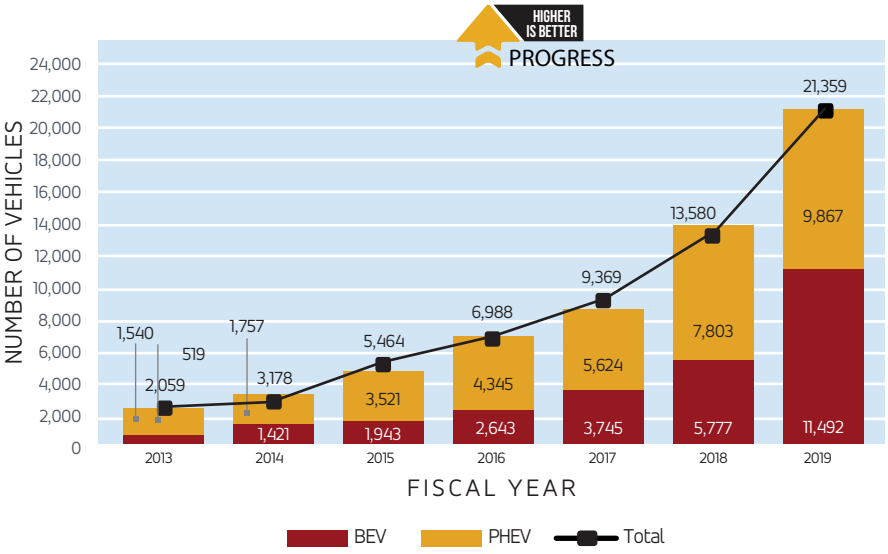
- Within the FY 2020–FY 2025 CTP, MDOT estimates that 63% (approximately $7.077 billion) of Maryland's $11.293 billion six-year capital program (excluding MDTA, capital salaries, wages, and other costs) is associated with investments that could reduce GHG emissions by 2020 and beyond
- MDOT is leading implementation of the bicycle and pedestrian priority area (BPPA) program, supporting localities in designating areas and developing plans leading toward implementation of network improvements in these areas
- MDOT SHA's investment in a progressive, design-build approach to improve reliability and reduce congestion in the I-270 corridor is an example of a project that will utilize innovative and technology focused approaches to manage congestion

TOTAL ELECTRIC VEHICLES (EVS) REGISTERED IN MARYLAND AND TOTAL PUBLICLY AVAILABLE EV CHARGING INFRASTRUCTURE

ON TRACK

Maryland has a goal of 60,000 EV registrations in the State by 2020 and 300,000 by 2025. These goals represent a key component of ensuring that Maryland meets our GHG emission reduction goal of 40% from 2006 levels by 2030.

Drivers in Maryland are encouraged to buy EVs through educational efforts, tax benefits, and rebates, leading to an increase in EVs registered across the State. The installation of EVSE will continue to be critical in addressing range-anxiety and ensuring that adequate EV charging infrastructure is in place as EV adoption accelerates.

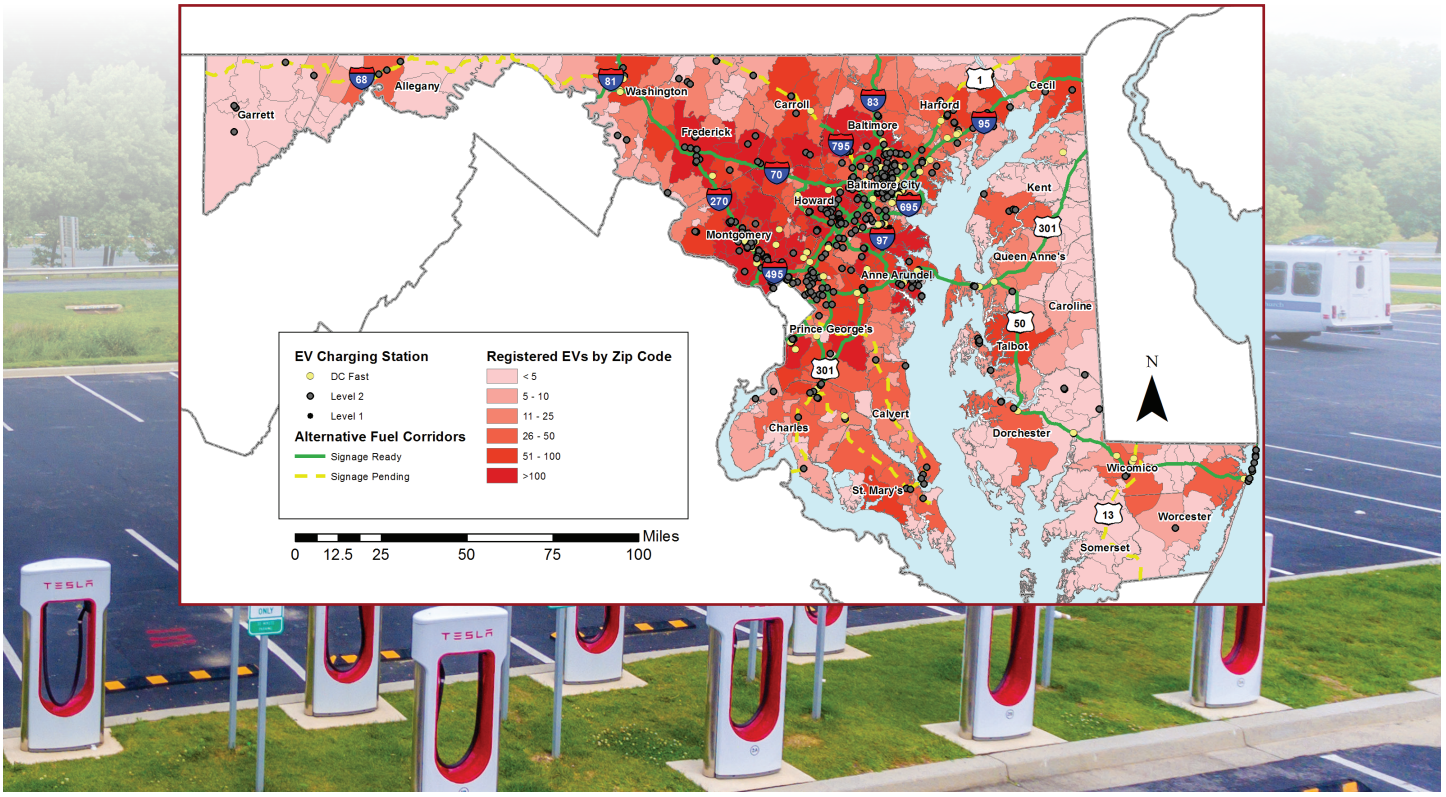


Why Did Performance Change?

- MDOT continued a direct outreach campaign throughout 2019 and has engaged over 6,700 Marylanders across 12 Counties and Baltimore City; the outreach campaign is designed to educate Marylanders on the availability and benefits of EVs
- Maryland now has 20 alternative fuel/EV corridors designated as signage ready or signage pending throughout the State
- In addition to EV excise tax incentive and the funding available for the installation of EVSE, Maryland's public utilities have entered the EVSE space under the direction of the Public Service Commission (PSC); under this order, more than 5,000 new chargers will be installed across Maryland

What Are Future Performance Strategies?

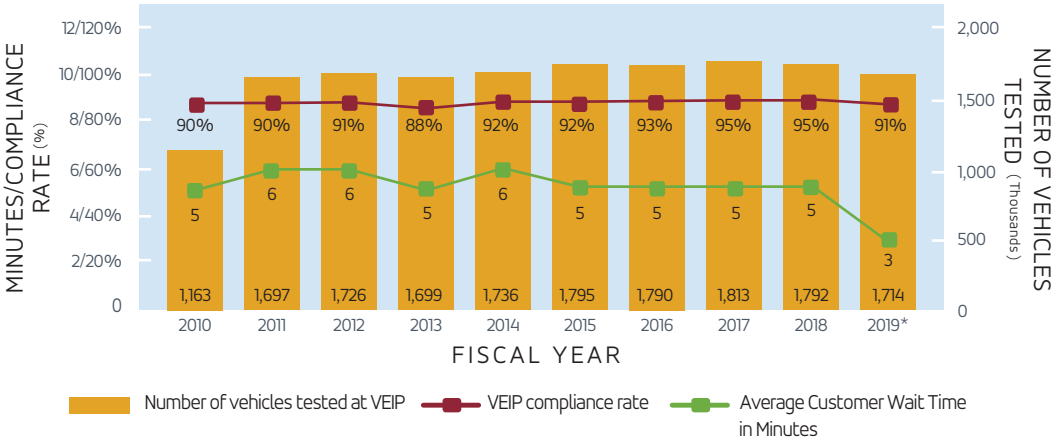
- MDOT will continue to lead the ZEEVIC to promote and incentivize zero emission vehicle (ZEV) adoption, including the promotion of EV adoption and EVSE installation
- Maryland will continue to participate in State and region-wide efforts to install signage along our EV charging corridors
- Maryland will continue to provide educational materials through the **MarylandEV.org** and #MarylandEV platforms



COMPLIANCE RATE AND NUMBER OF VEHICLES TESTED FOR VEHICLE EMISSIONS INSPECTION PROGRAM (VEIP) VERSUS CUSTOMER WAIT TIME

MAKING PROGRESS

Monitoring the VEIP testing compliance rate ensures system effectiveness and identifies vehicles exceeding allowable standards. Tracking the average wait time at VEIP stations ensures that the 15-minute average wait time requirement is met. Timely and efficient customer service helps the State meet federal clean air standards by identifying polluting vehicles and encouraging regular vehicle maintenance.



* 2019 data is preliminary and subject to change. 14 counties offer VEIP tests: Anne Arundel, Baltimore, Baltimore City, Carroll, Harford, Howard, Queen Anne's, Cecil, Washington, Calvert, Charles, Frederick, Montgomery, and Prince George's.



Why Did Performance Change?

- In FY 2019, MDOT MVA saw an overall decrease in number of VEIP-eligible vehicles being tested due to regulations which extended VEIP compliance for new cars and exempted pre 1995 vehicles
- There were slight changes in the compliance rate due to an increase in VEIP extensions which are excluded from the compliance rate until their vehicles are tested
- The VEIP self-serve kiosks are available twenty four hours a day, seven days a week (24/7) in a total of nine locations and provide a $4 cost savings to the customer; the same On Board Diagnostics (OBD) test that a station inspector would do in the lanes is performed by the customer, but at their convenience since the kiosk is open 24/7

What Are Future Performance Strategies?

- MDOT MVA will track and monitor the recently installed VEIP self-serve testing kiosks
- MDE and MDOT MVA continue to look at new technologies for testing such as mobile units, telematics and remote testing for future enhancements to our centralized program



MDOT MARYLAND DEPARTMENT OF TRANSPORTATION

EXCELLERATOR

PRESENTING:

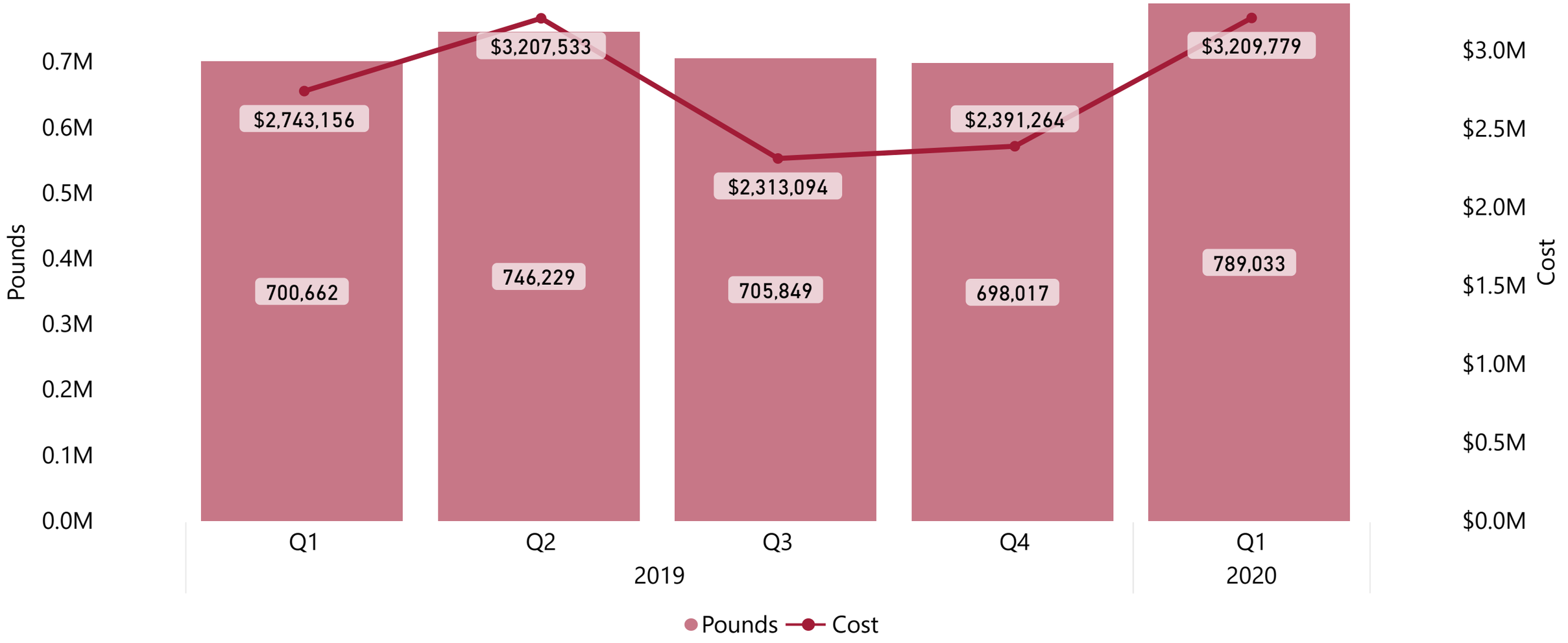
BE A GOOD STEWARD OF OUR ENVIRONMENT

TANGIBLE RESULT #9

TR#9: BE A GOOD STEWARD OF OUR ENVIRONMENT

PM#9.2: Land Pollution Prevention

Chart 9.2D.1: Litter Pickup Weight vs Cost



TR#9: BE A GOOD STEWARD OF OUR ENVIRONMENT

PM#9.2: Land Pollution Prevention

Chart 9.2D.2: Litter Pickup Weight

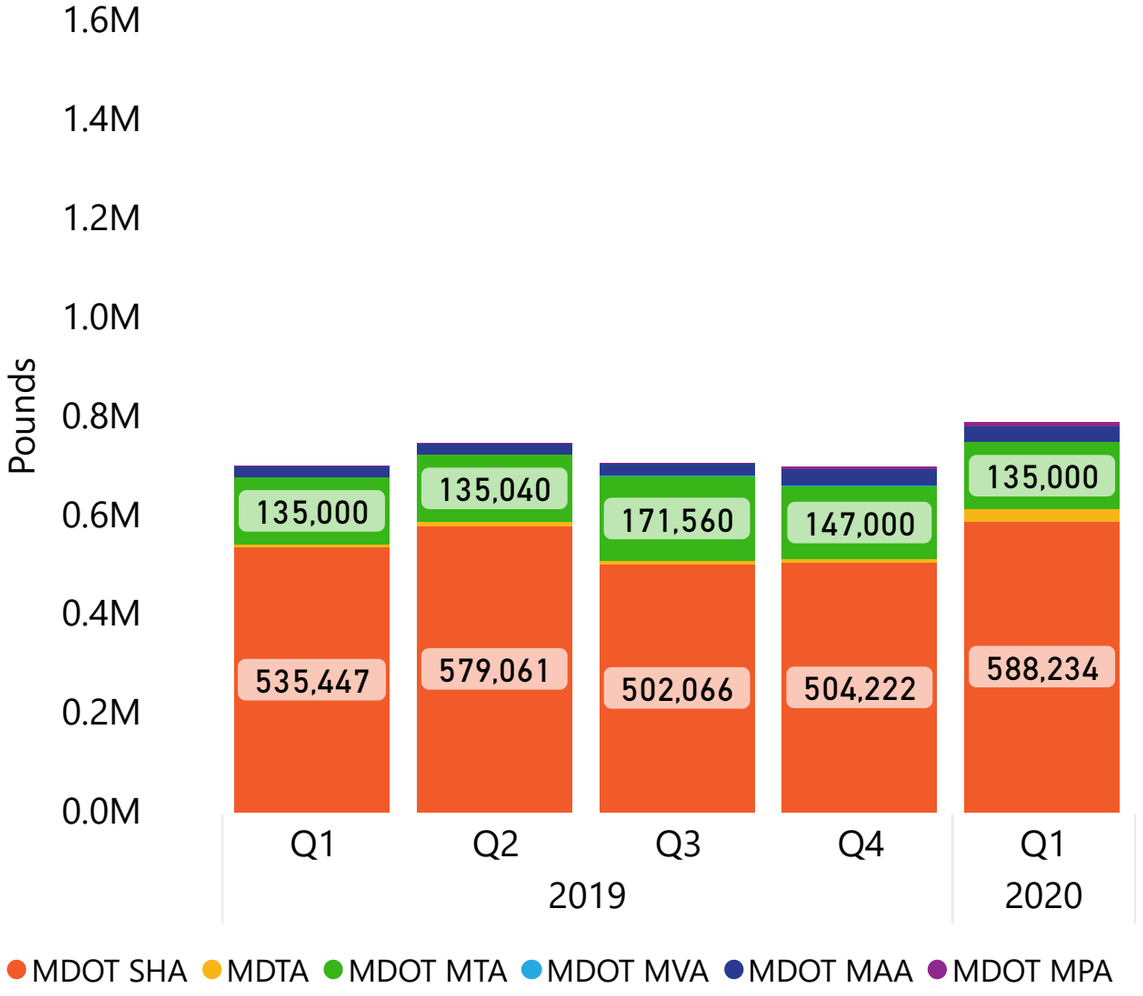
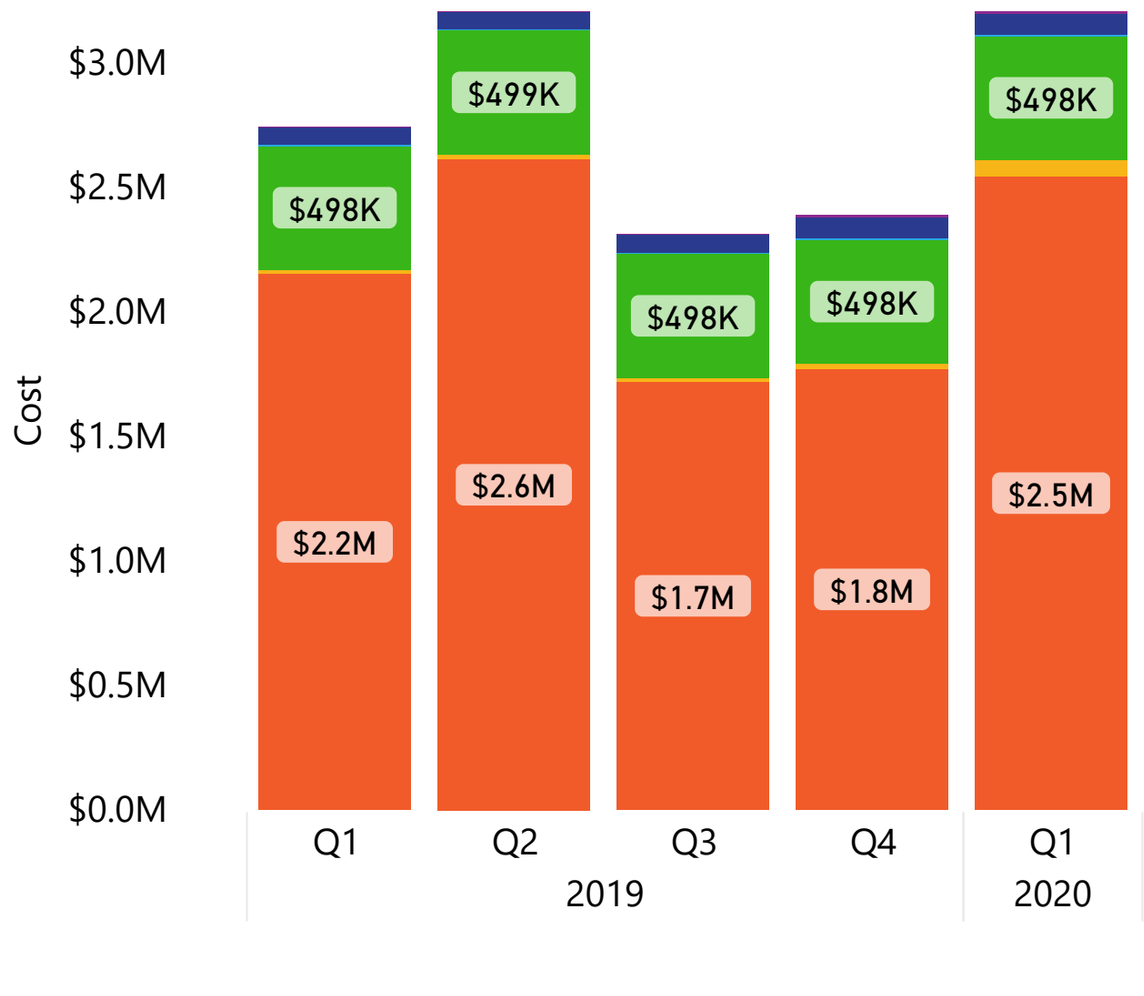
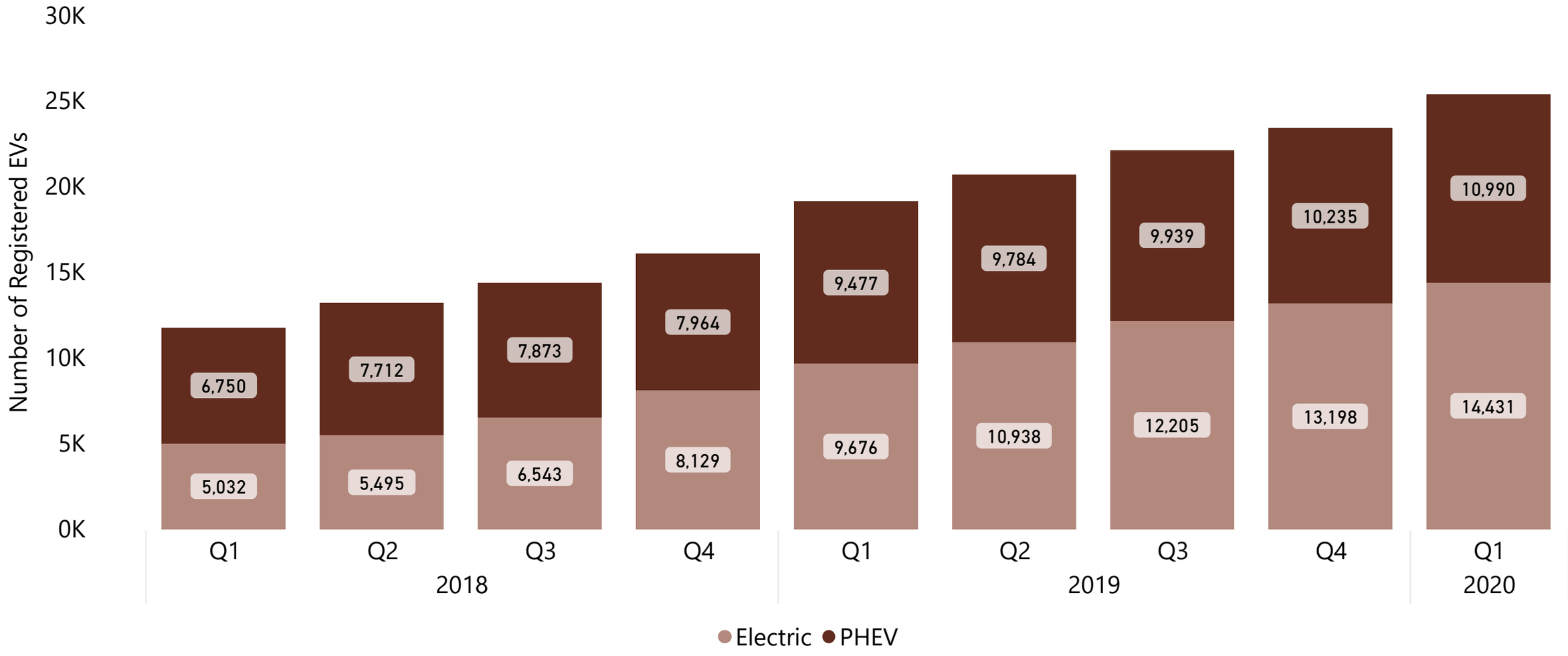


Chart 9.2D.3: Litter Pickup Cost



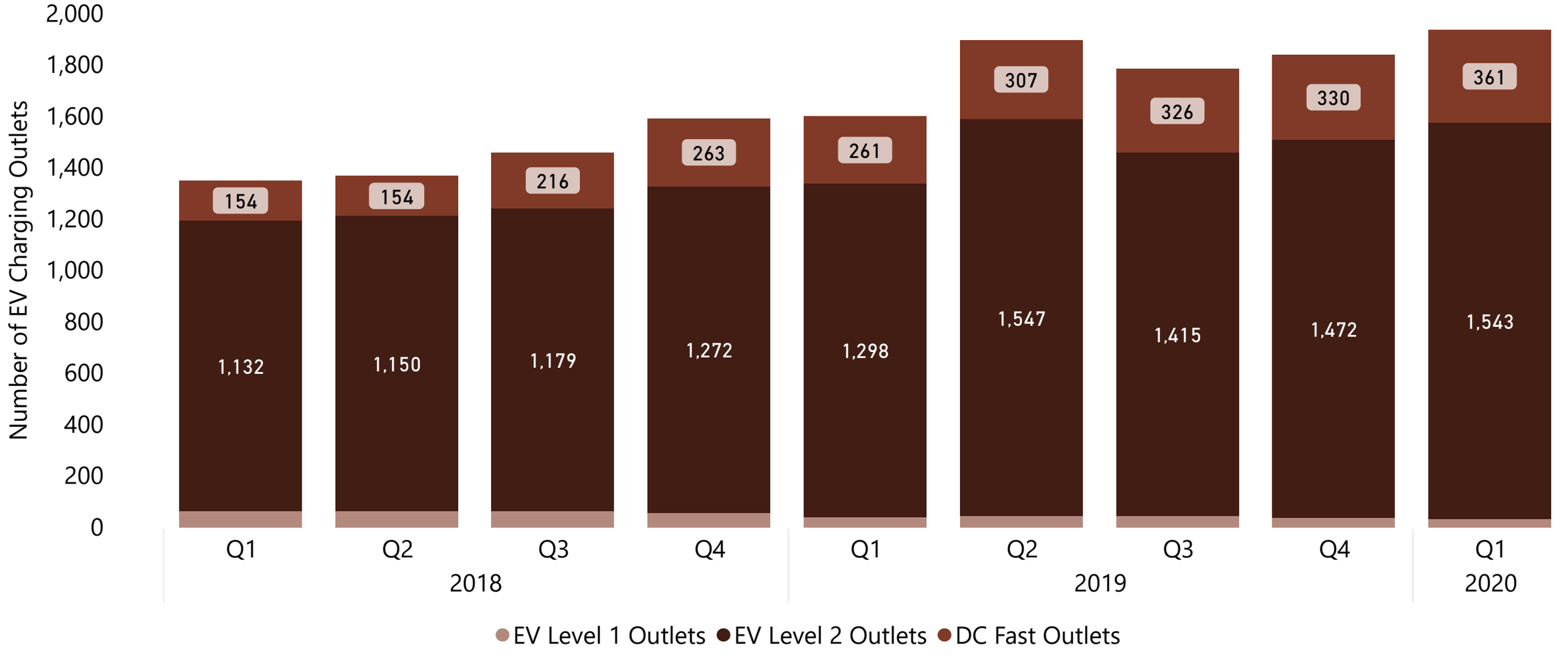
PM#9.4: Air Quality

Chart 9.4A.1: Electric Vehicles Registered in Maryland



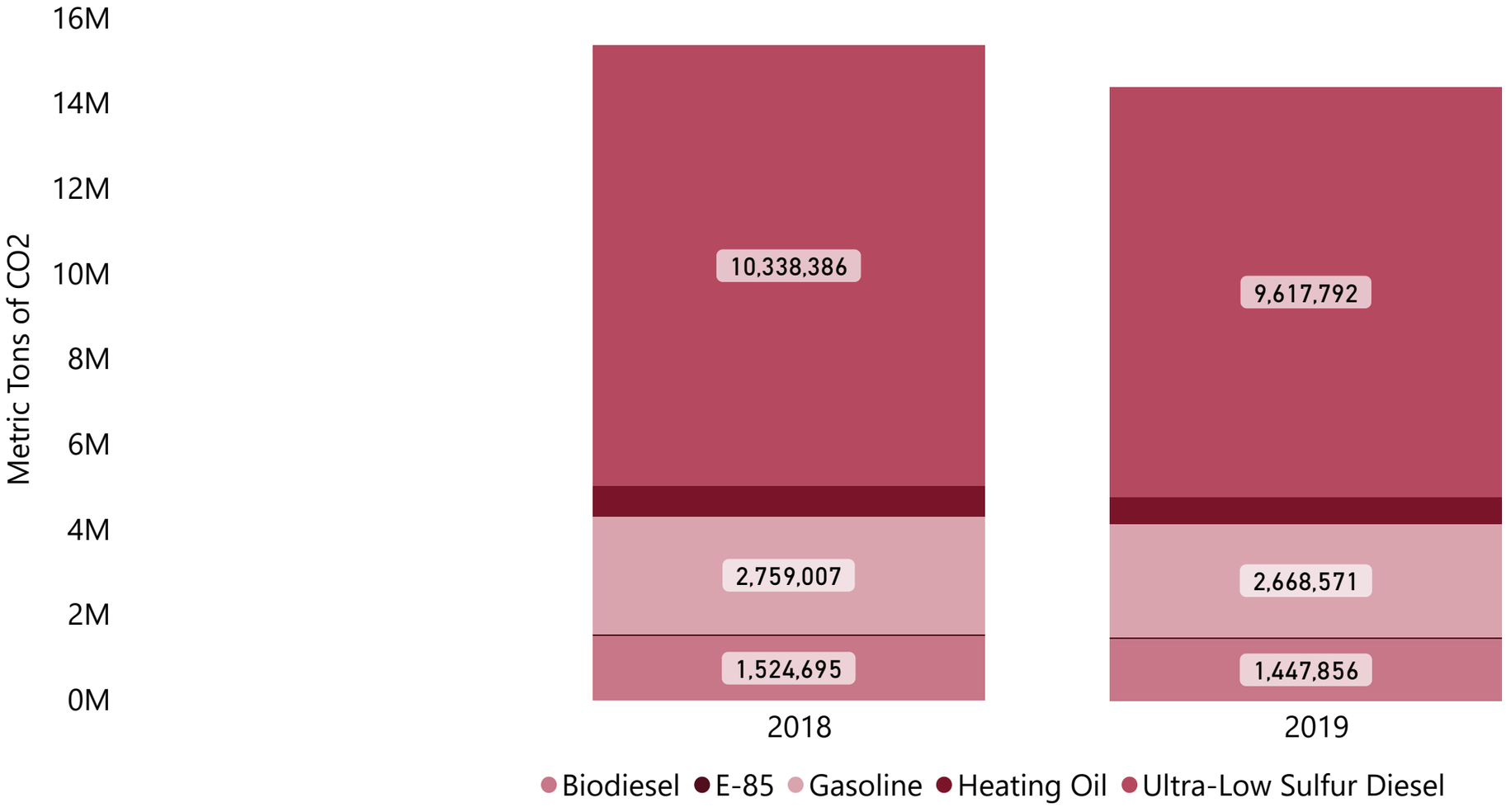
PM#9.4: Air Quality

Chart 9.4A.2: Electric Vehicle Charging Outlets



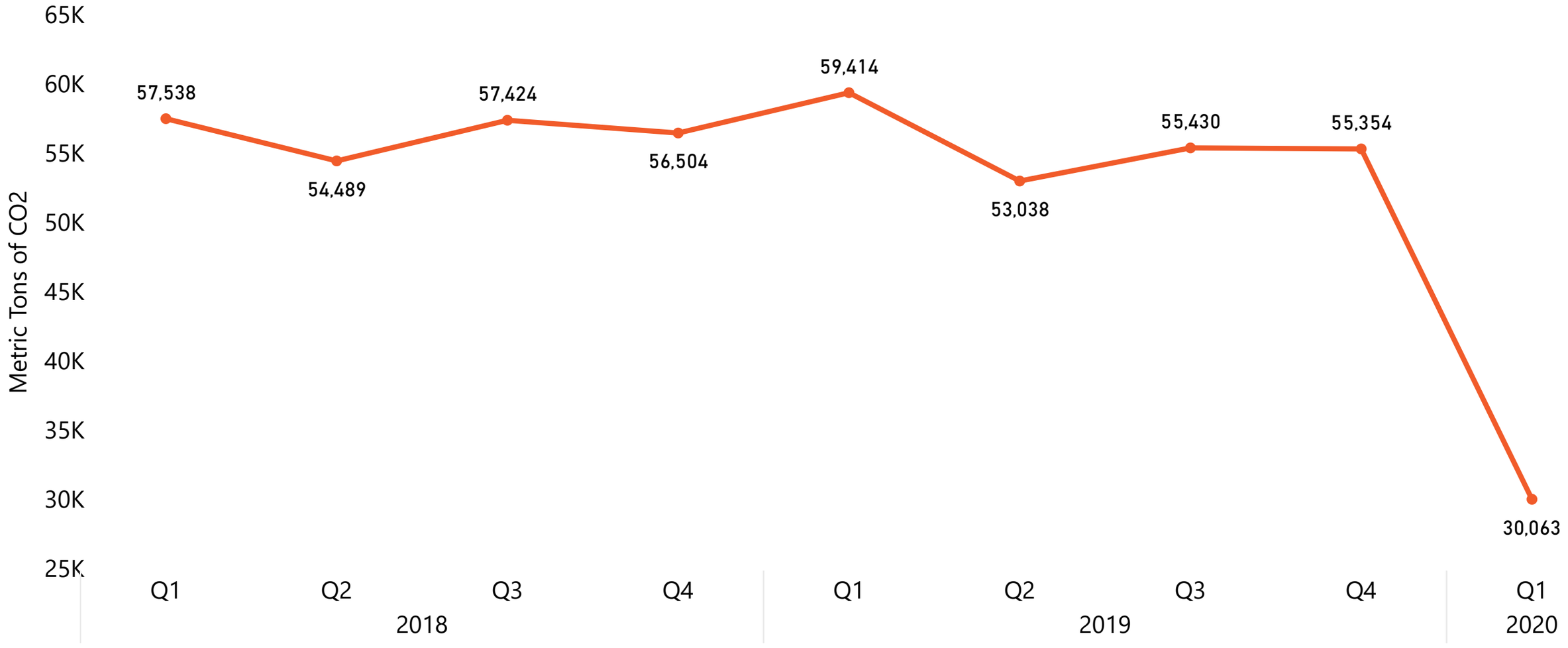
PM#9.4: Air Quality

Chart 9.4B.1: CO2 Emissions by Fuel Type



PM#9.4: Air Quality

Chart 9.4B.2: CO2e Emissions from Electricity Use



MDTA EMS Meeting 3/13/2020

Meeting Agenda

1. Review of Environmental Objective Progress
2. W&I Commercial Vehicle Maintenance/Repair Concerns
3. Internal Audit Plan
    a. What limits should be placed on the auditor?
        i. Number of operational controls reviewed, etc.
    b. How much notice to give the EMS Team/the facilities that are going to be visited?
    c. How far in advance do you want to receive the audit plan from SEMCAS?
    d. Who wants to attend the In-Brief/Out-Brief from the EMS Team?
    e. Who will be interviewed from Senior Management?
        i. What does Senior Management need to be prepared for the Internal Audit?
            1. Types of questions they might be asked? Answers to those questions, etc.?
    f. Review of Prep Questions/Checklist for EMS Team
    g. How else can we help you prepare for this Internal Audit?
        i. For example, ensure everything is stored on EEIMS prior to the audit?
    h. Schedule – Week of April 13th?

Appendix C: Illicit Discharge Detection and Elimination Supporting Documentation

MDTA MS4 Outfalls - Index Map



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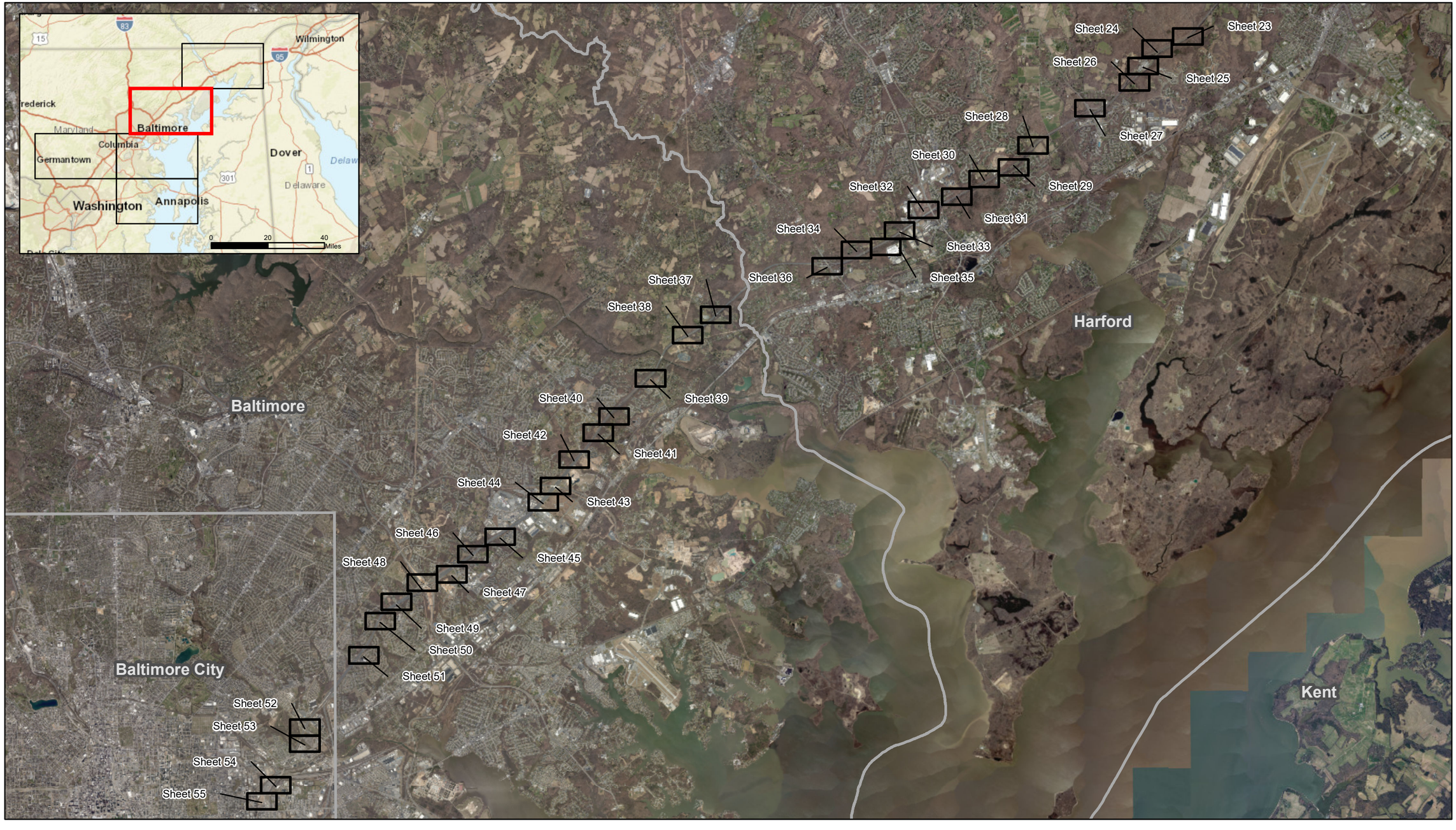
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- County Boundaries
- MD_SixInchImagery

0 1 2 4 6 8 Miles

1 in = 2 miles

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MDTA MS4 Outfalls - Index Map



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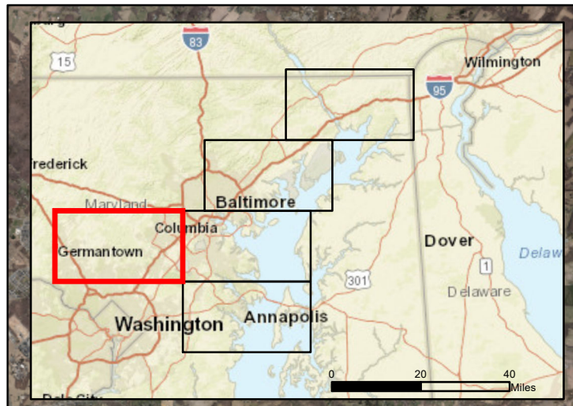
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MDTA MS4 Outfalls - Index Map



Baltimore

Howard

Montgomery

Prince George's

Anne Arundel

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Sheet 123

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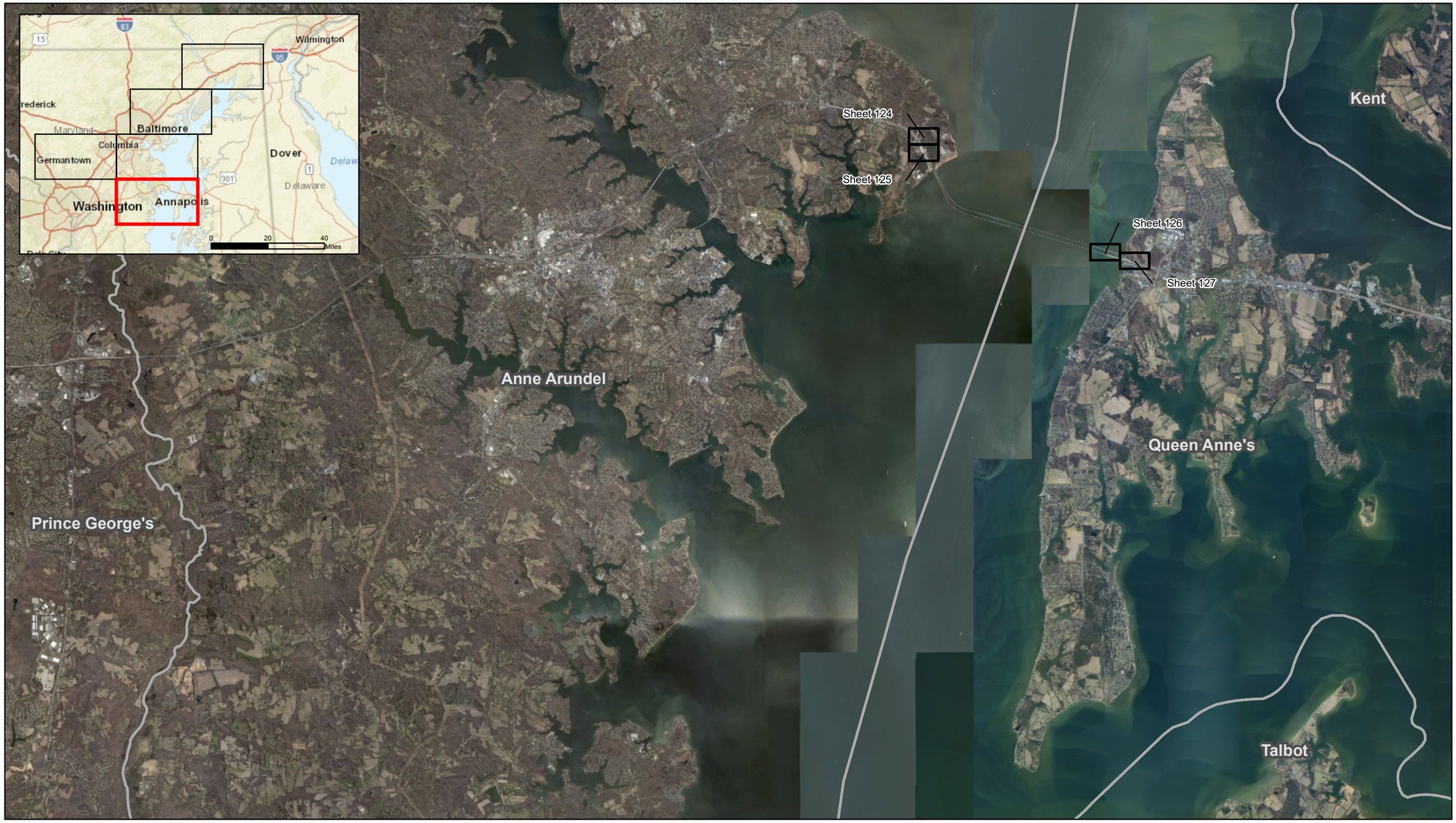
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MDTA MS4 Outfalls - John F Kennedy Memorial Highway



Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

0 125 250 500 750 1,000 Feet

1 in = 200 feet

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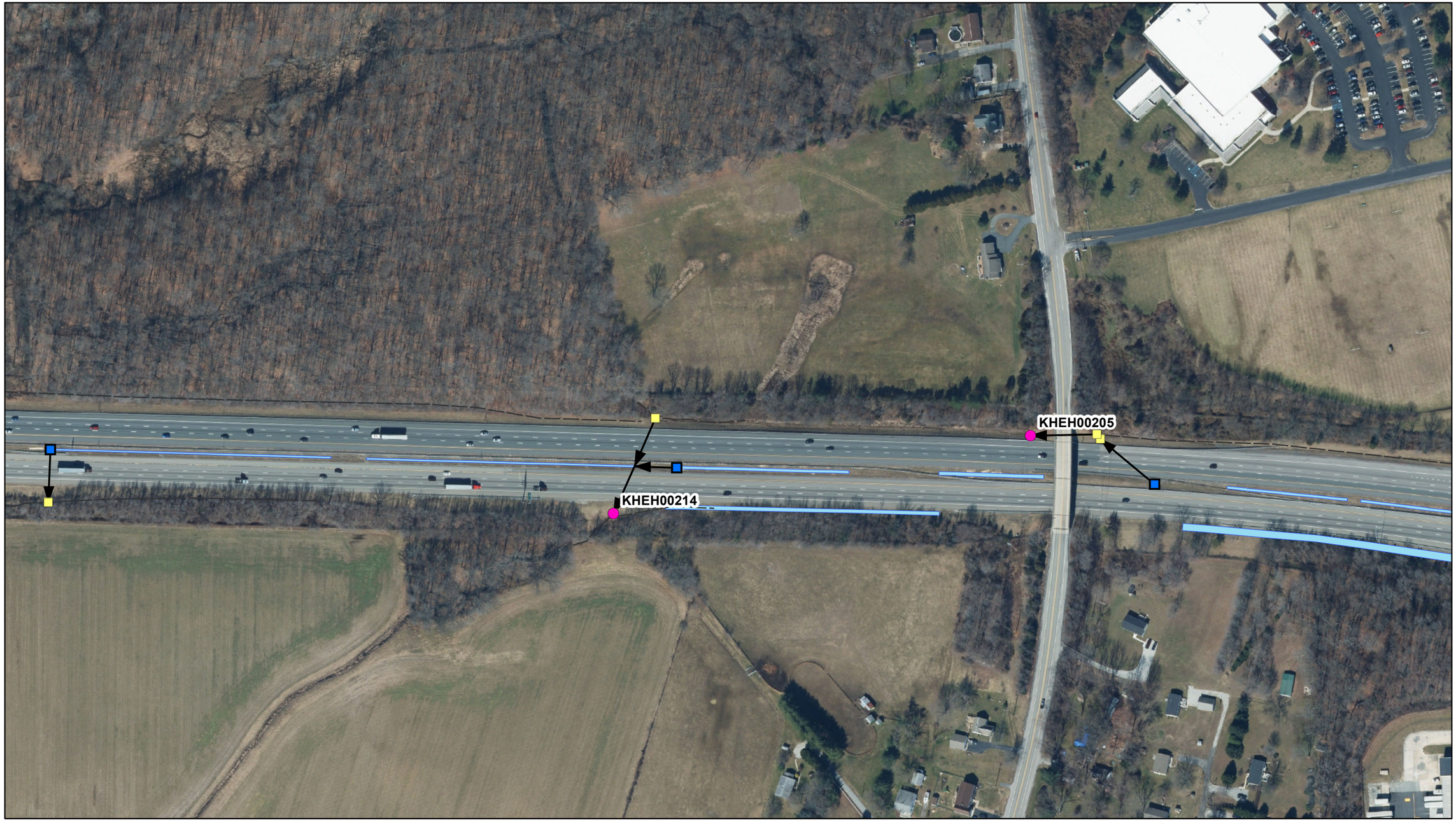
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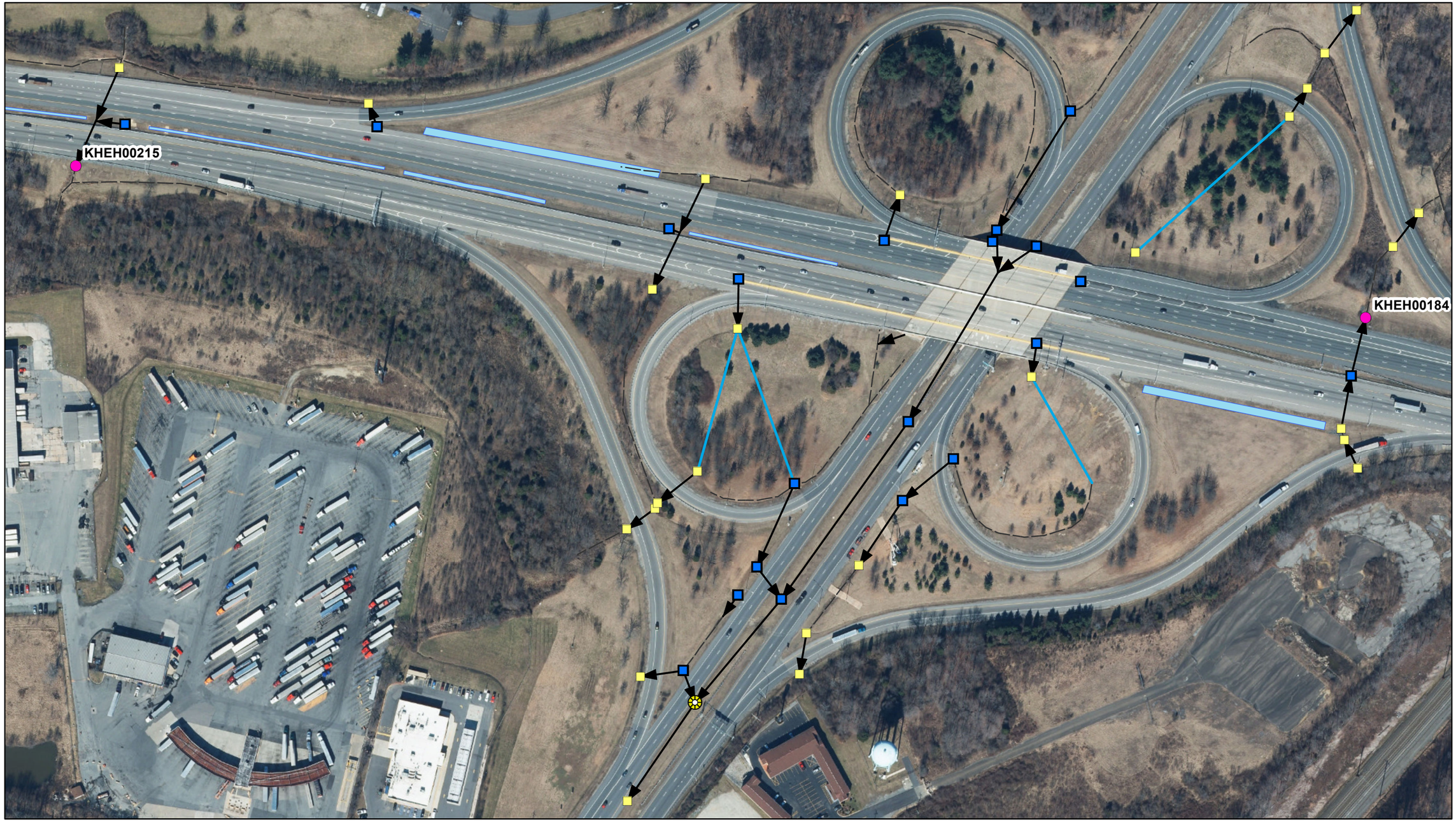
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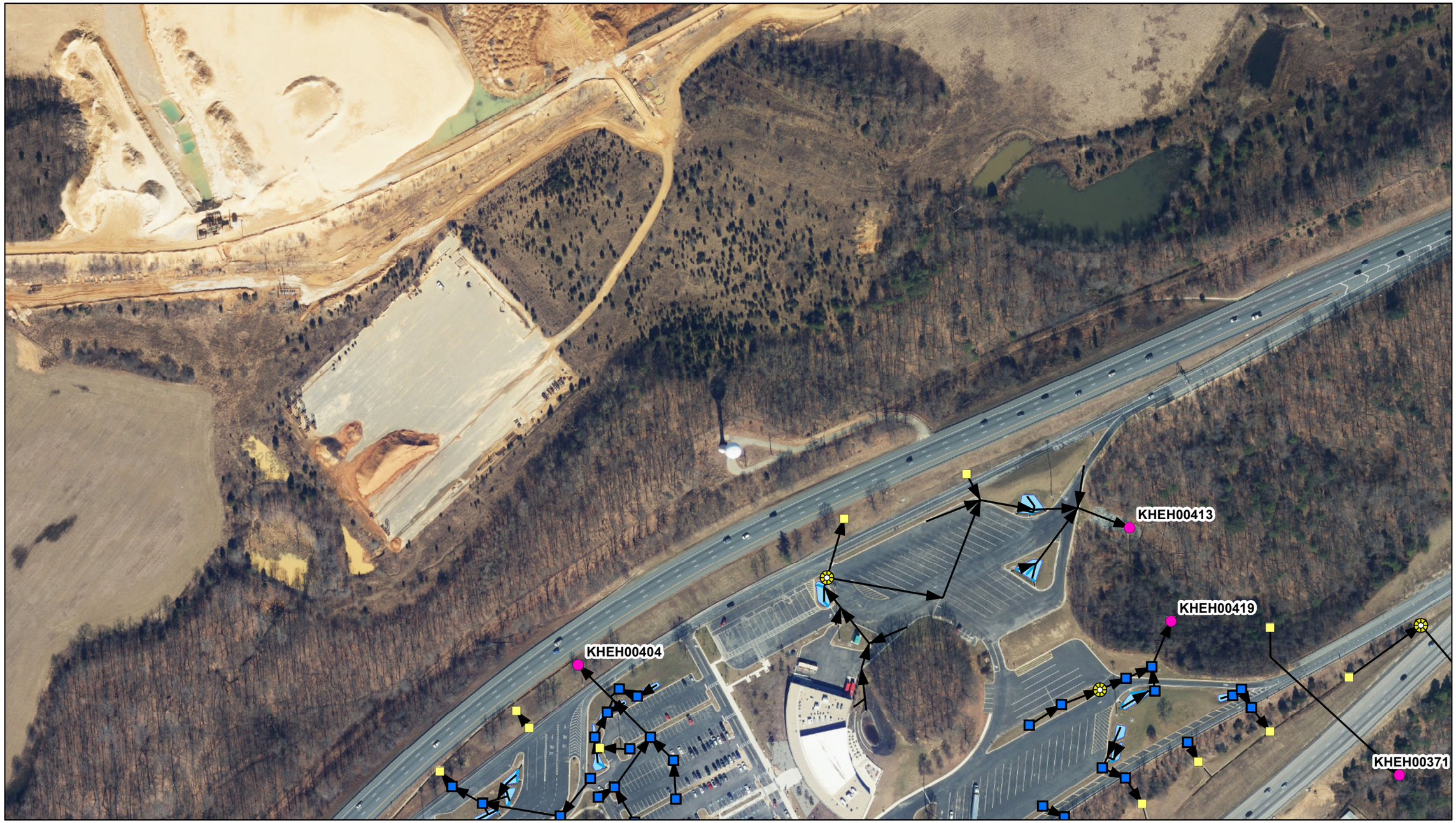
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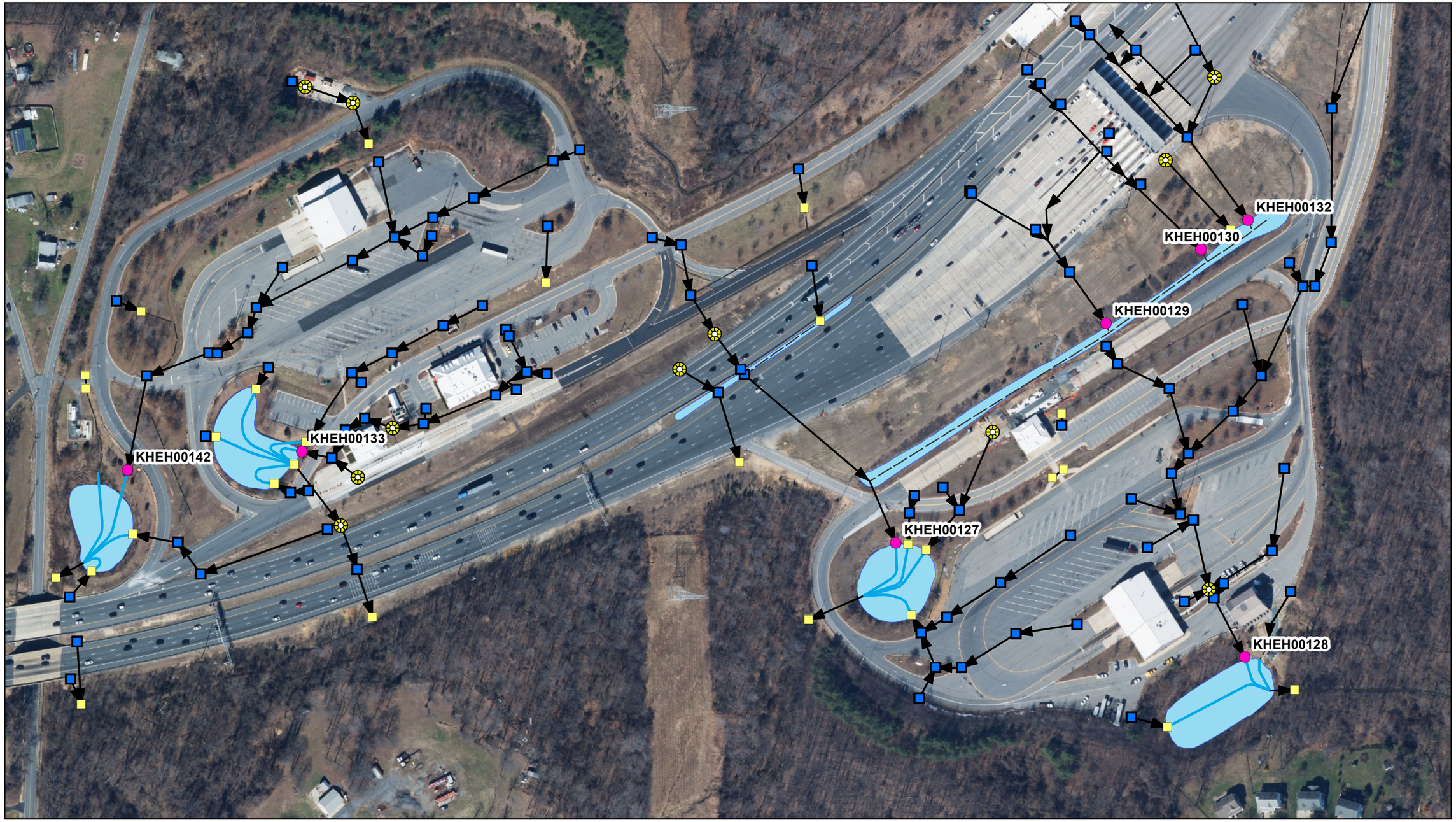
Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

0 125 250 500 750 1,000 Feet

1 in = 200 feet

N

MDTA MS4 Outfalls - John F Kennedy Memorial Highway



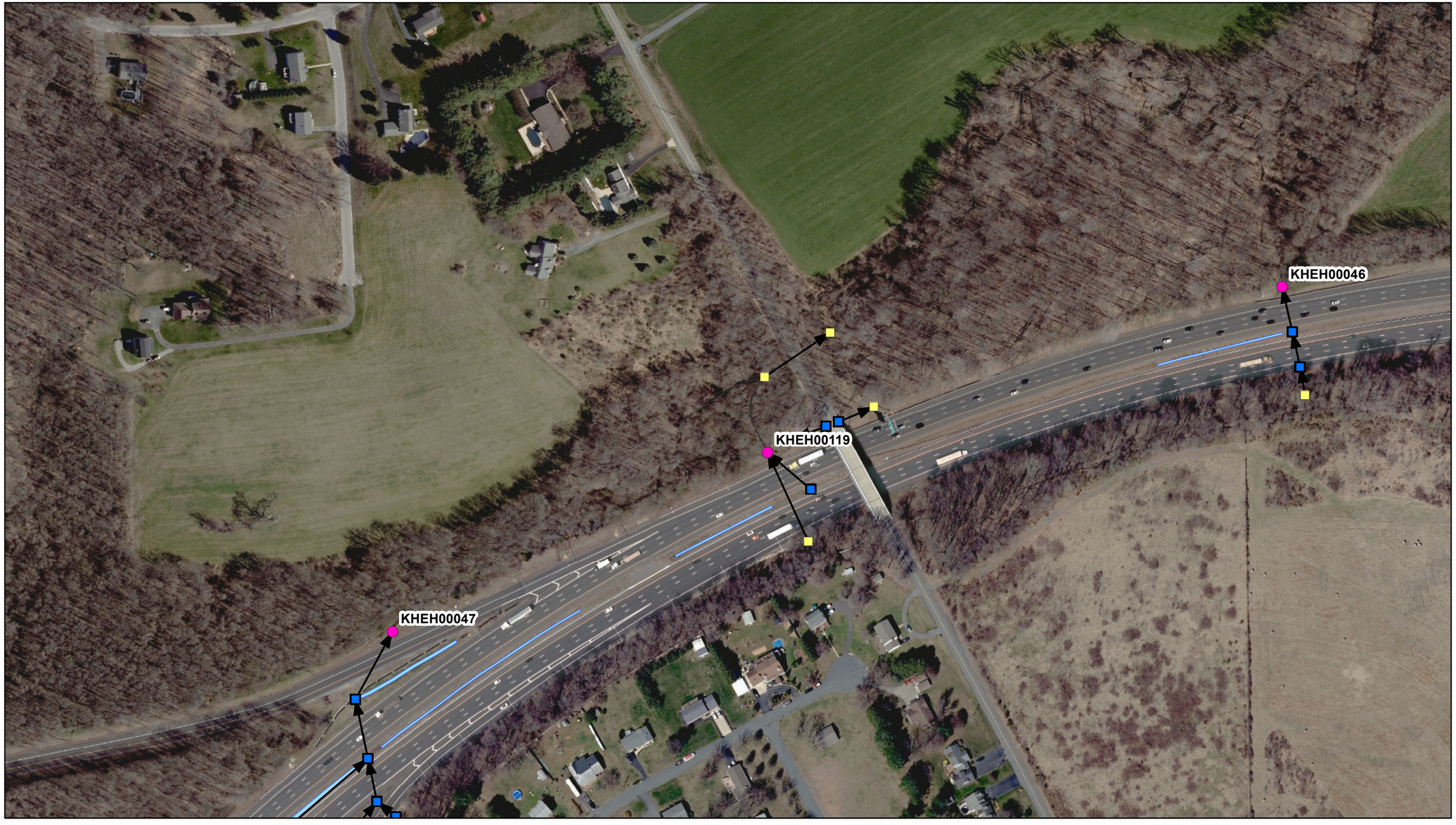
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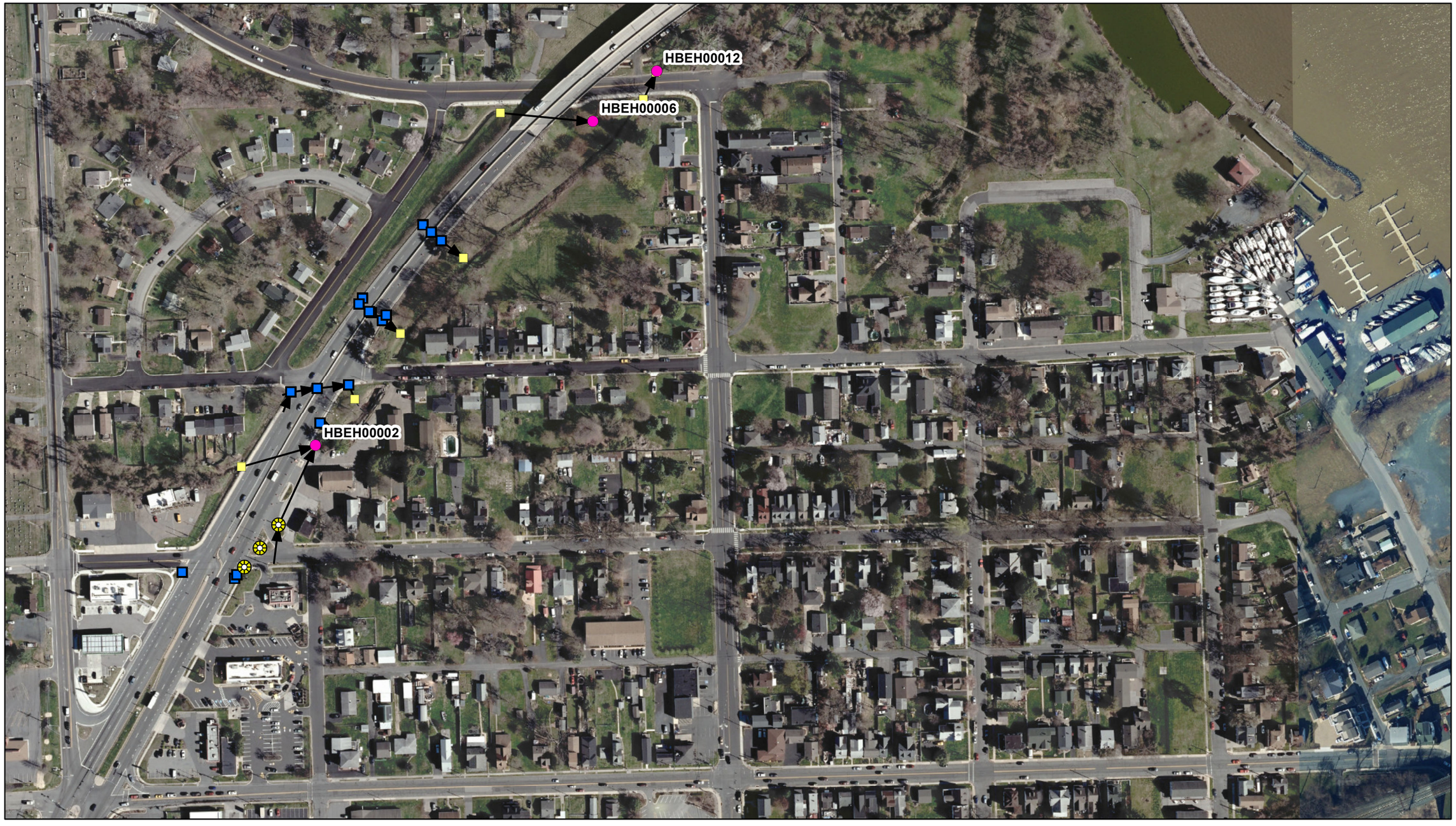
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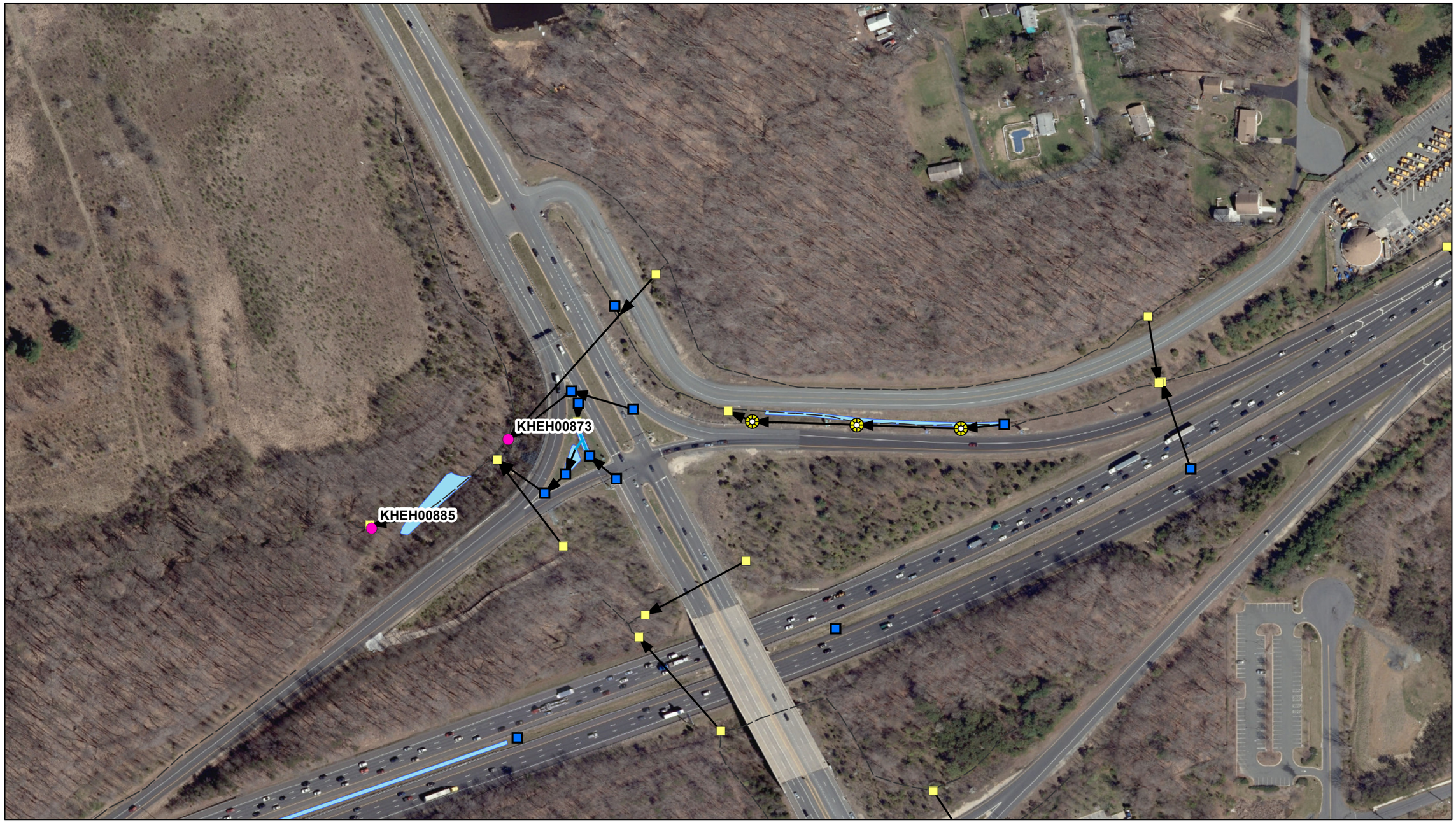
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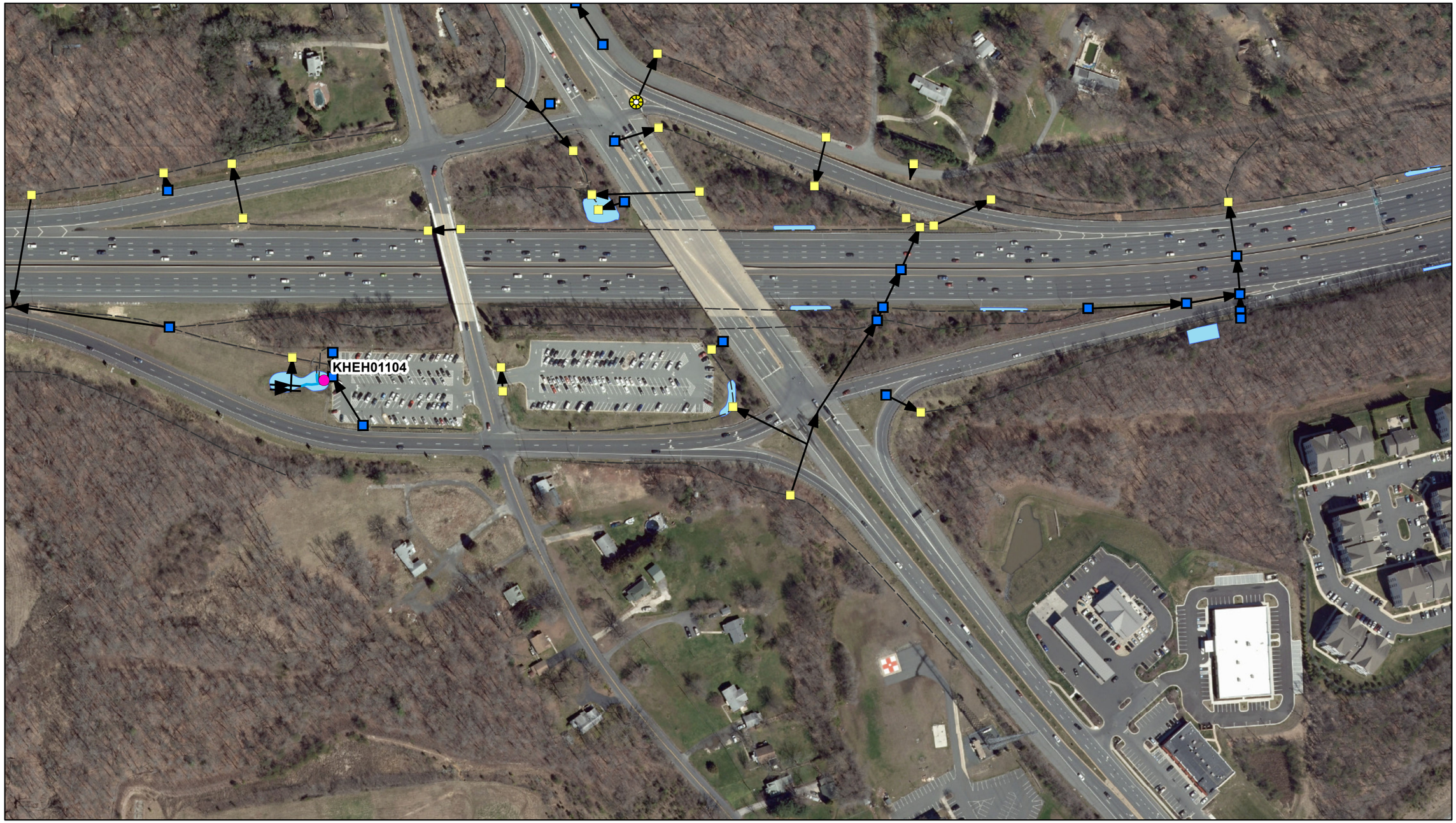
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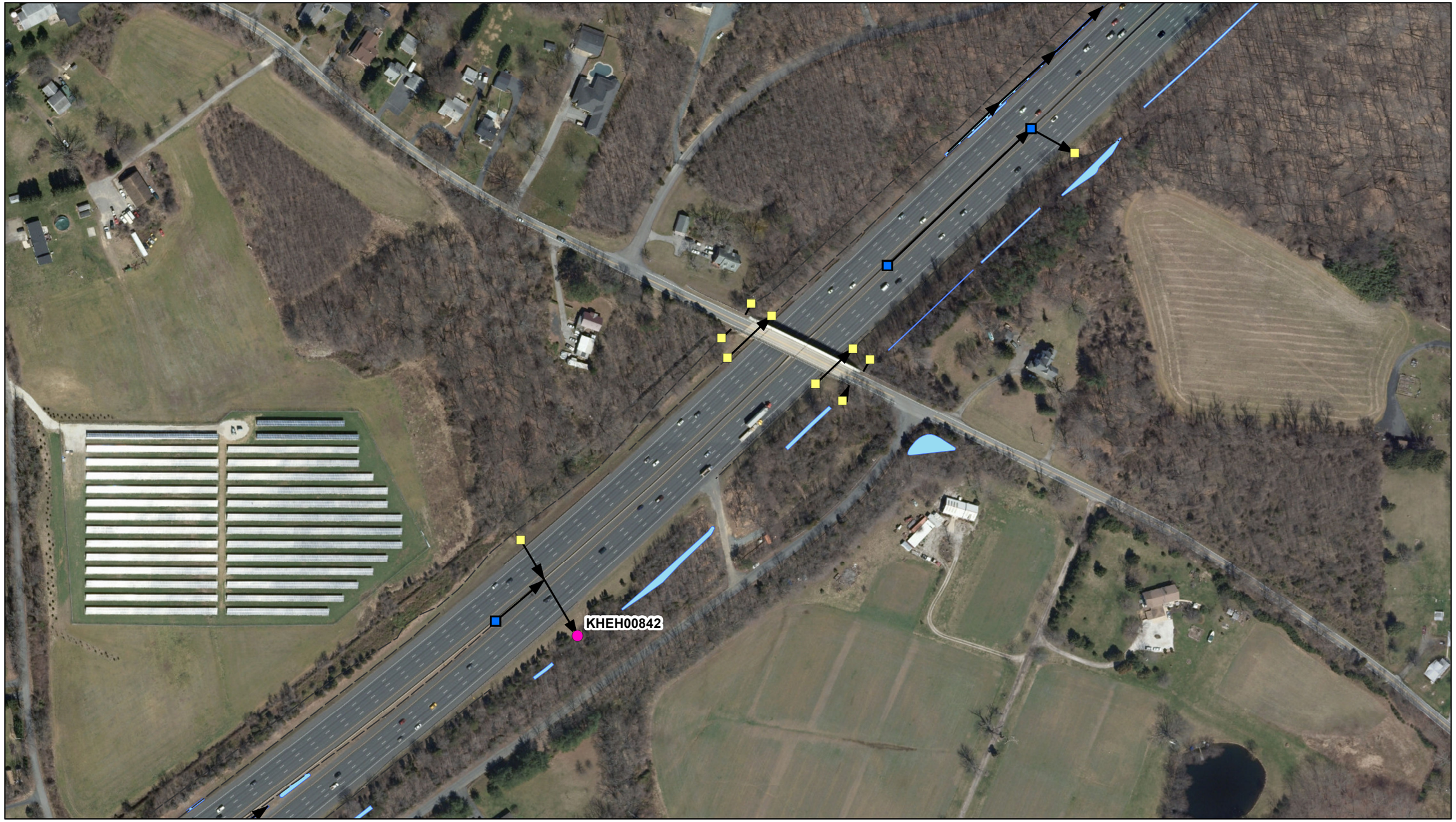
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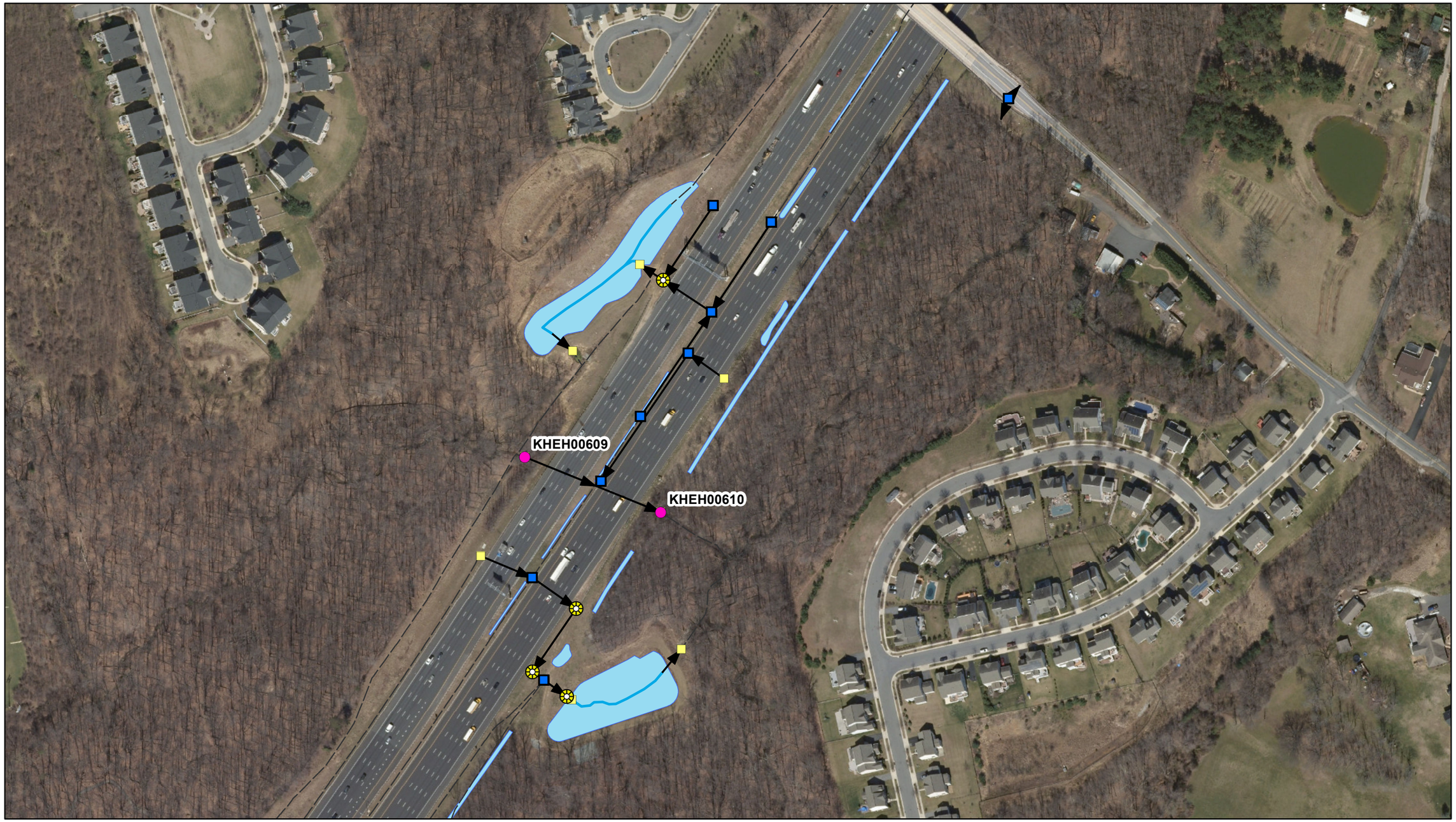
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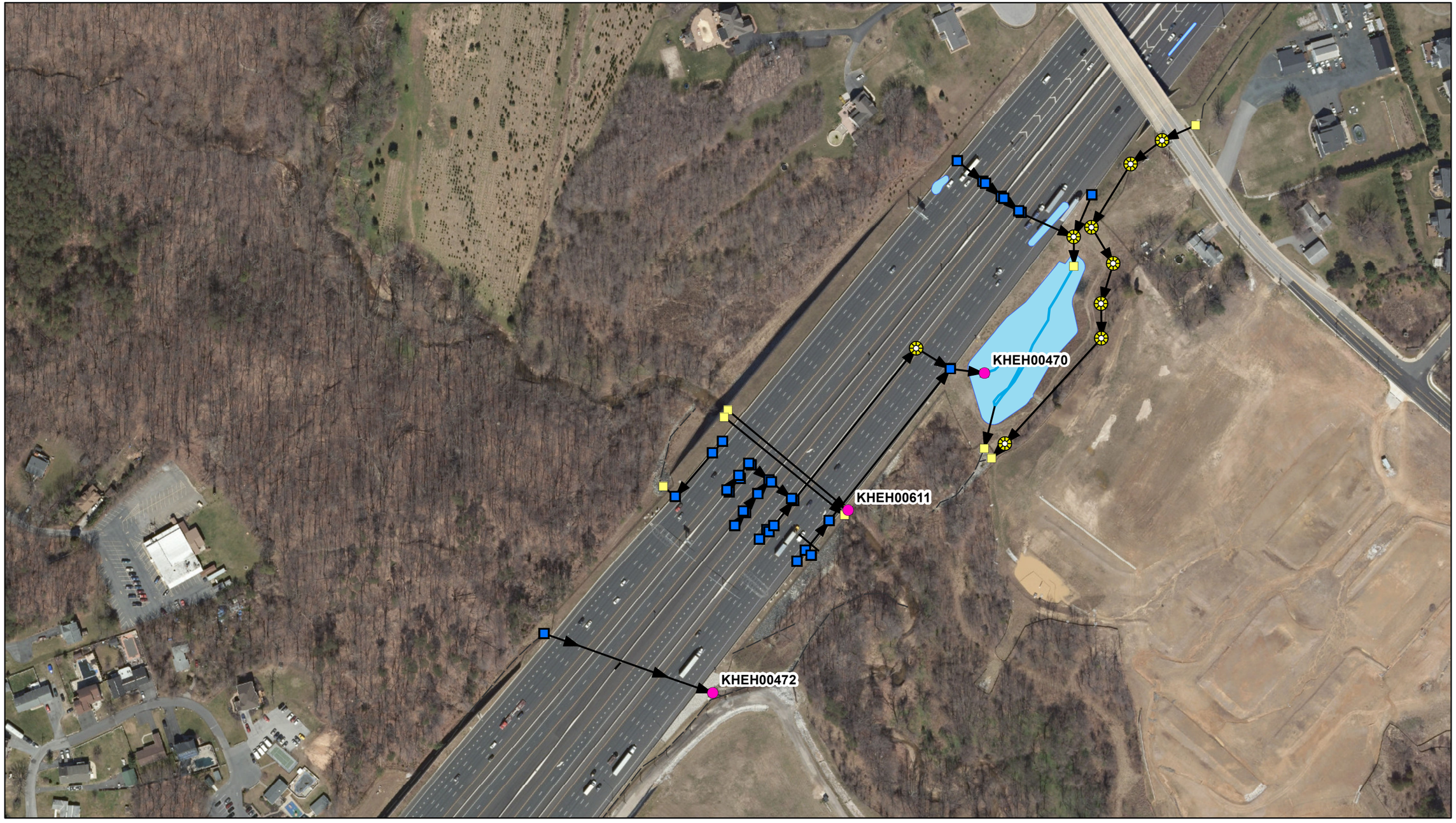
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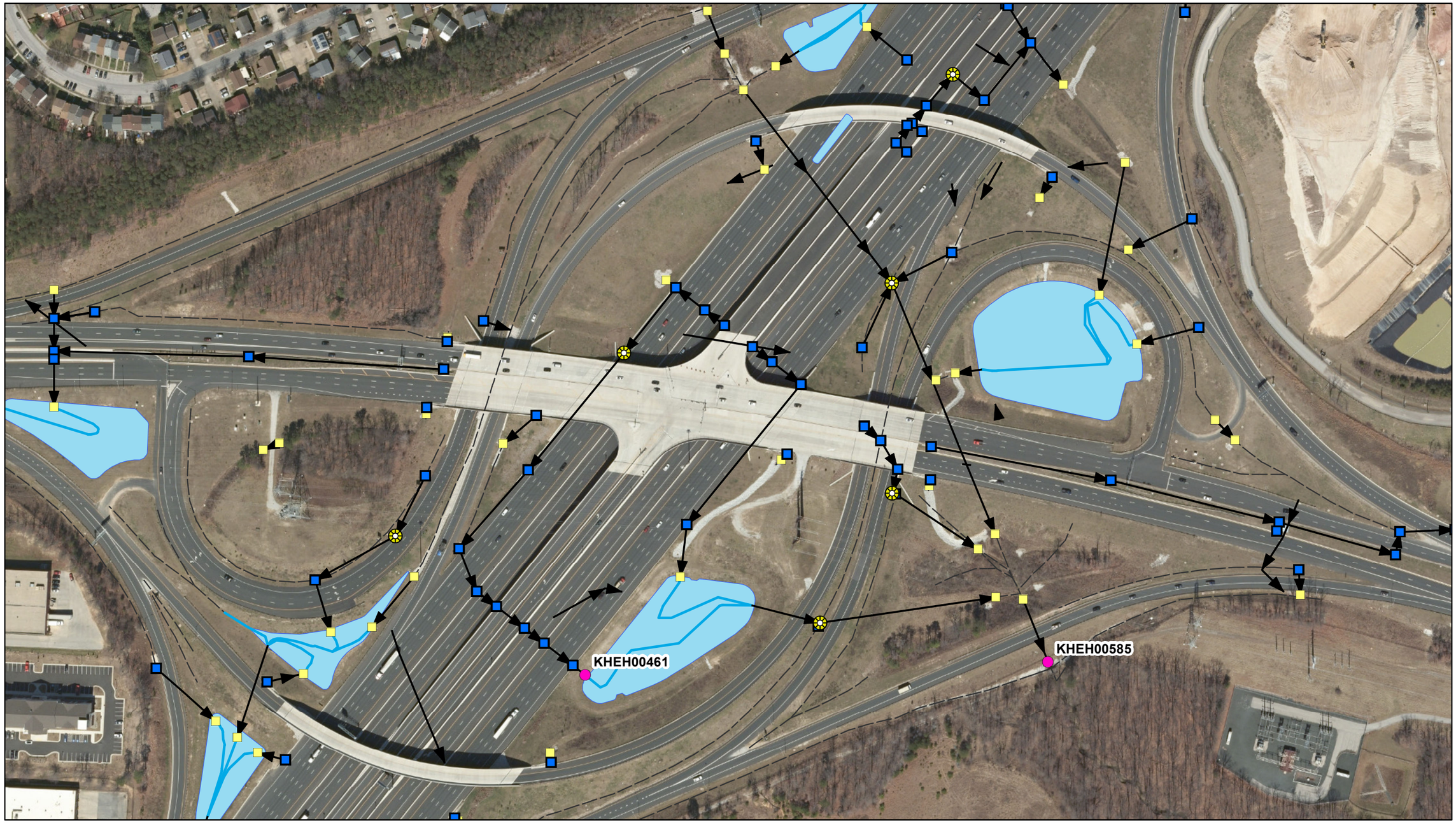
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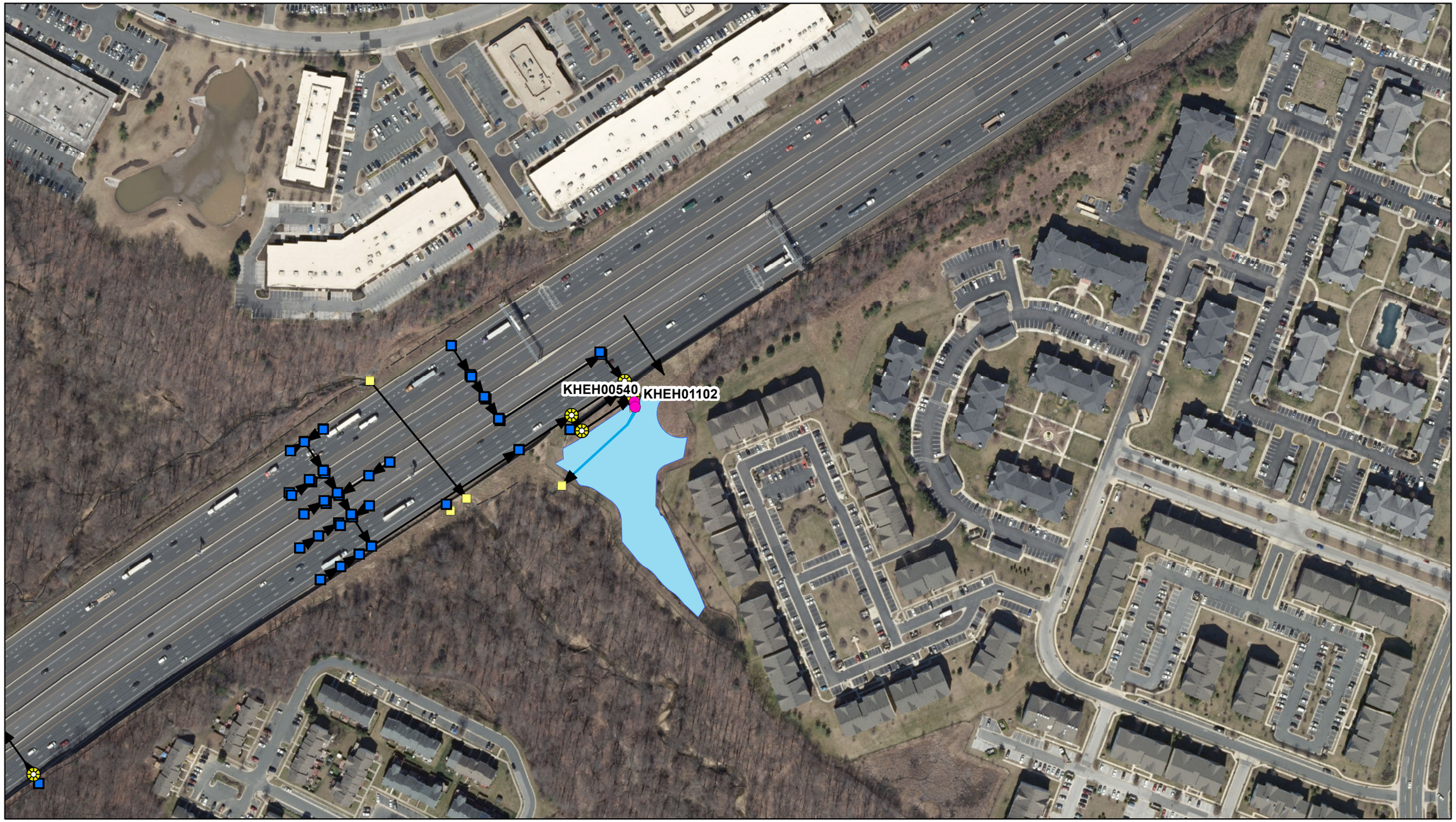
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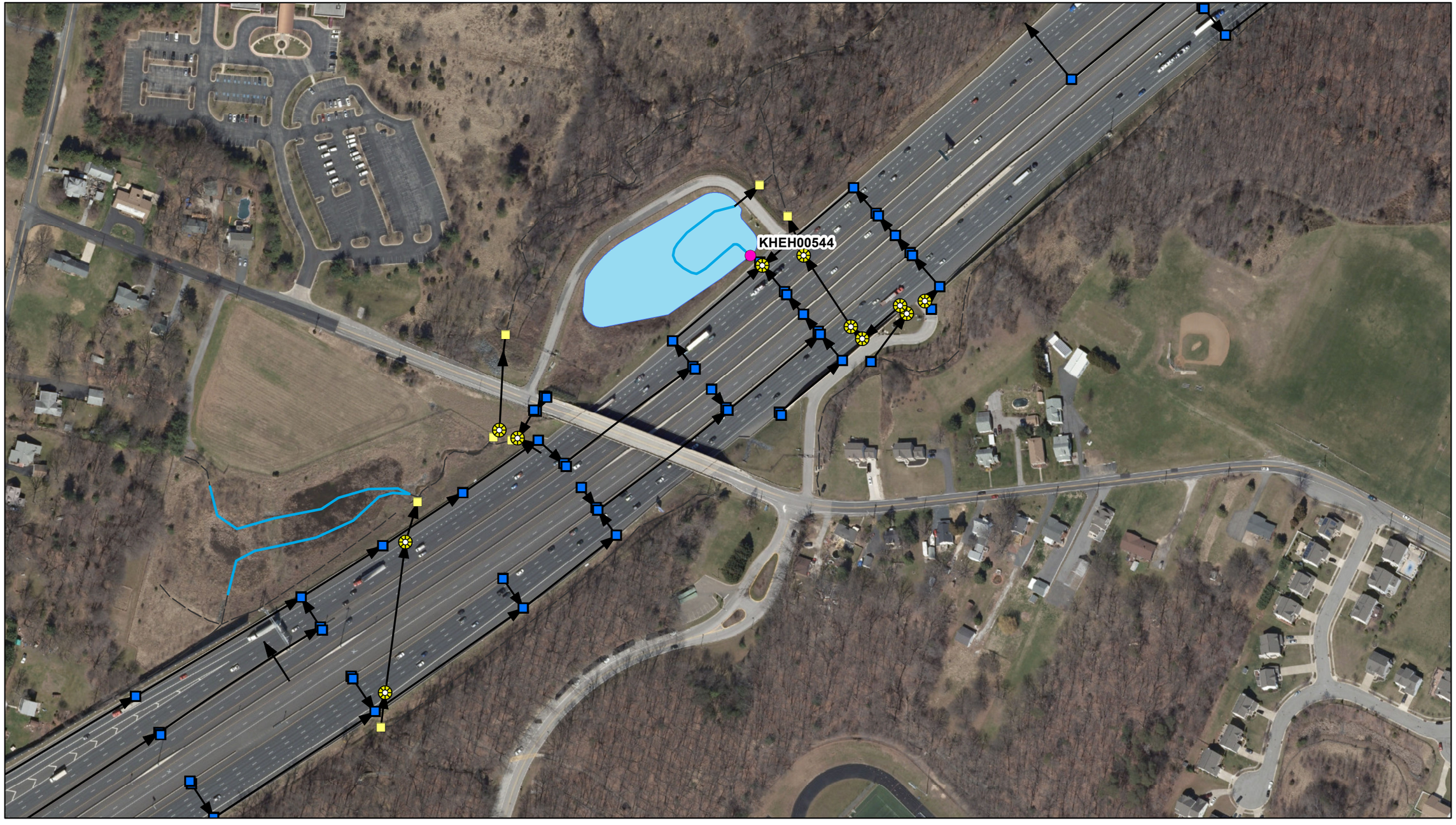
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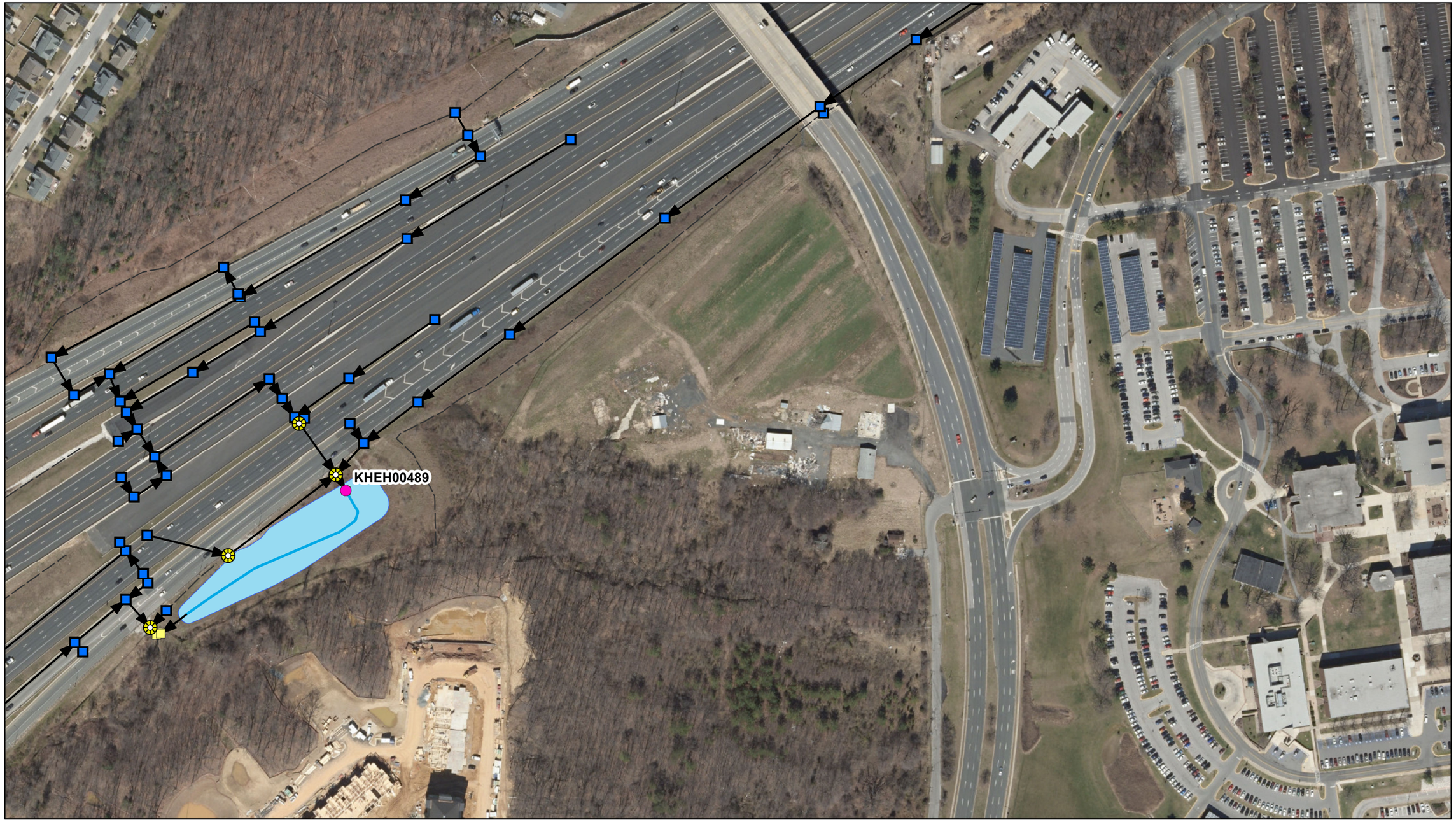
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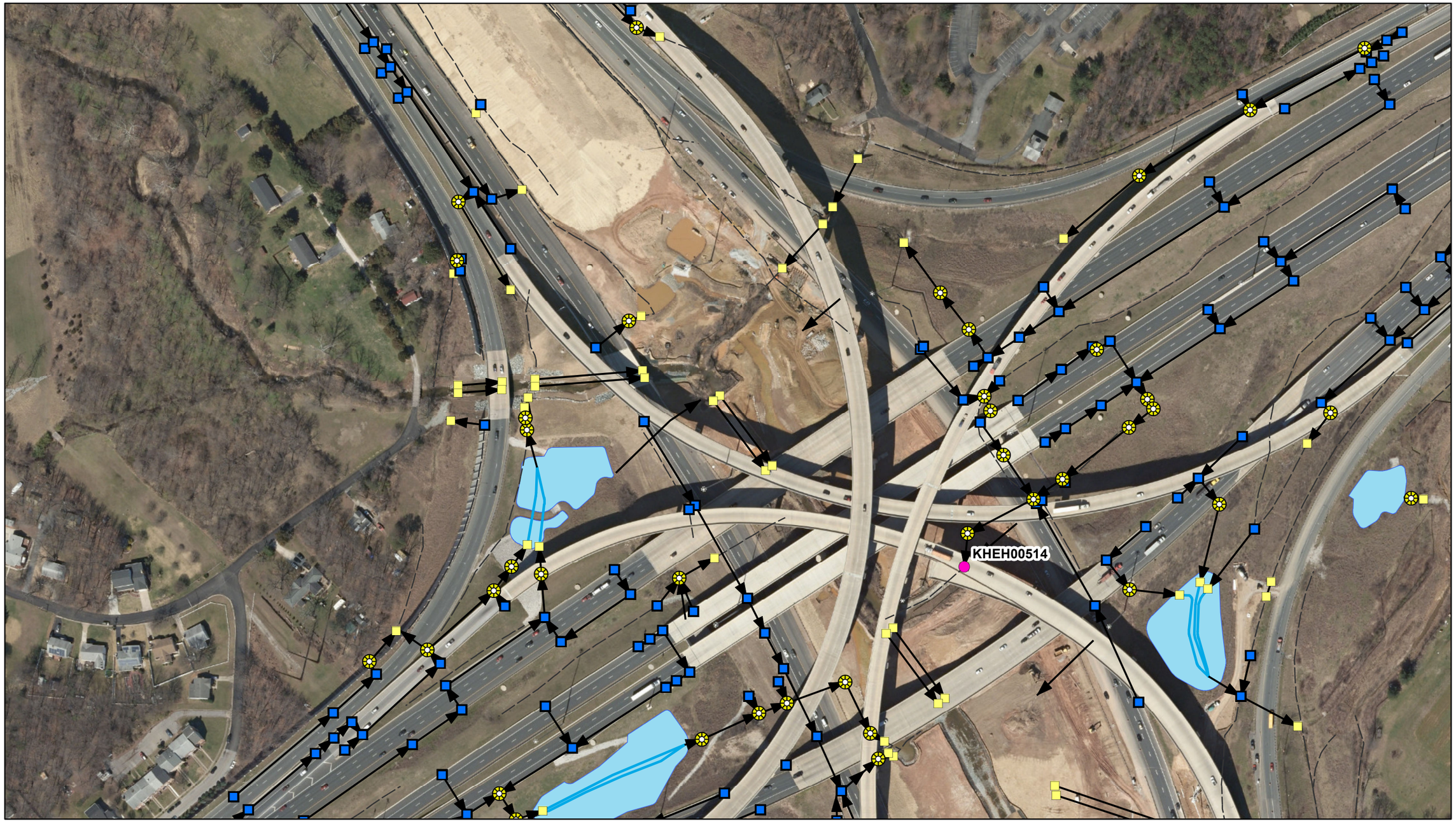
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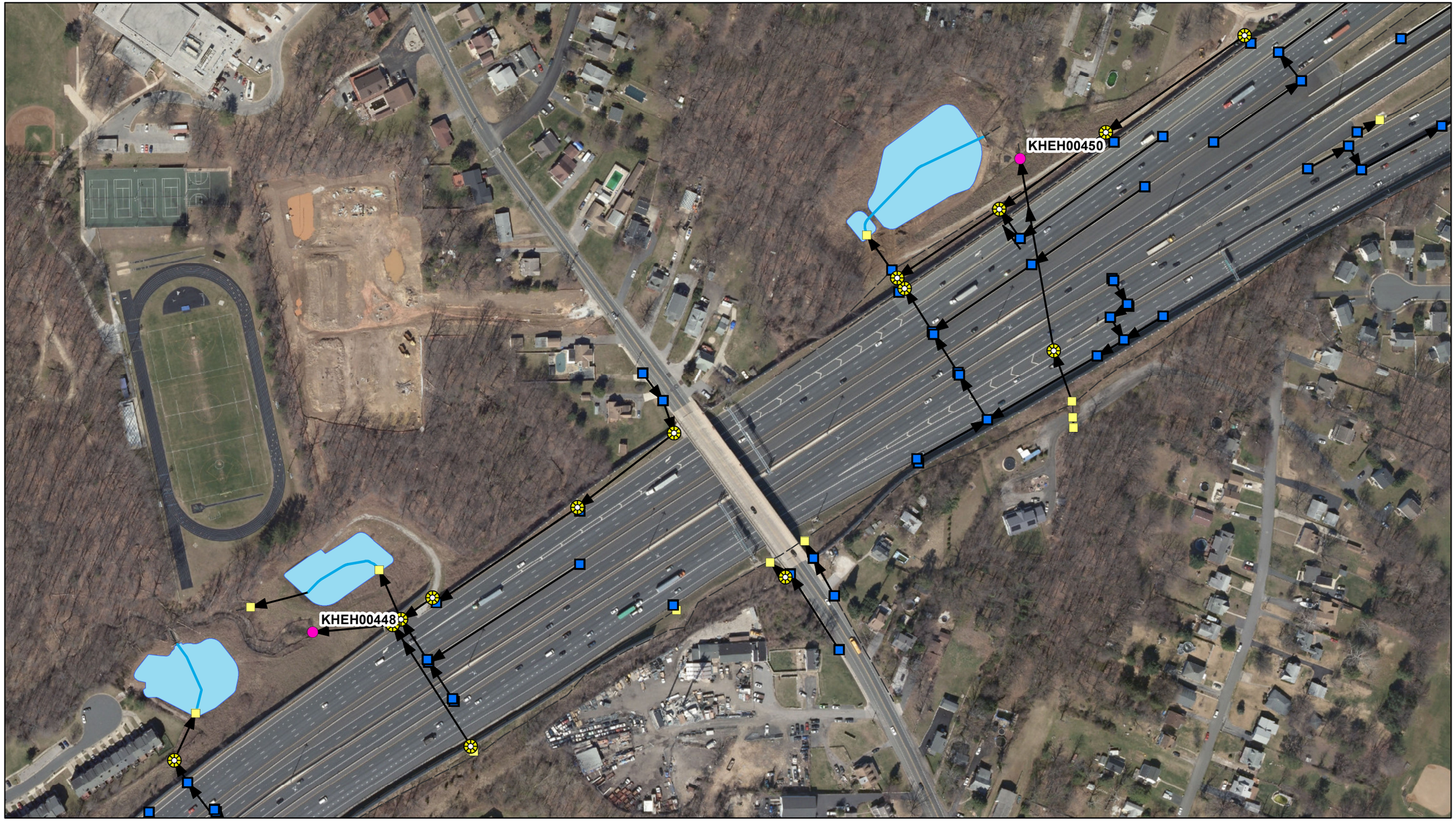
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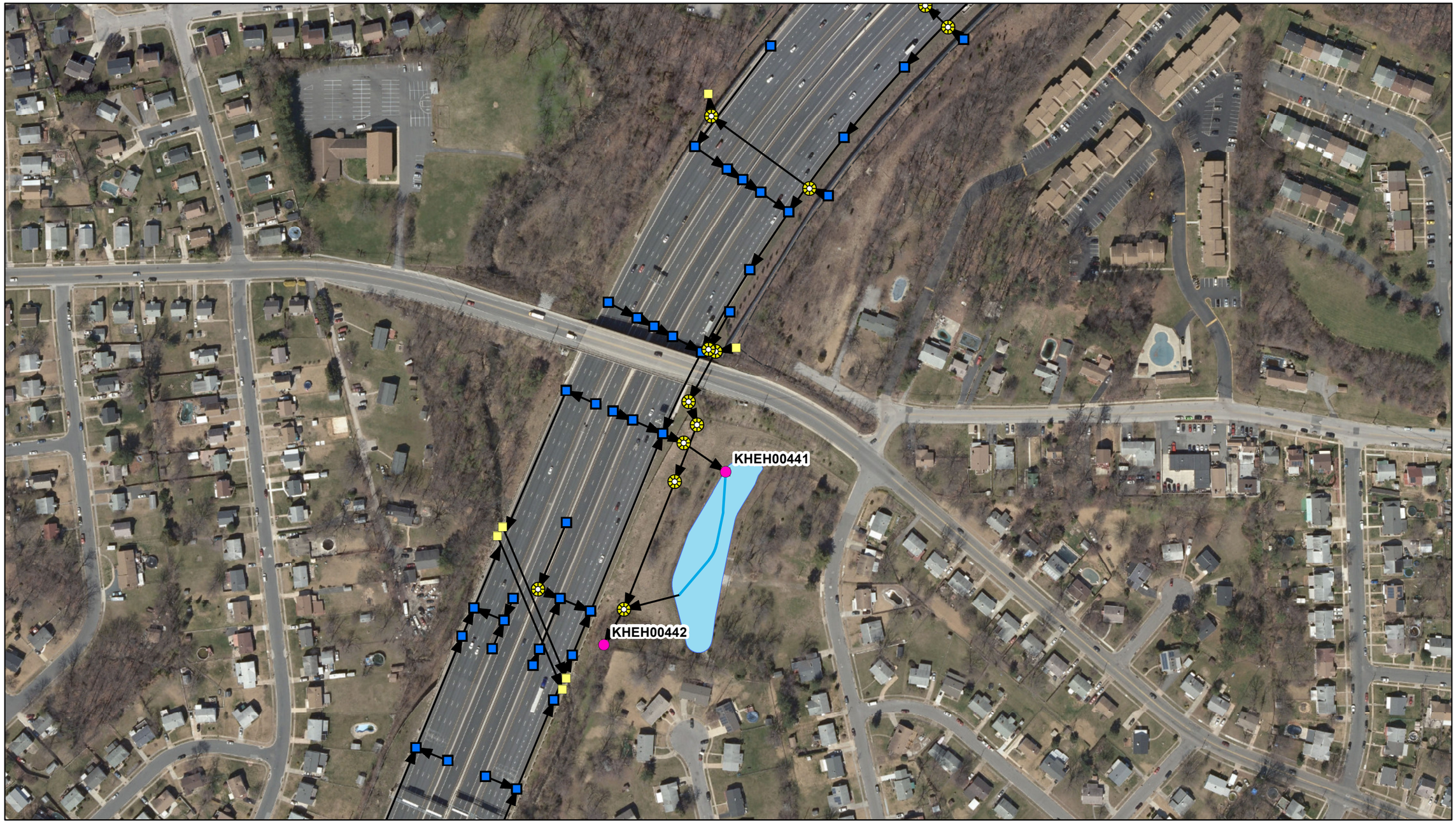
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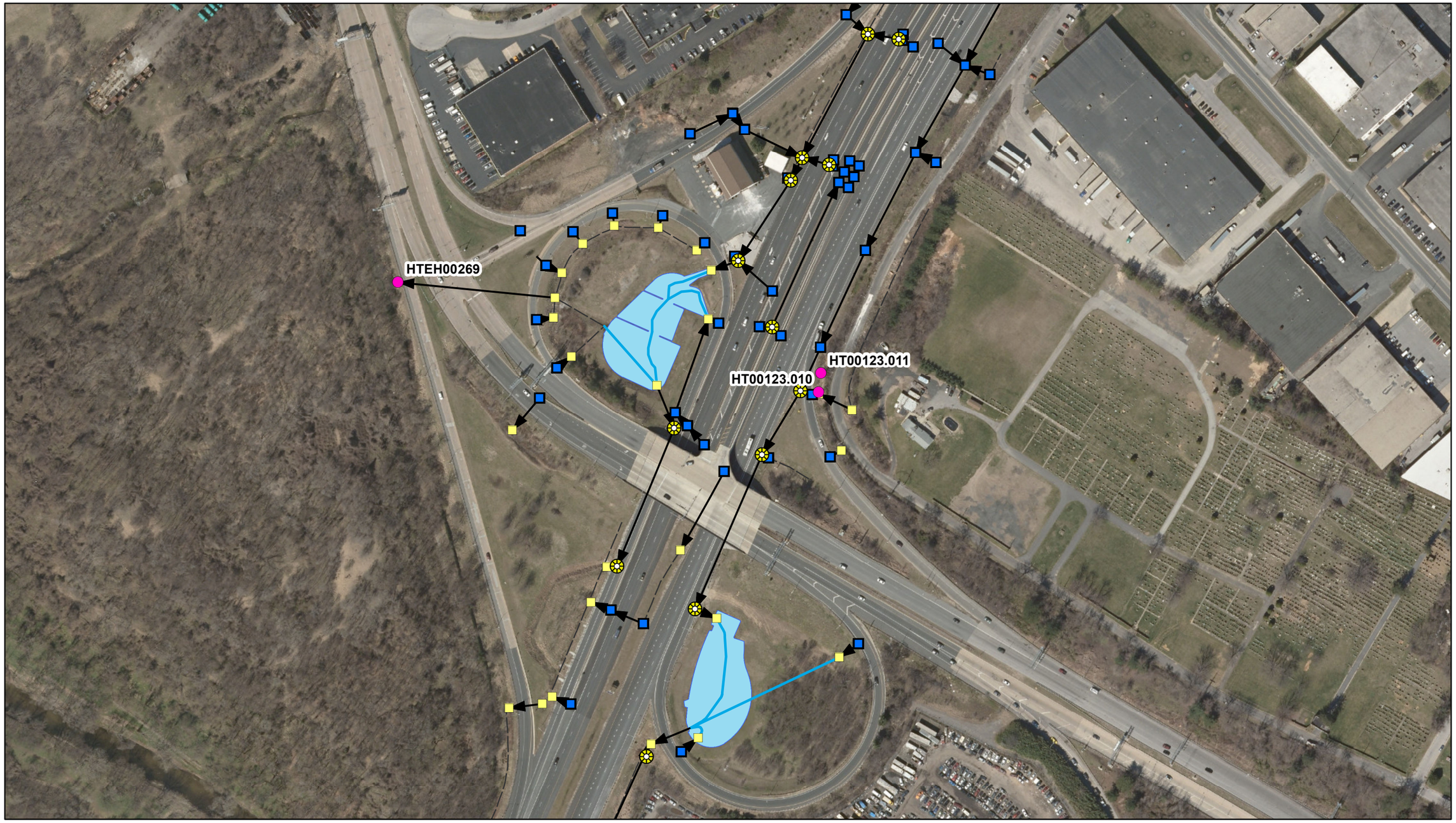
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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



Outfall
Manhole
Inlet
Endwall or Headwall
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Culvert
Hydraulic Connection
Ditch
BMP Inventory

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1 in = 200 feet

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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



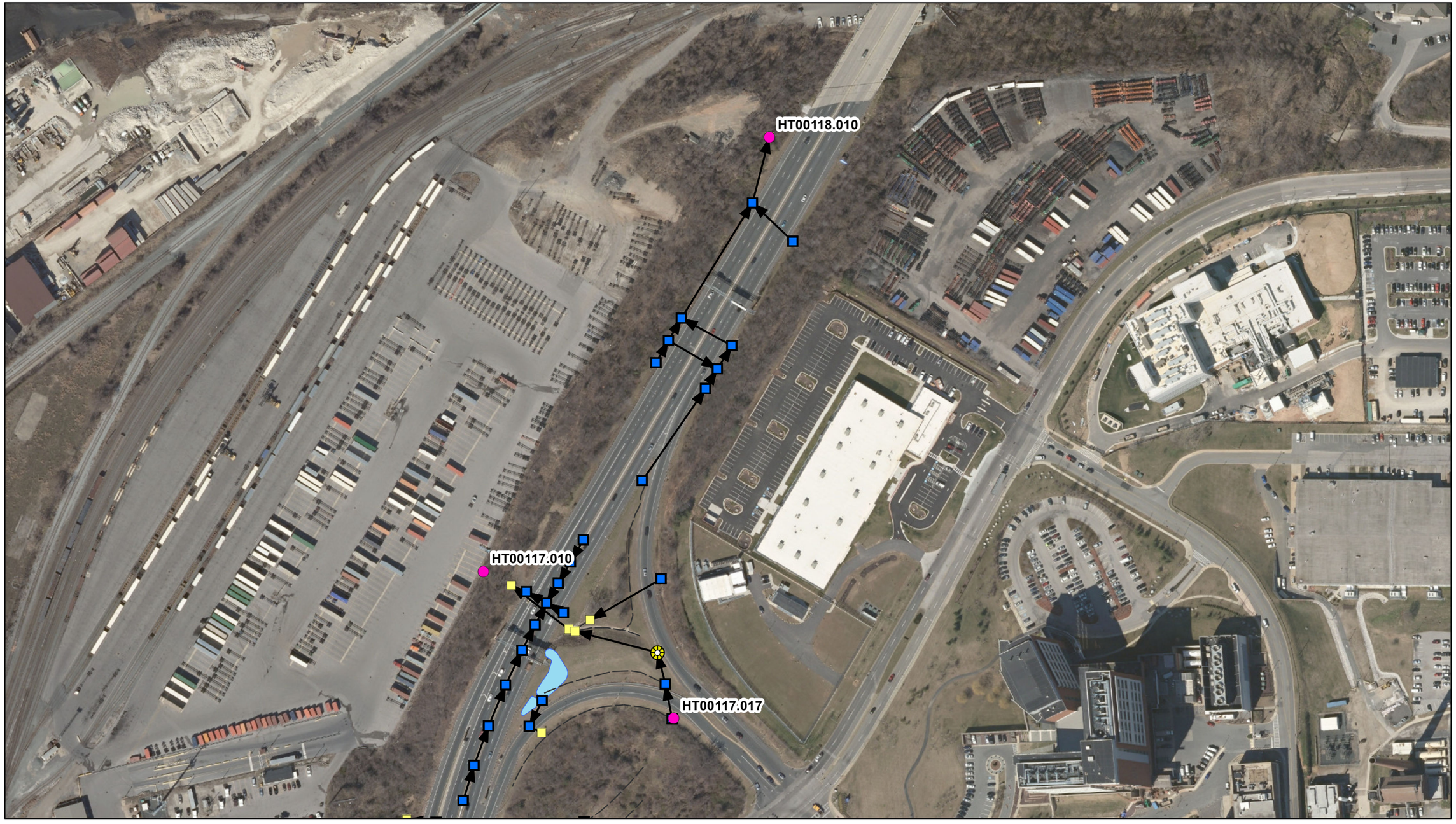
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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



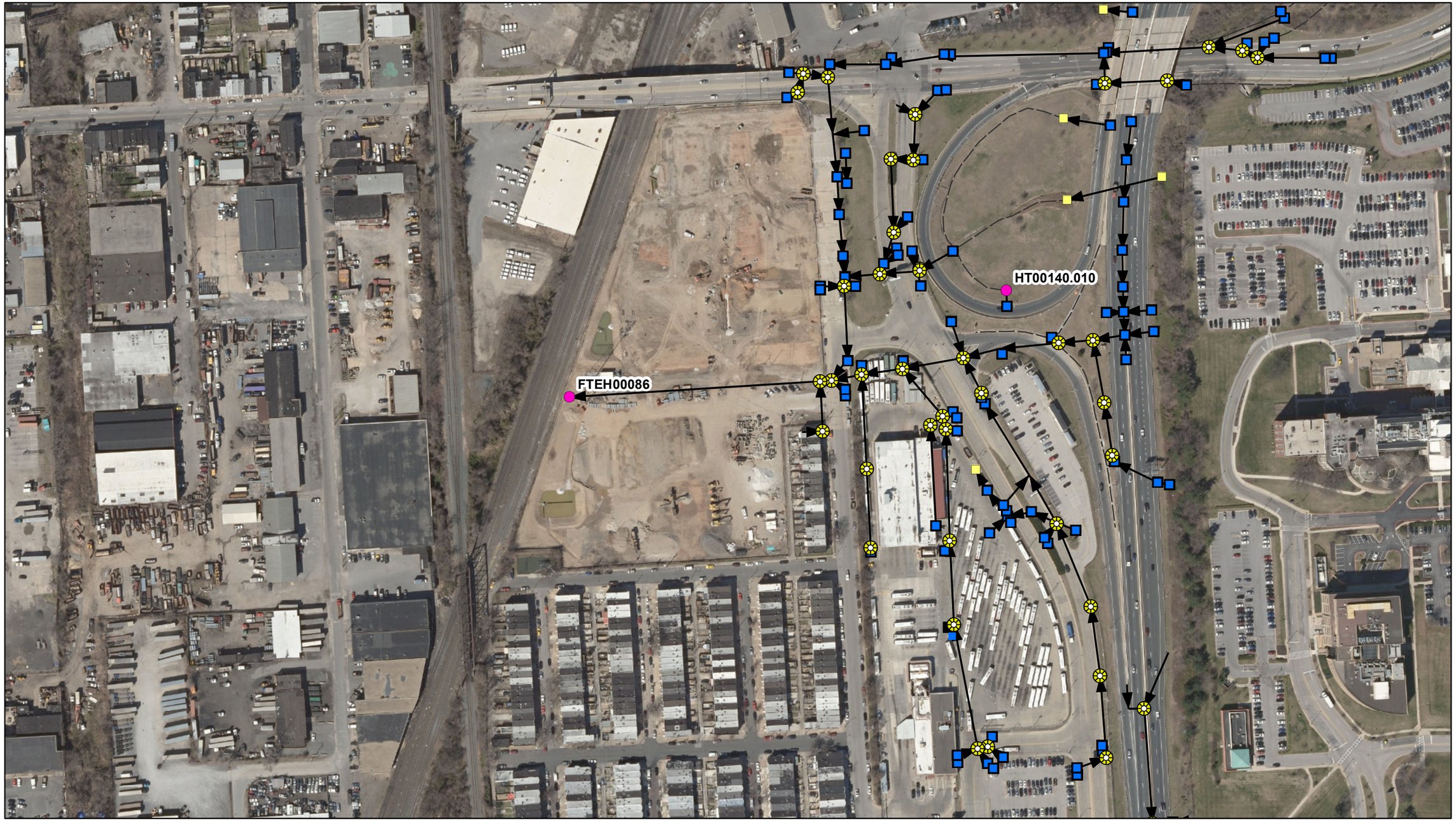
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MDTA MS4 Outfalls - Fort McHenry & Baltimore Harbor Tunnels



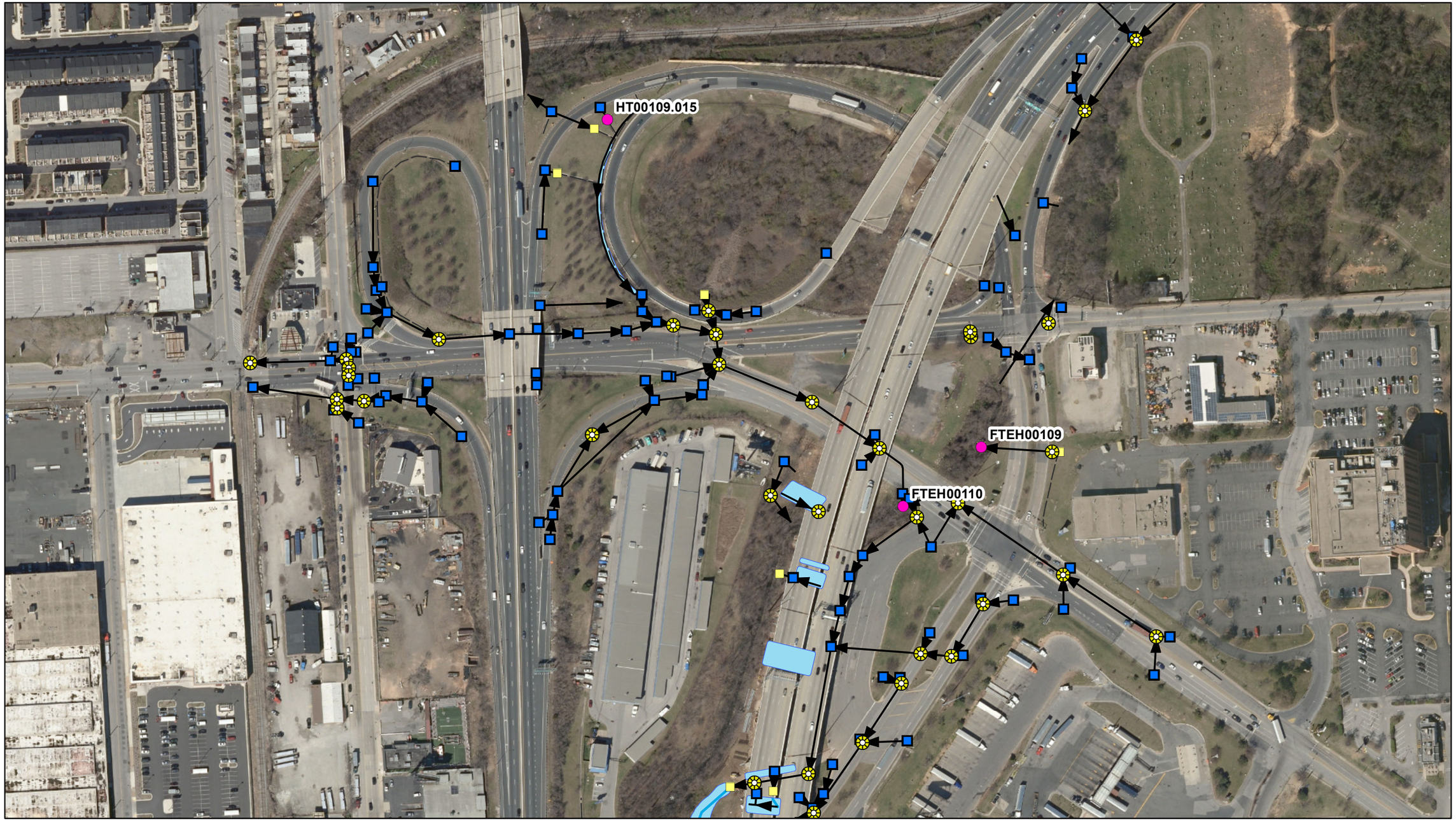
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Culvert
Hydraulic Connection
Ditch
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MDTA MS4 Outfalls - Fort McHenry & Baltimore Harbor Tunnels



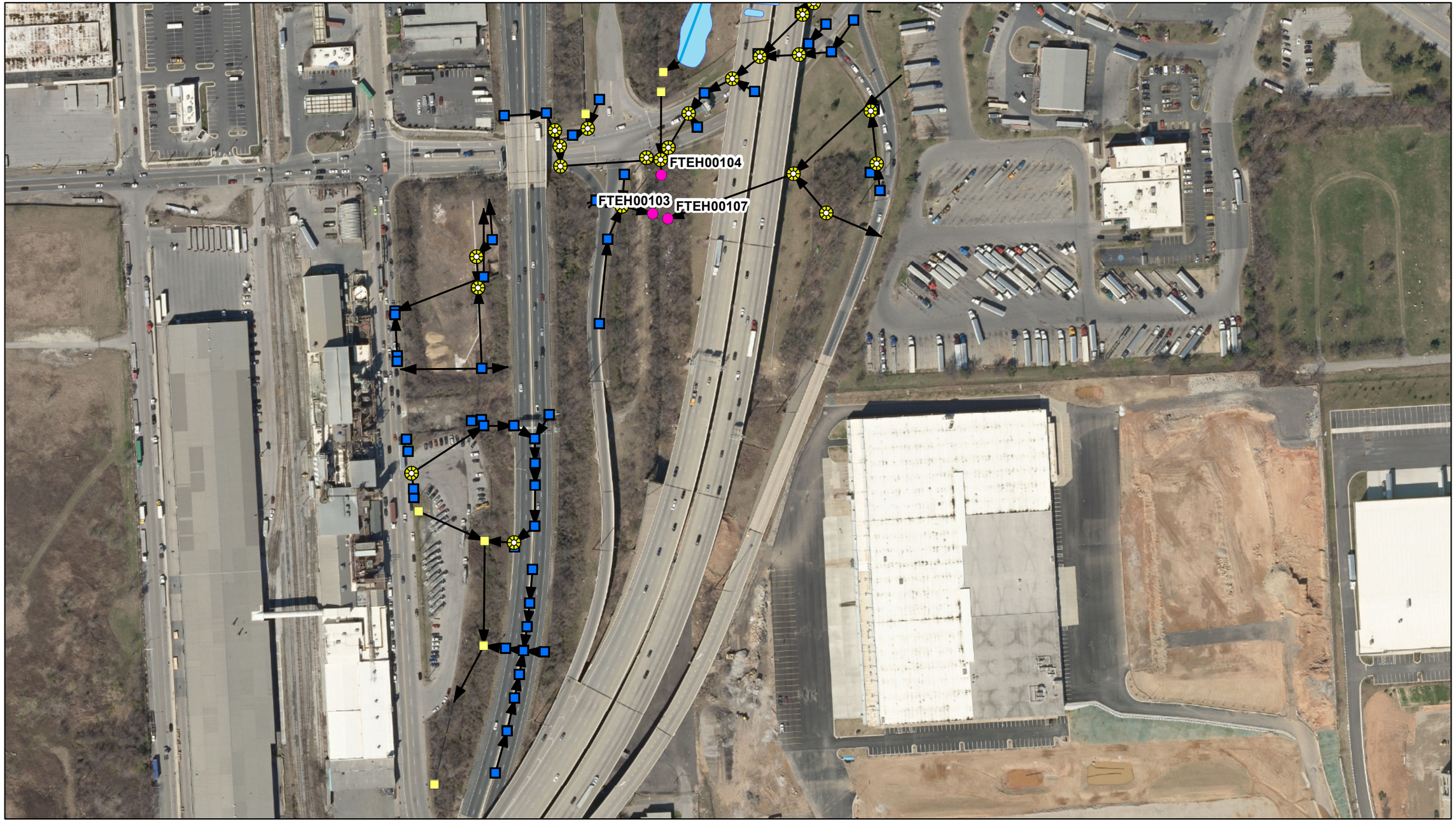
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MDTA MS4 Outfalls - Fort McHenry Tunnel



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Culvert
Hydraulic Connection
Ditch
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MDTA MS4 Outfalls - Fort McHenry Tunnel



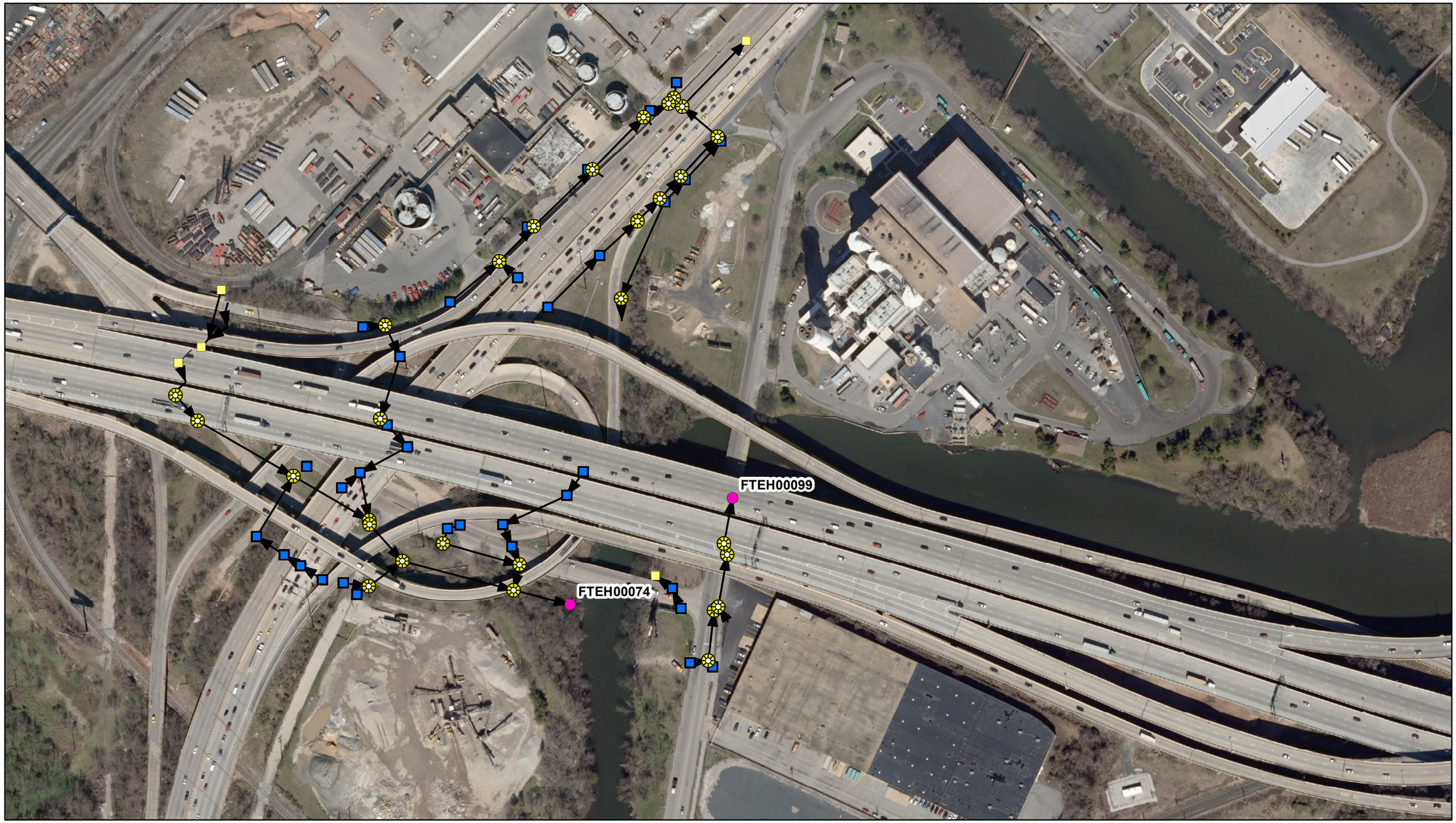
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MDTA MS4 Outfalls - Fort McHenry Tunnel



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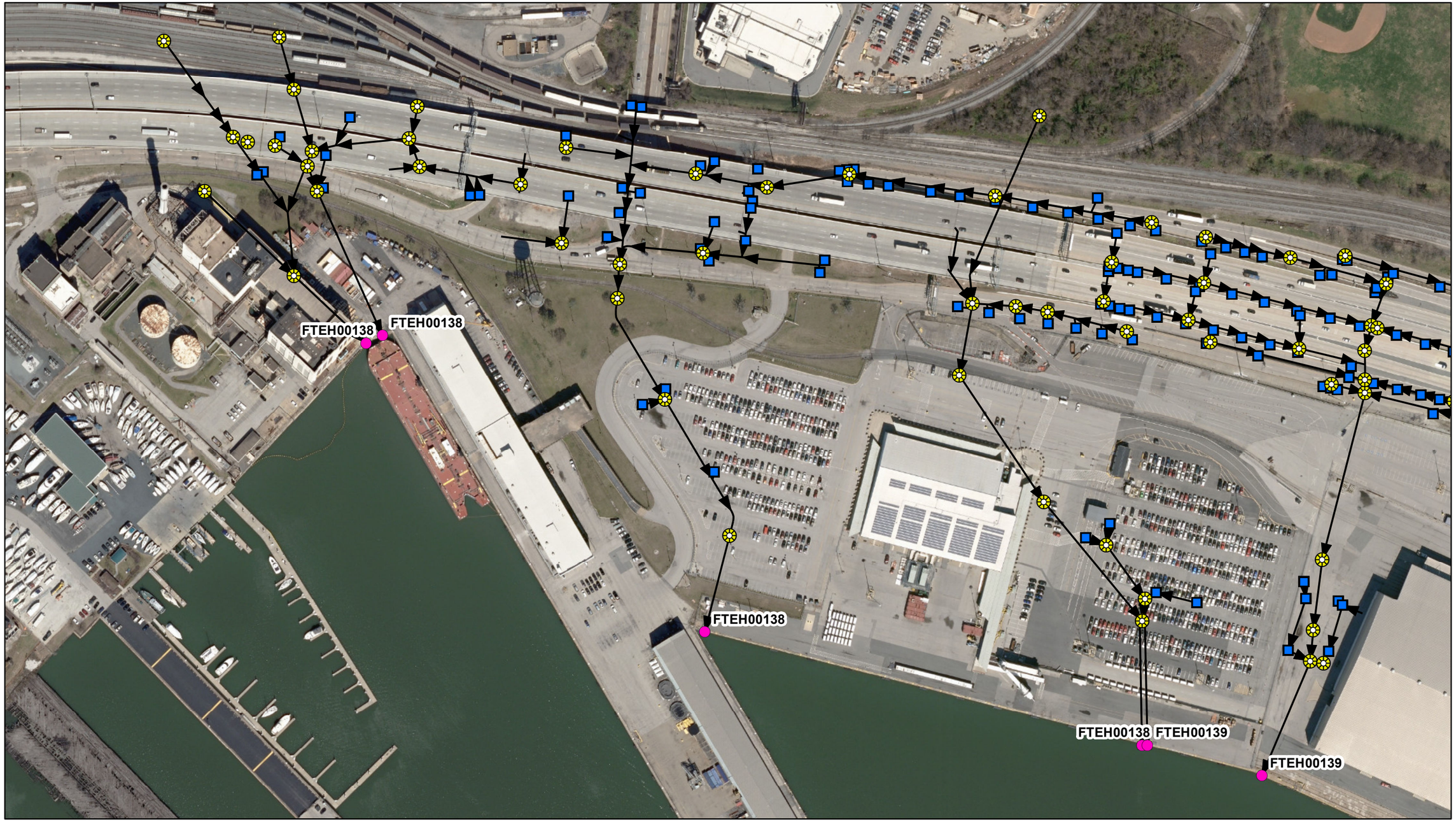
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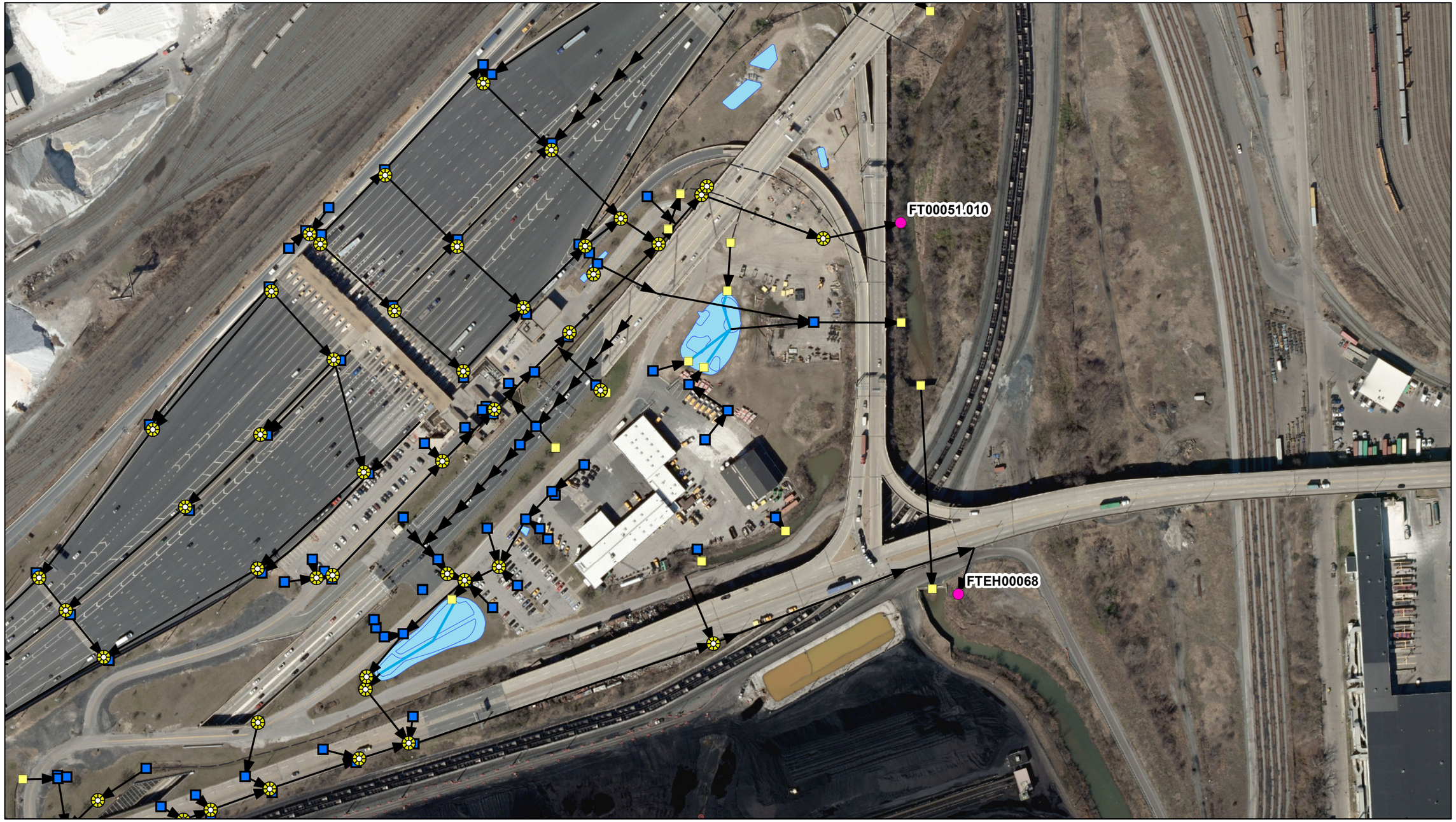
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MDTA MS4 Outfalls - Fort McHenry Tunnel



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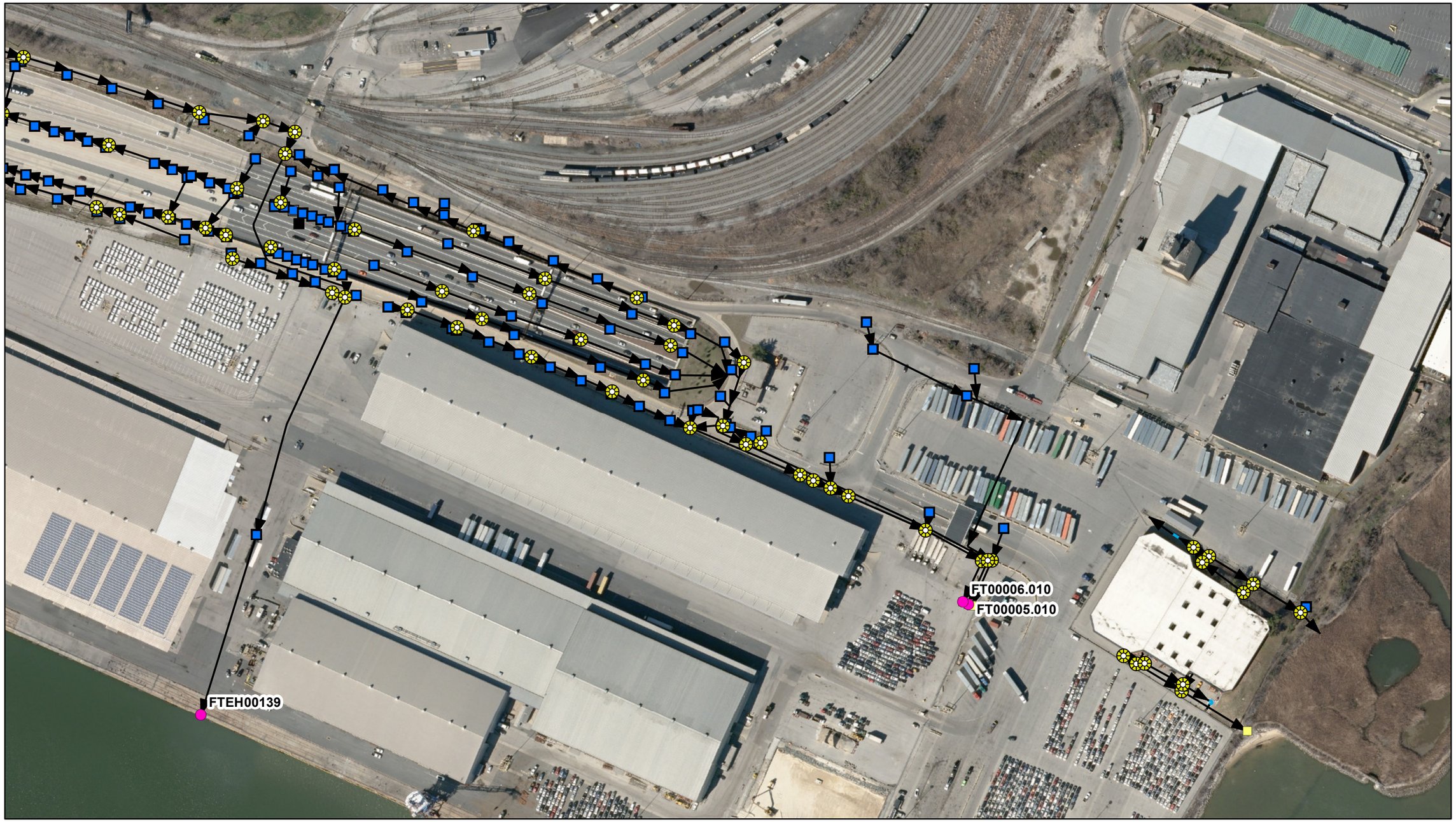
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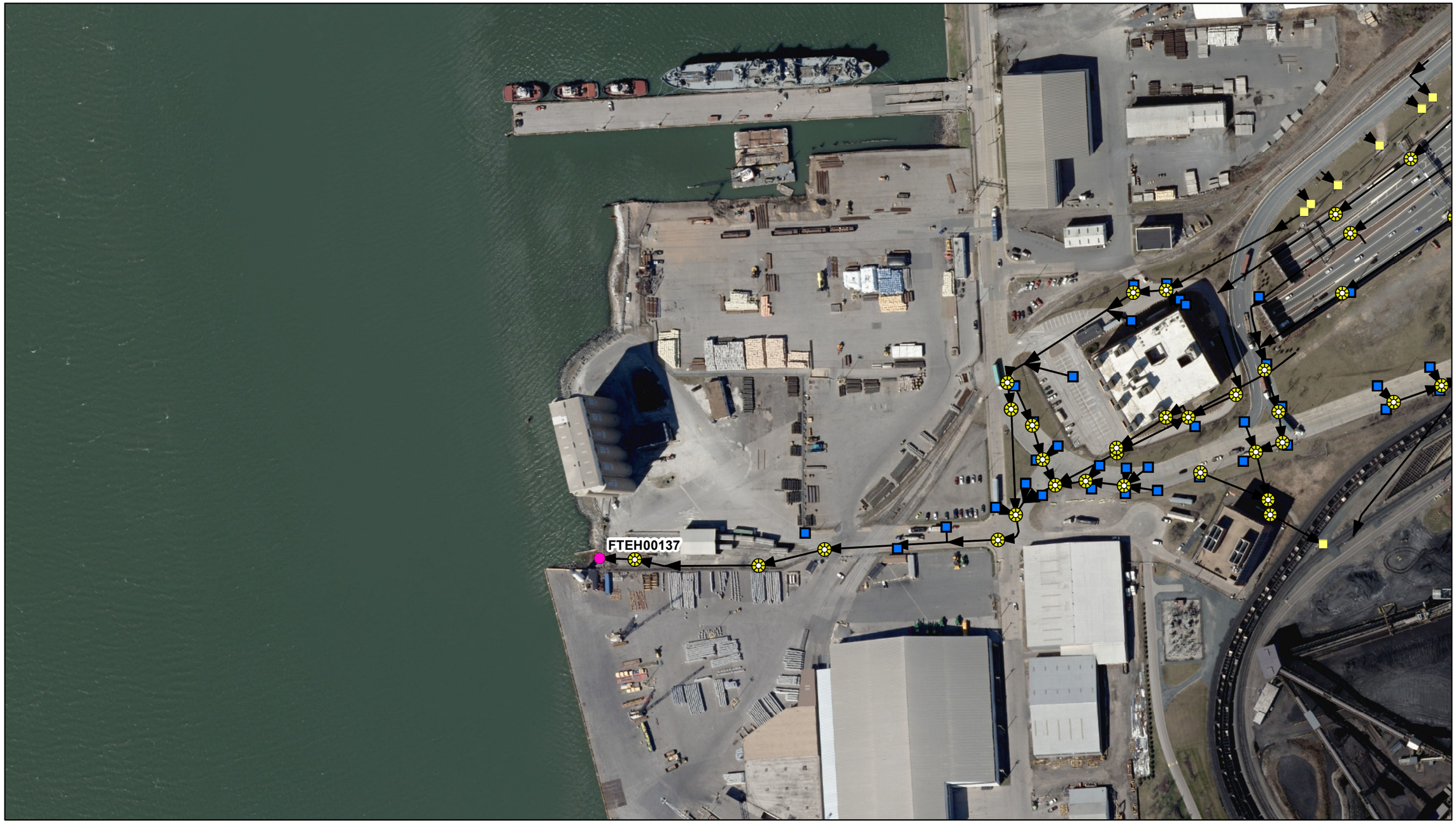
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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



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MDTA MS4 Outfalls - Francis Scott Key Bridge



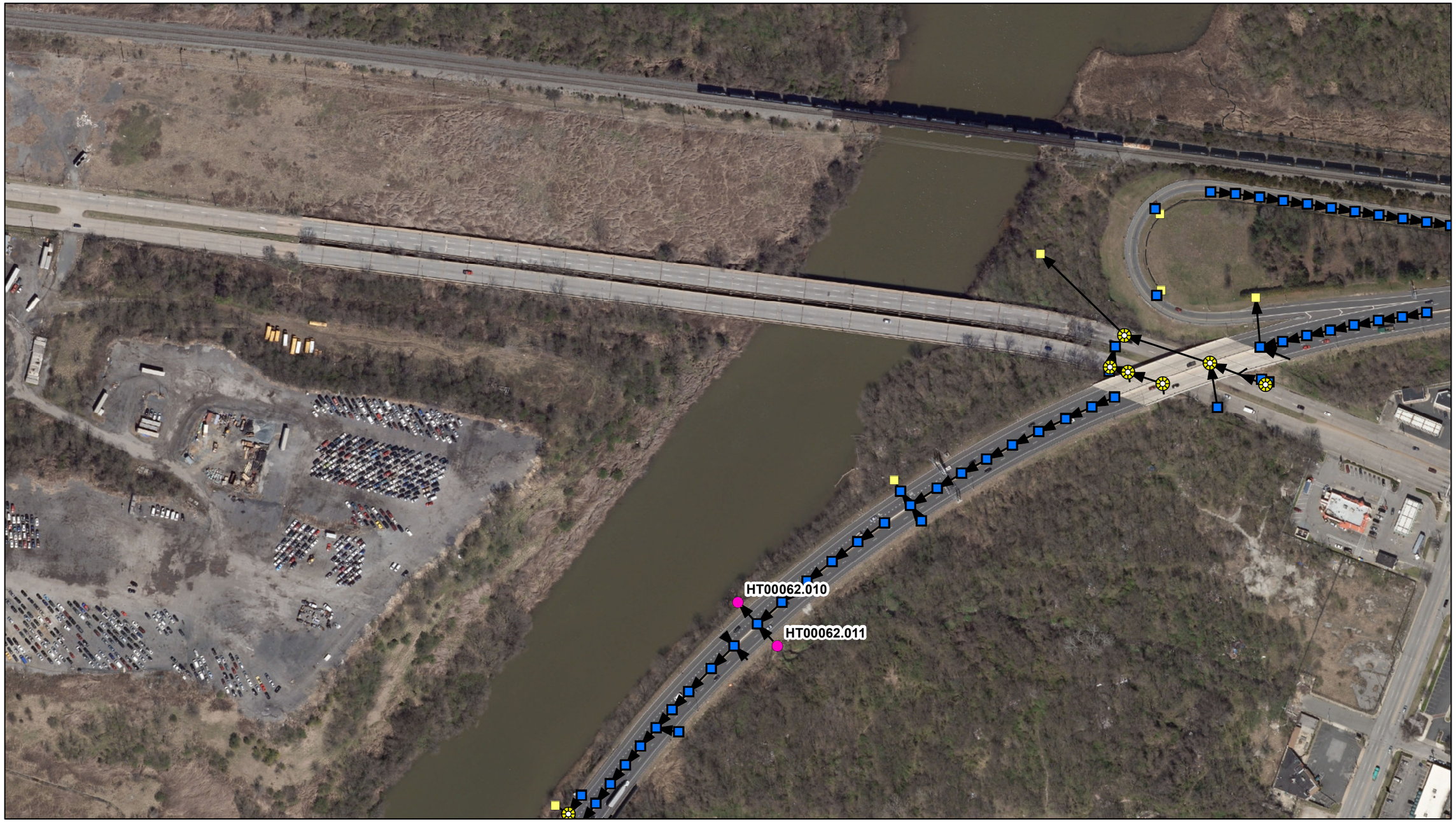
Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

0 125 250 500 750 1,000 Feet

1 in = 200 feet

N

MDTA MS4 Outfalls - Baltimore Harbor Tunnel



Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

0 125 250 500 750 1,000 Feet

1 in = 200 feet

N

MDTA MS4 Outfalls - Baltimore Harbor Tunnel



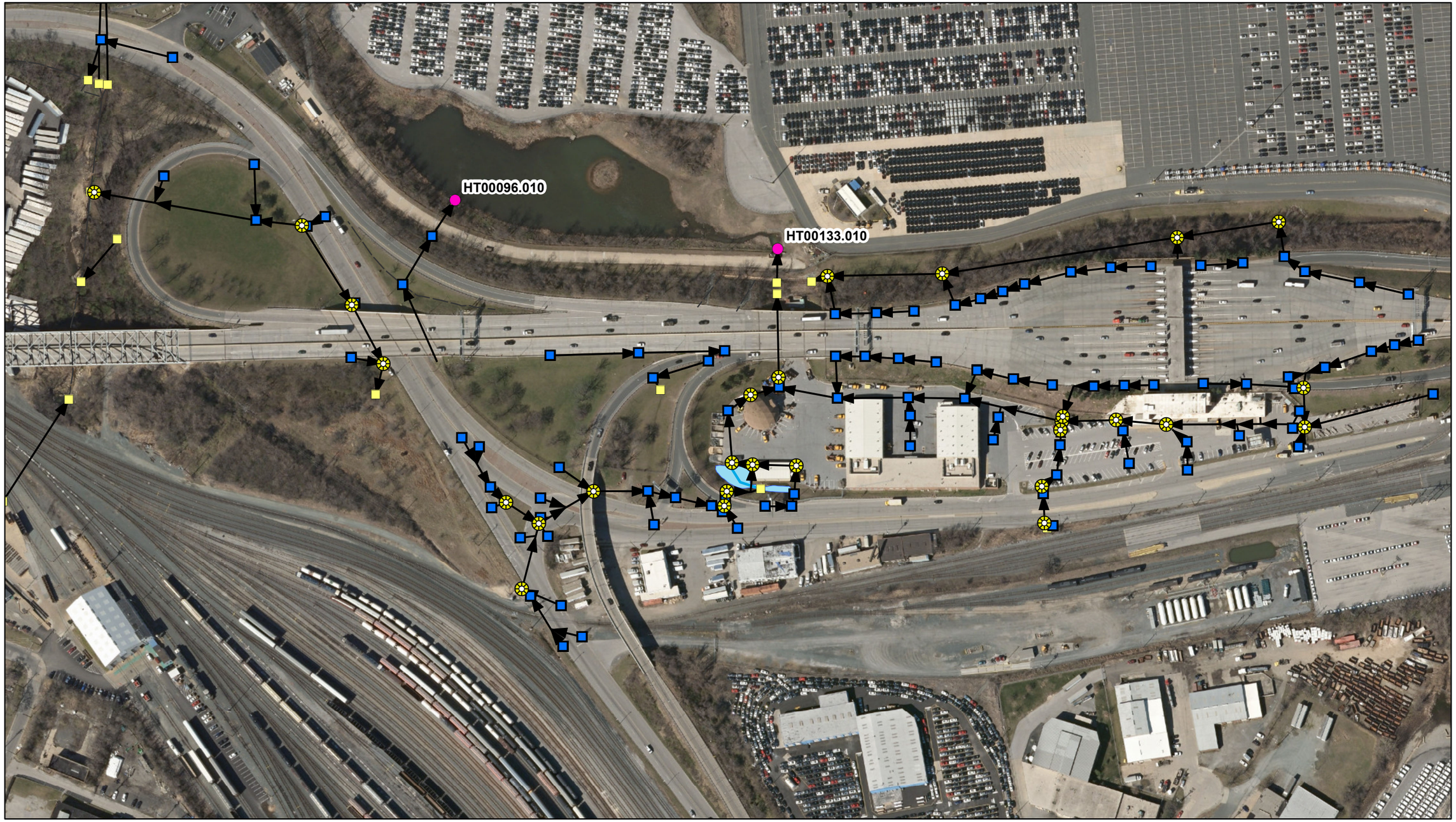
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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



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MDTA MS4 Outfalls - Francis Scott Key Bridge



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Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



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MDTA MS4 Outfalls - Baltimore Harbor Tunnel



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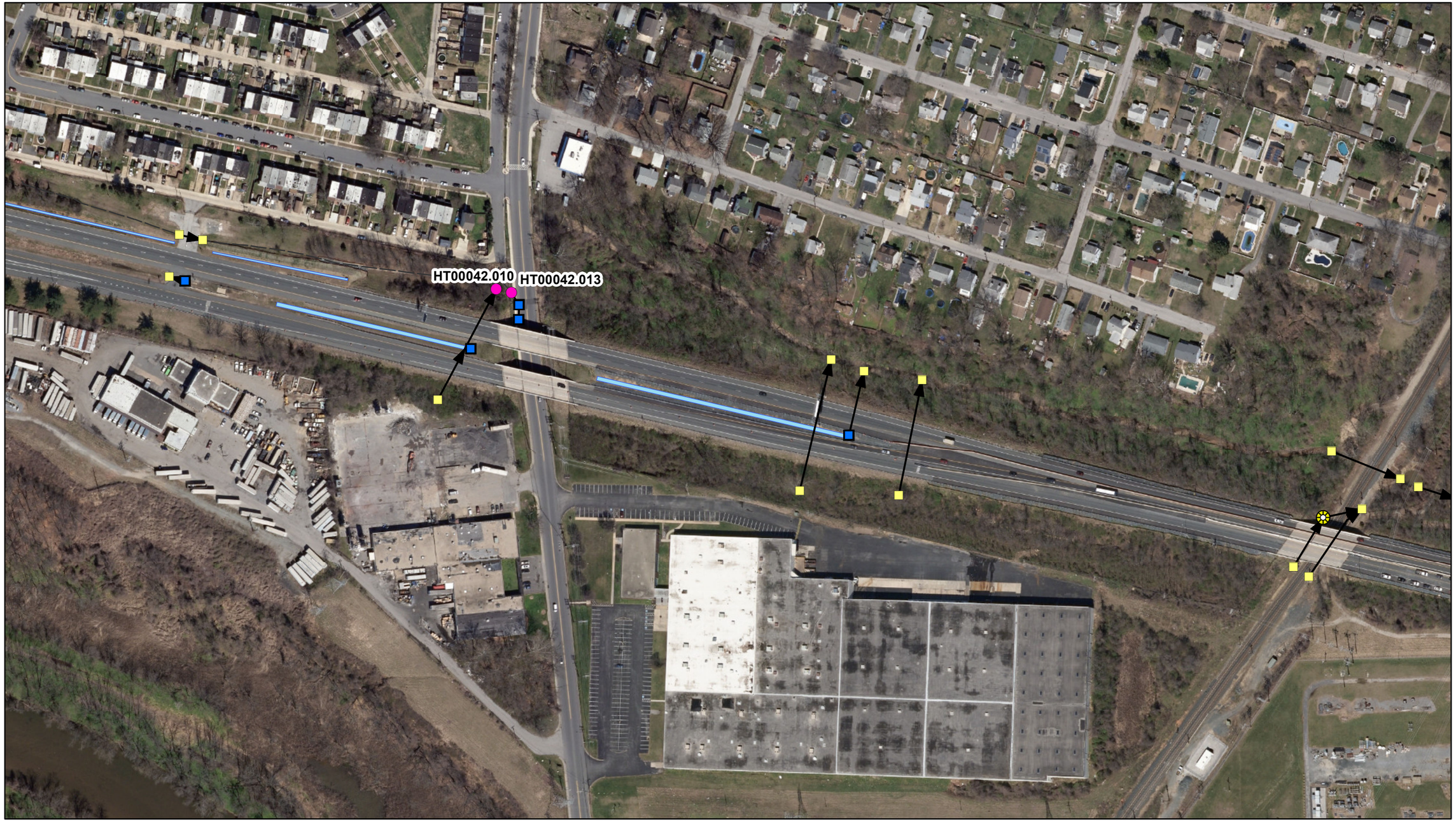
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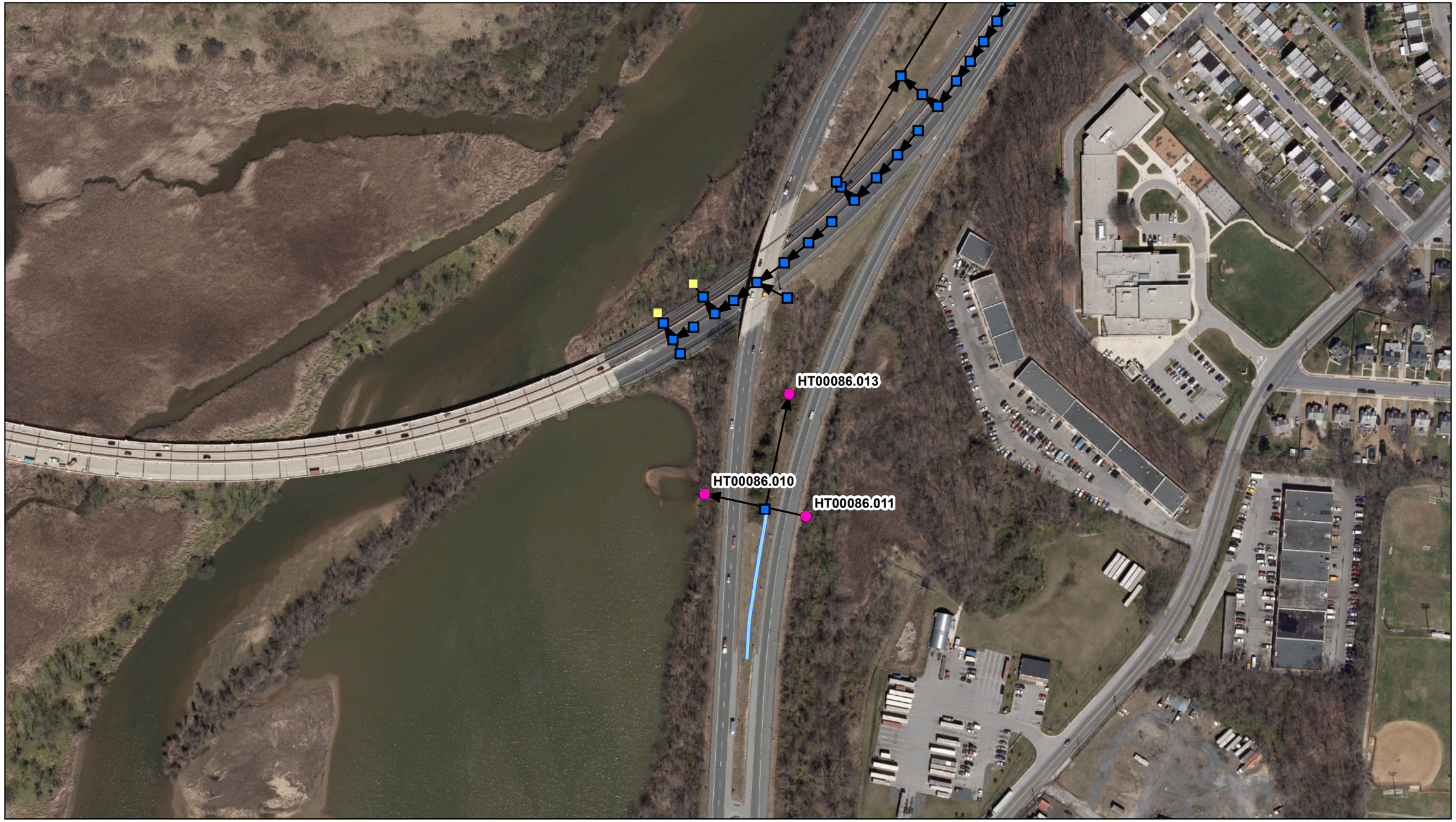
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MDTA MS4 Outfalls - Francis Scott Key Bridge



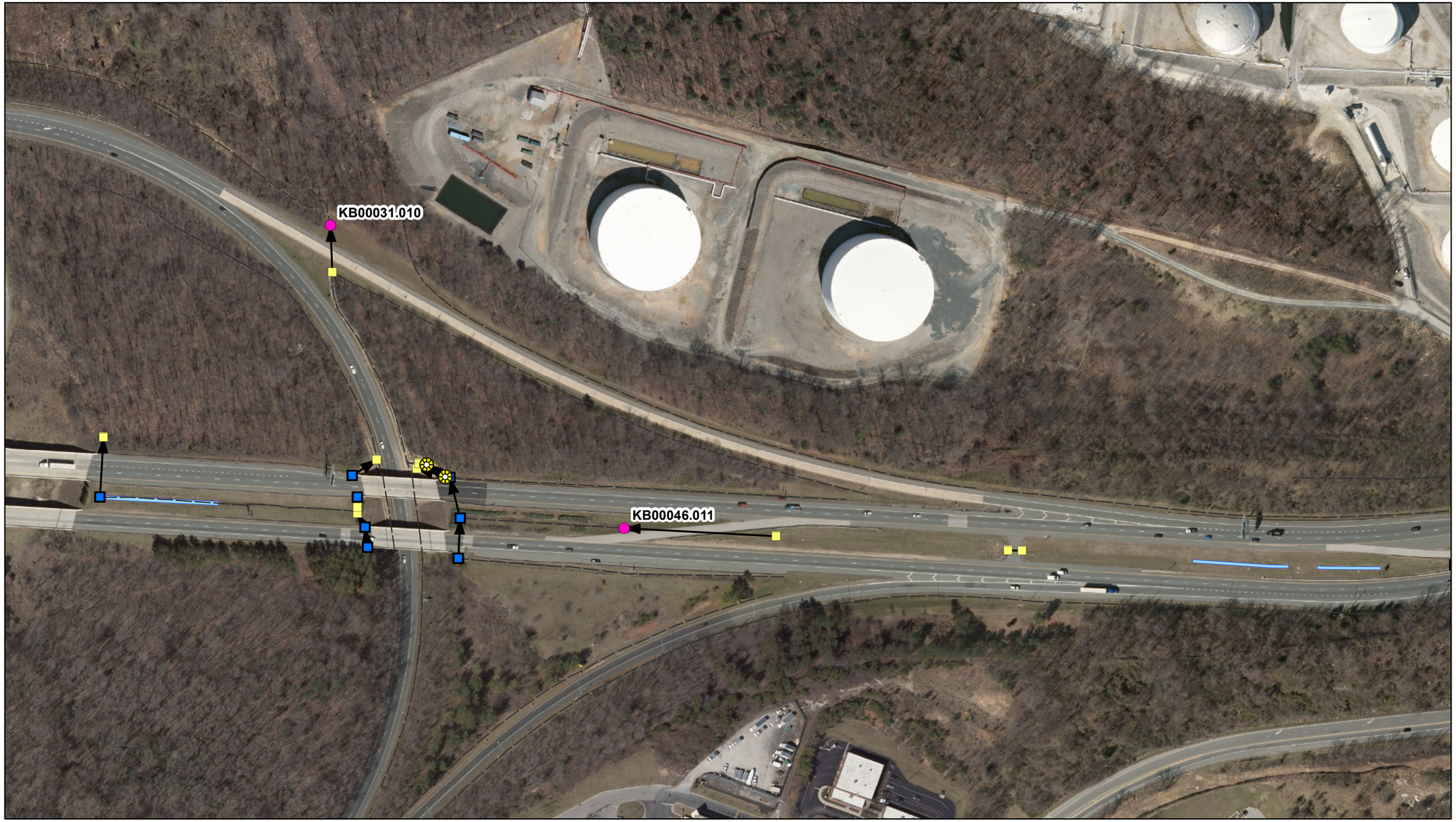
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MDTA MS4 Outfalls - Francis Scott Key Bridge



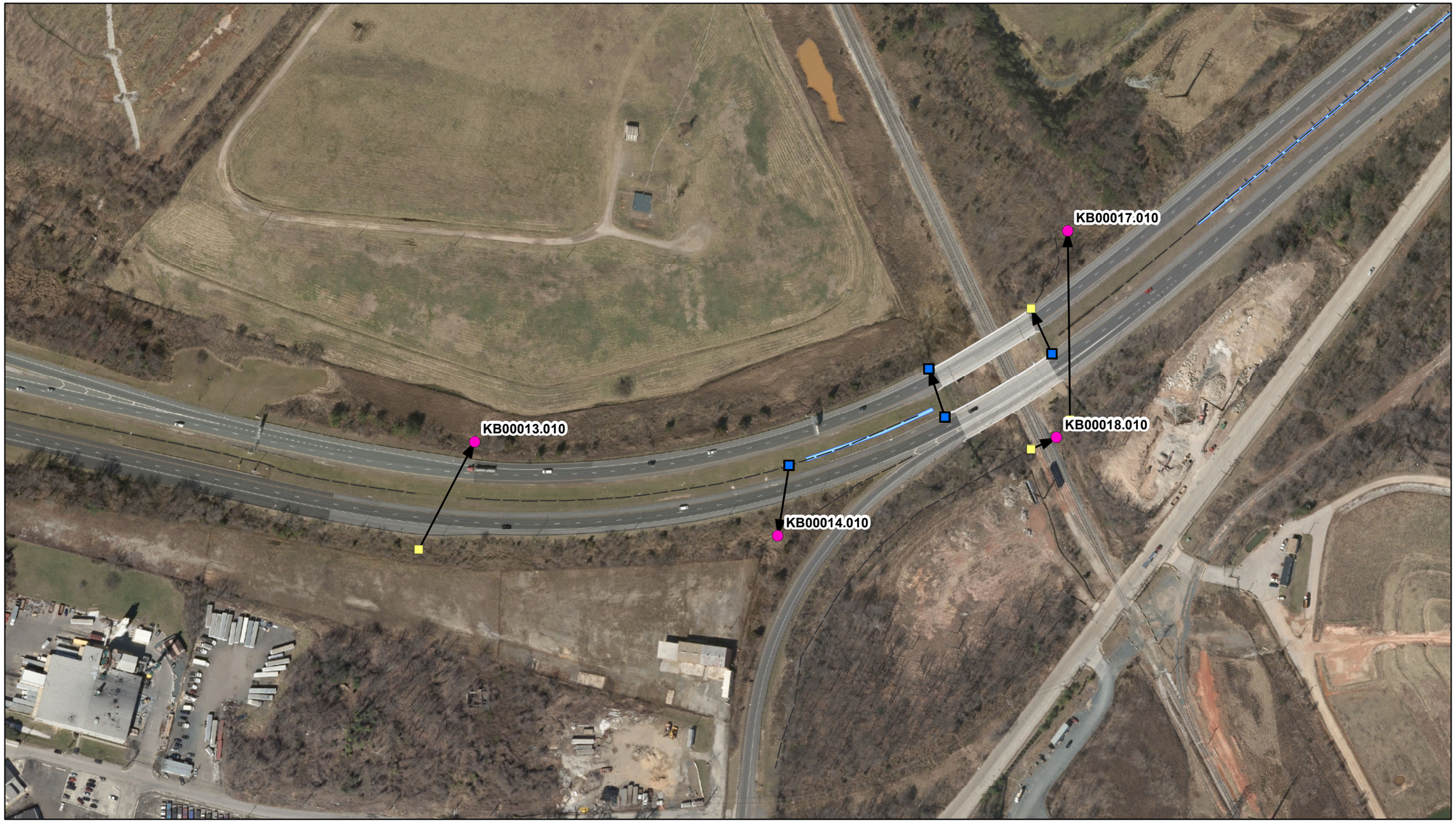
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MDTA MS4 Outfalls - Francis Scott Key Bridge



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MDTA MS4 Outfalls - ICC



Outfall
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MDTA MS4 Outfalls - ICC



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MDTA MS4 Outfalls - ICC

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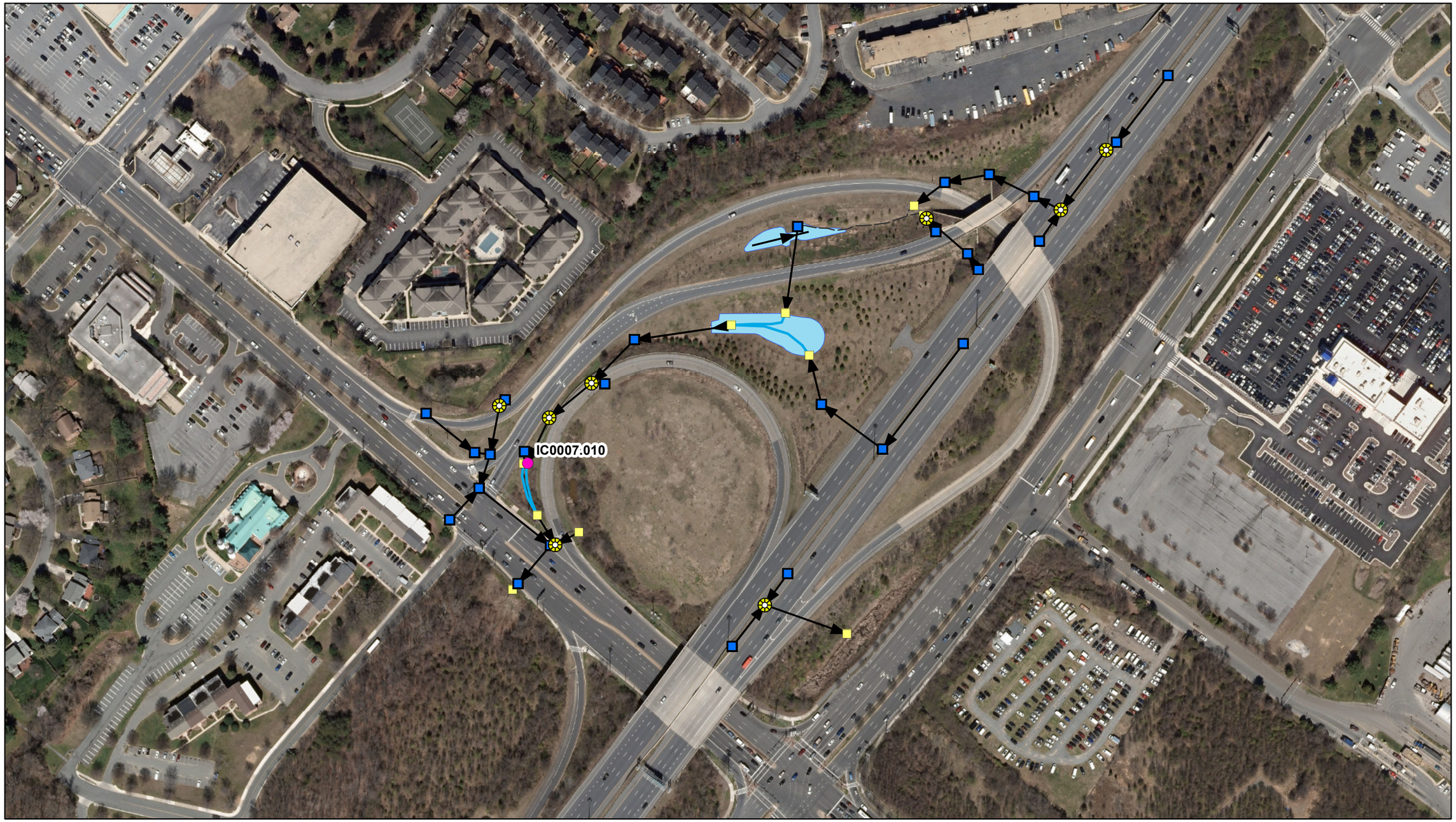
Outfall
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Hydraulic Connection
Ditch
BMP Inventory

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MDTA MS4 Outfalls - ICC



Outfall
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MDTA MS4 Outfalls - ICC



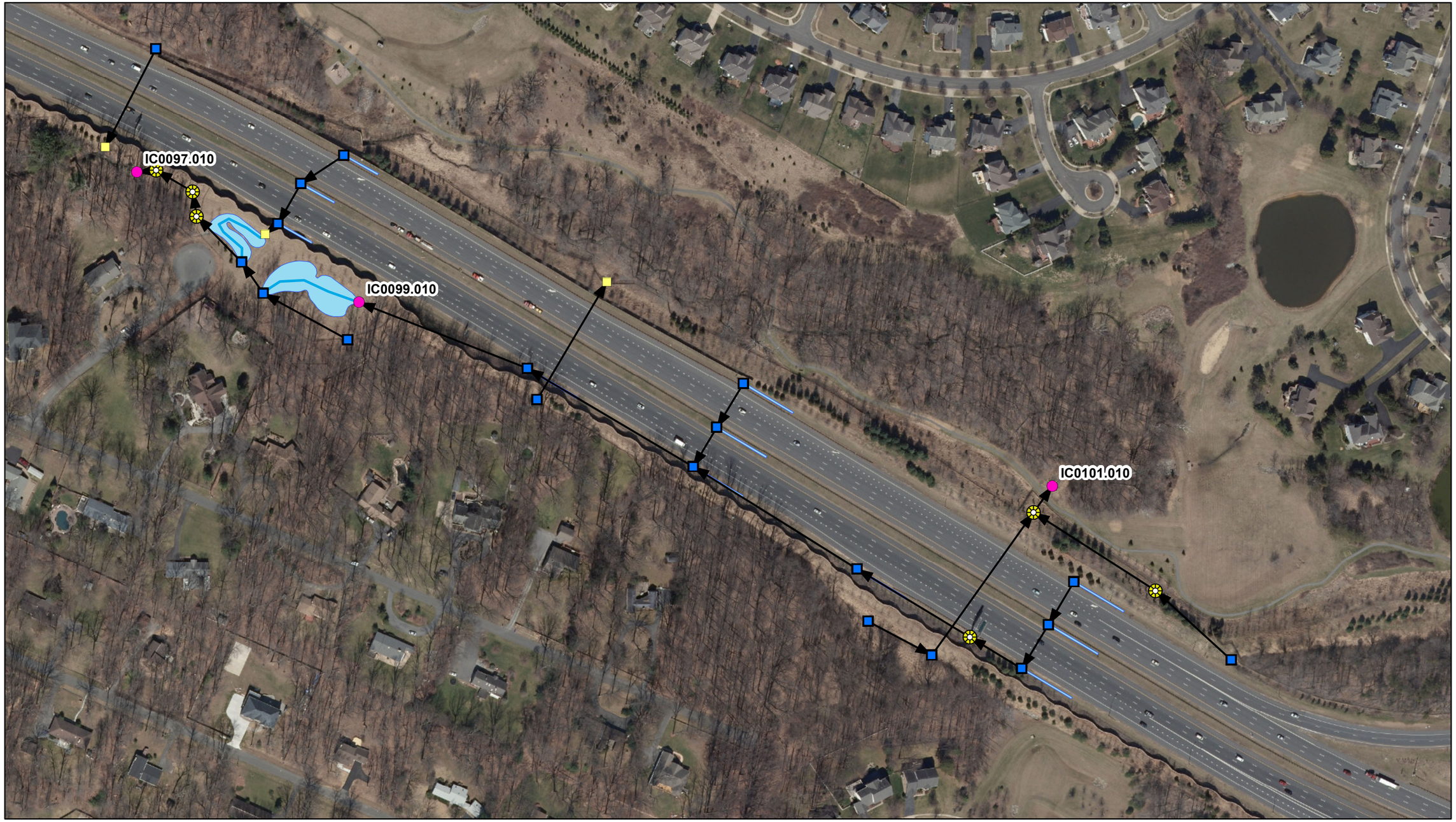
Outfall
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BMP Inventory

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MDTA MS4 Outfalls - ICC



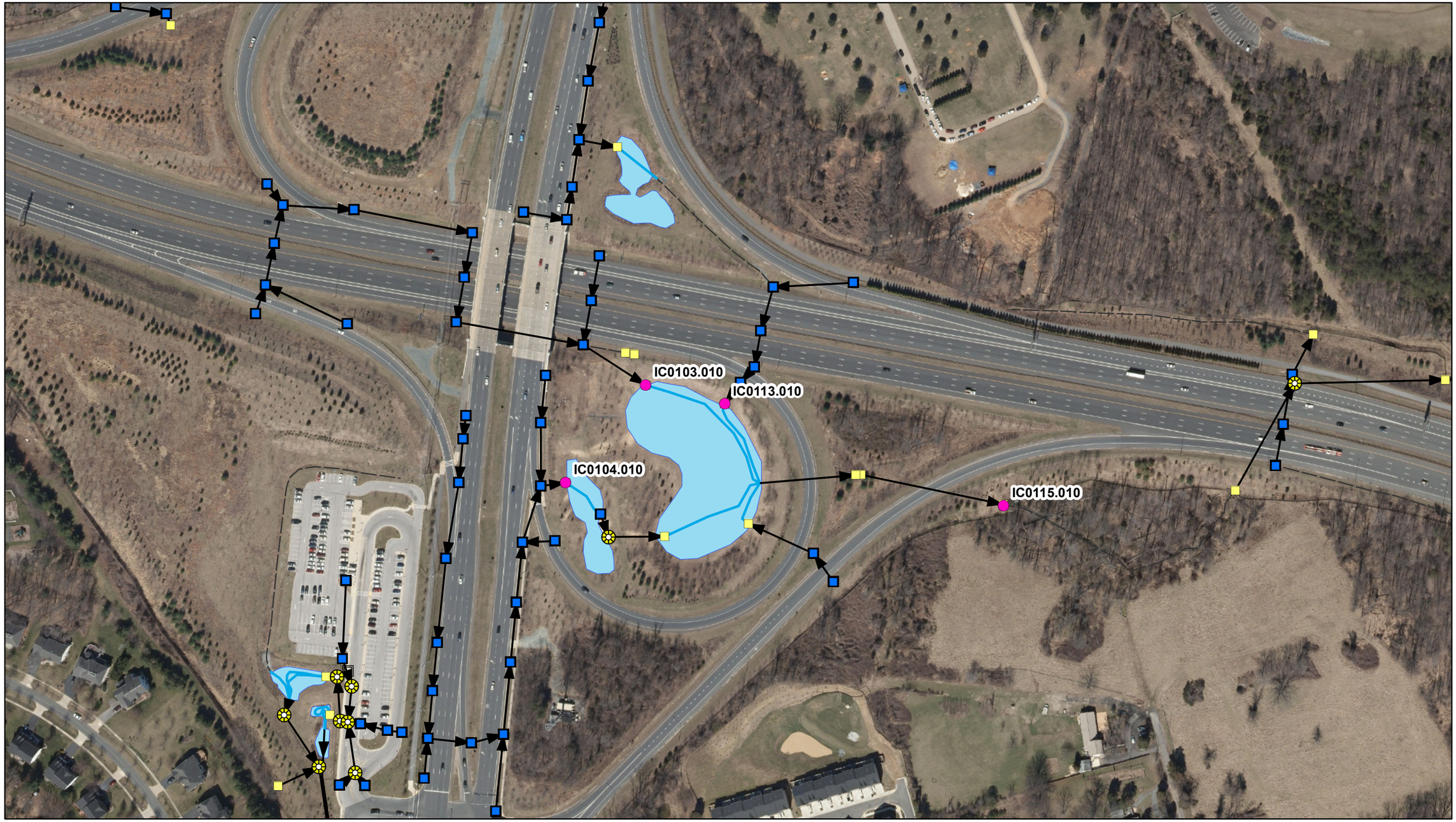
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MDTA MS4 Outfalls - ICC



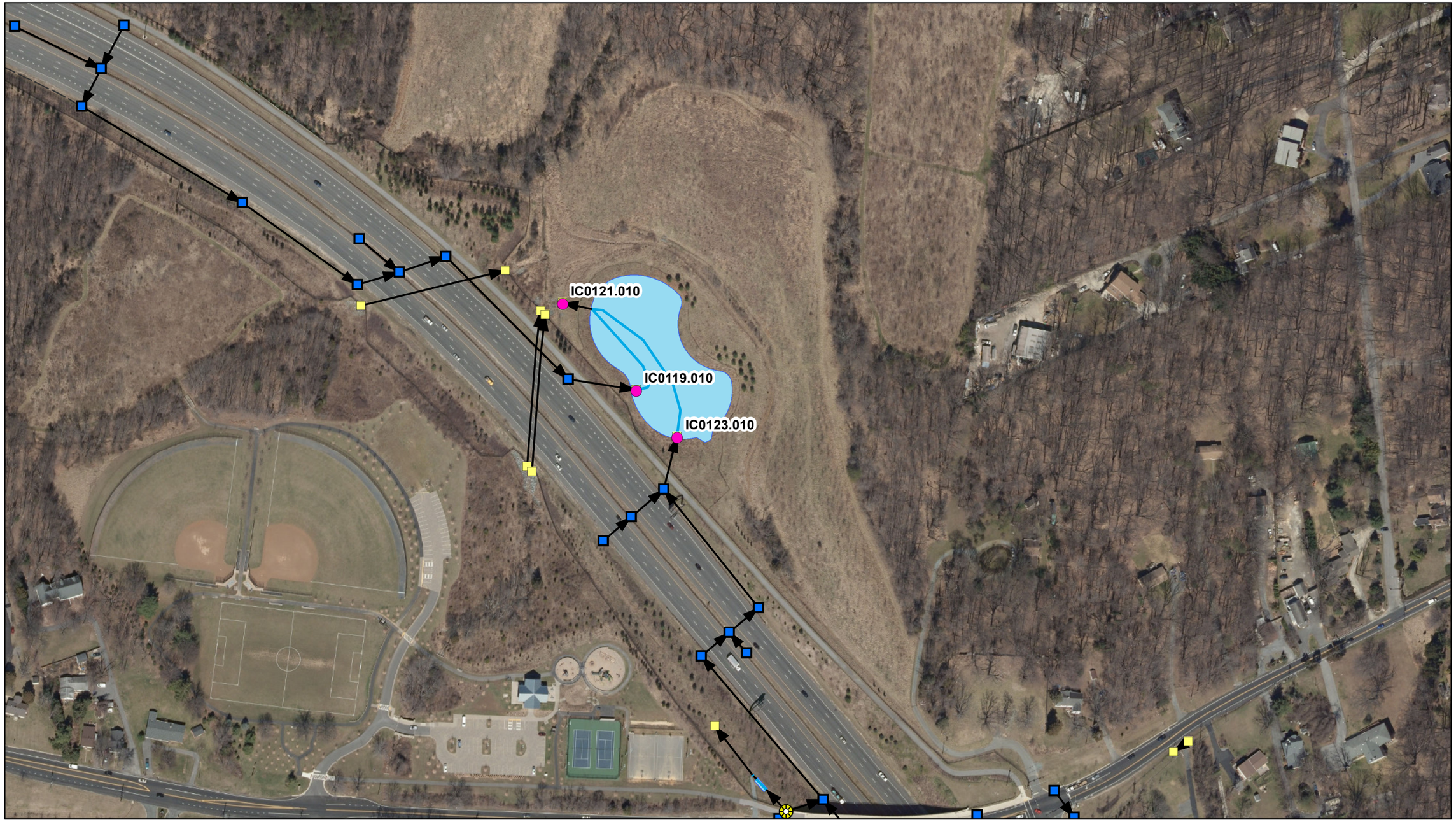
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MDTA MS4 Outfalls - ICC



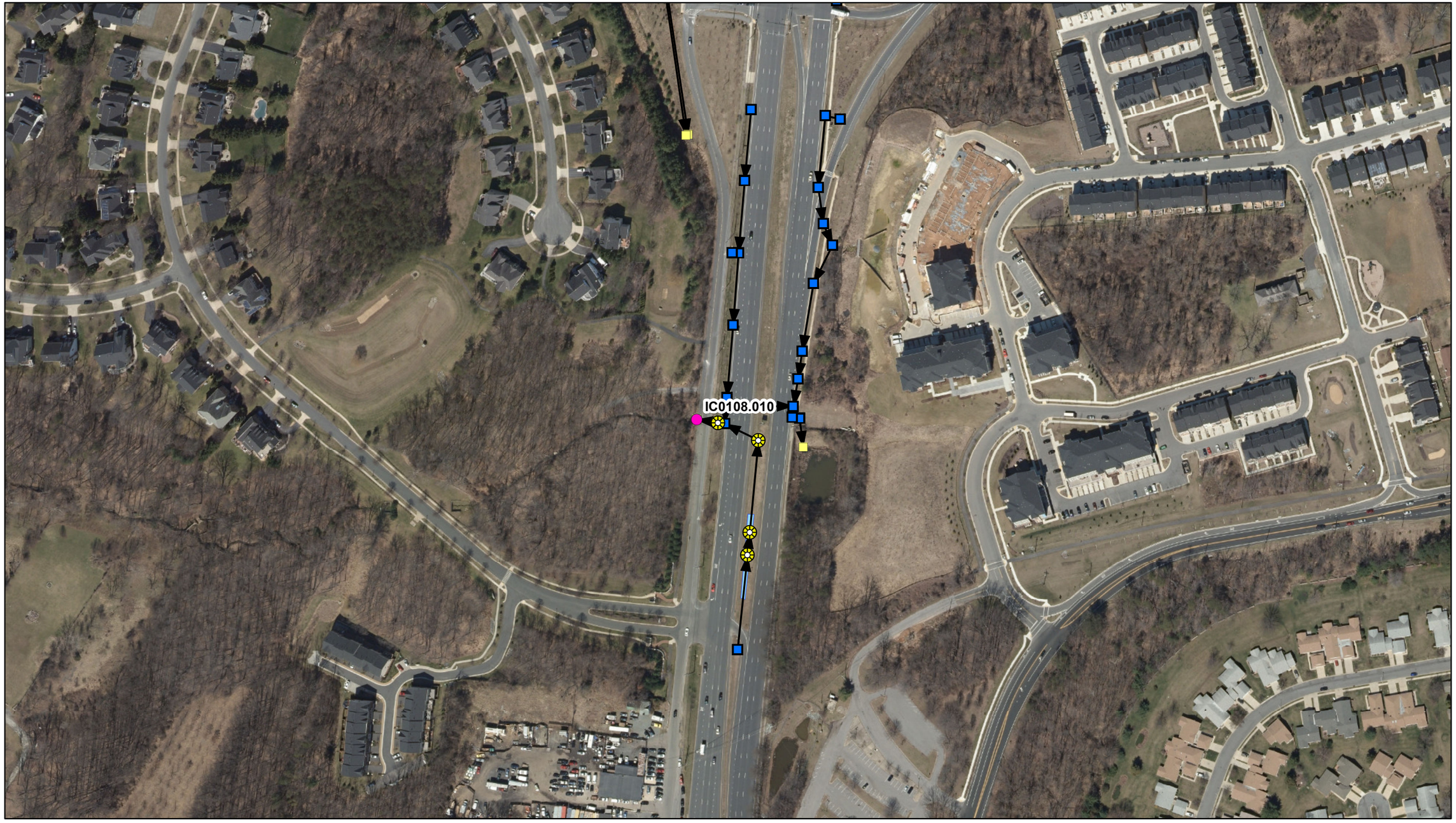
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MDTA MS4 Outfalls - ICC



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MDTA MS4 Outfalls - ICC



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N

MDTA MS4 Outfalls - ICC

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IC0137.010

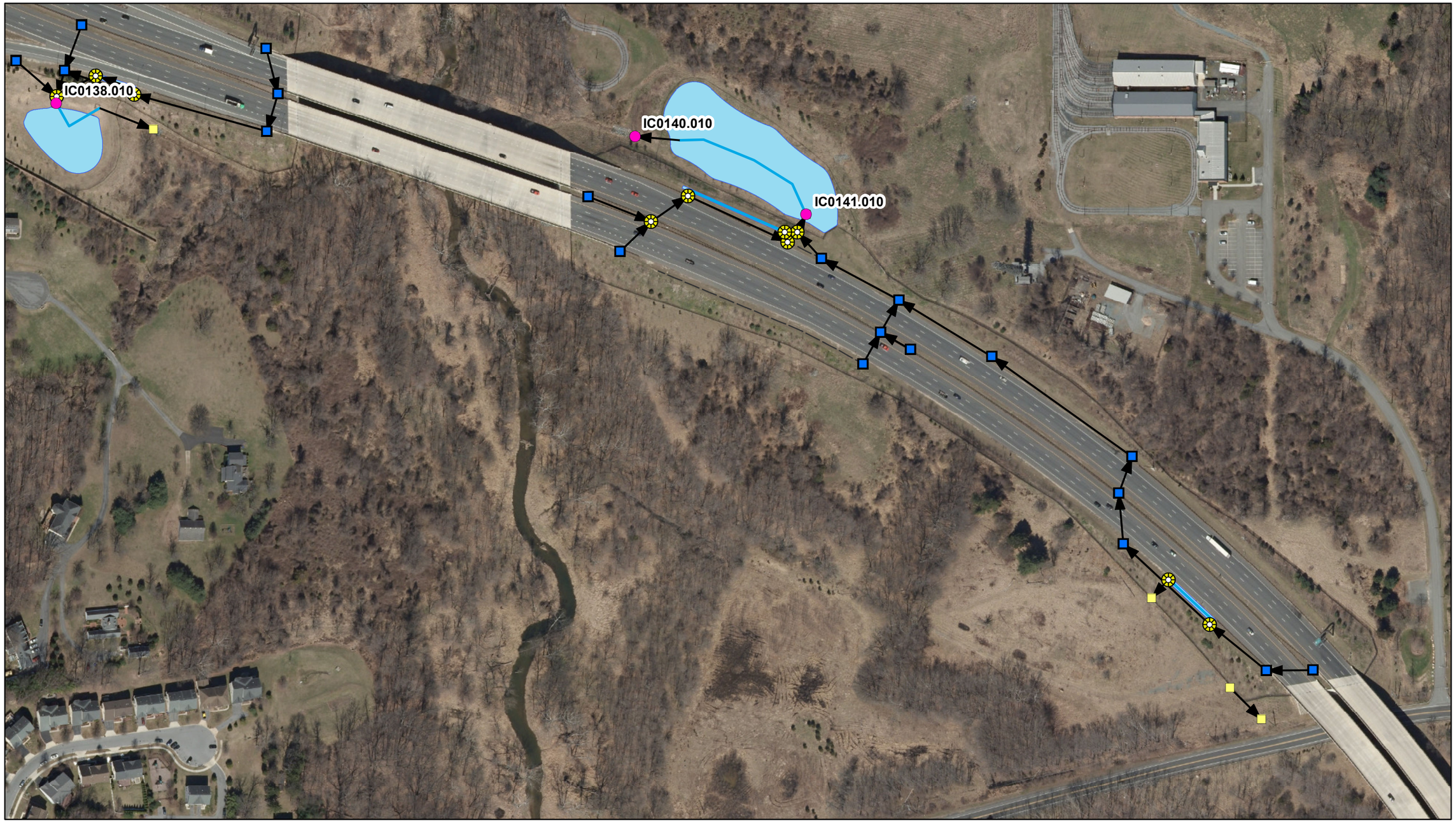
Outfall
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Ditch
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MDTA MS4 Outfalls - ICC



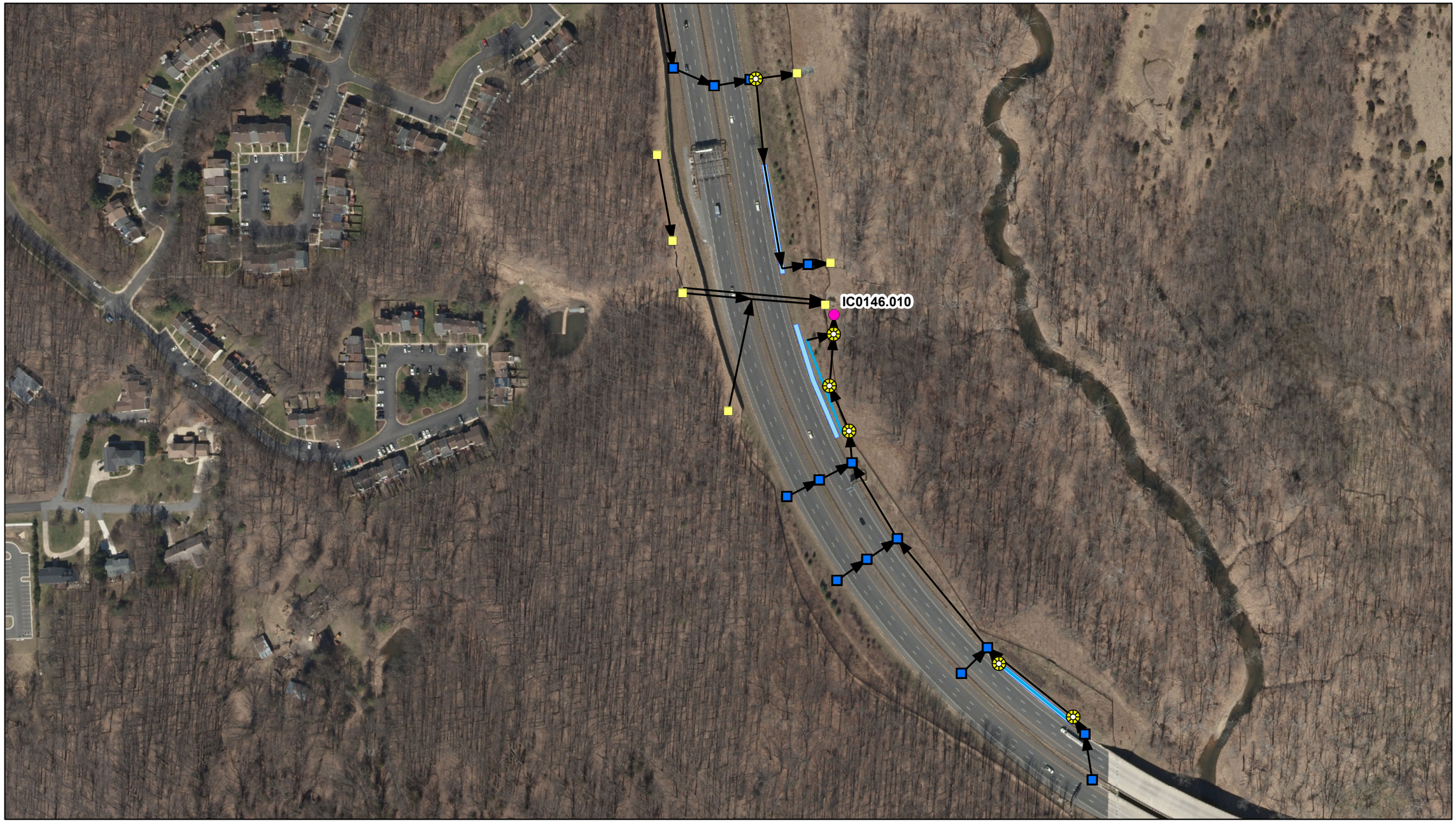
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Ditch
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MDTA MS4 Outfalls - ICC



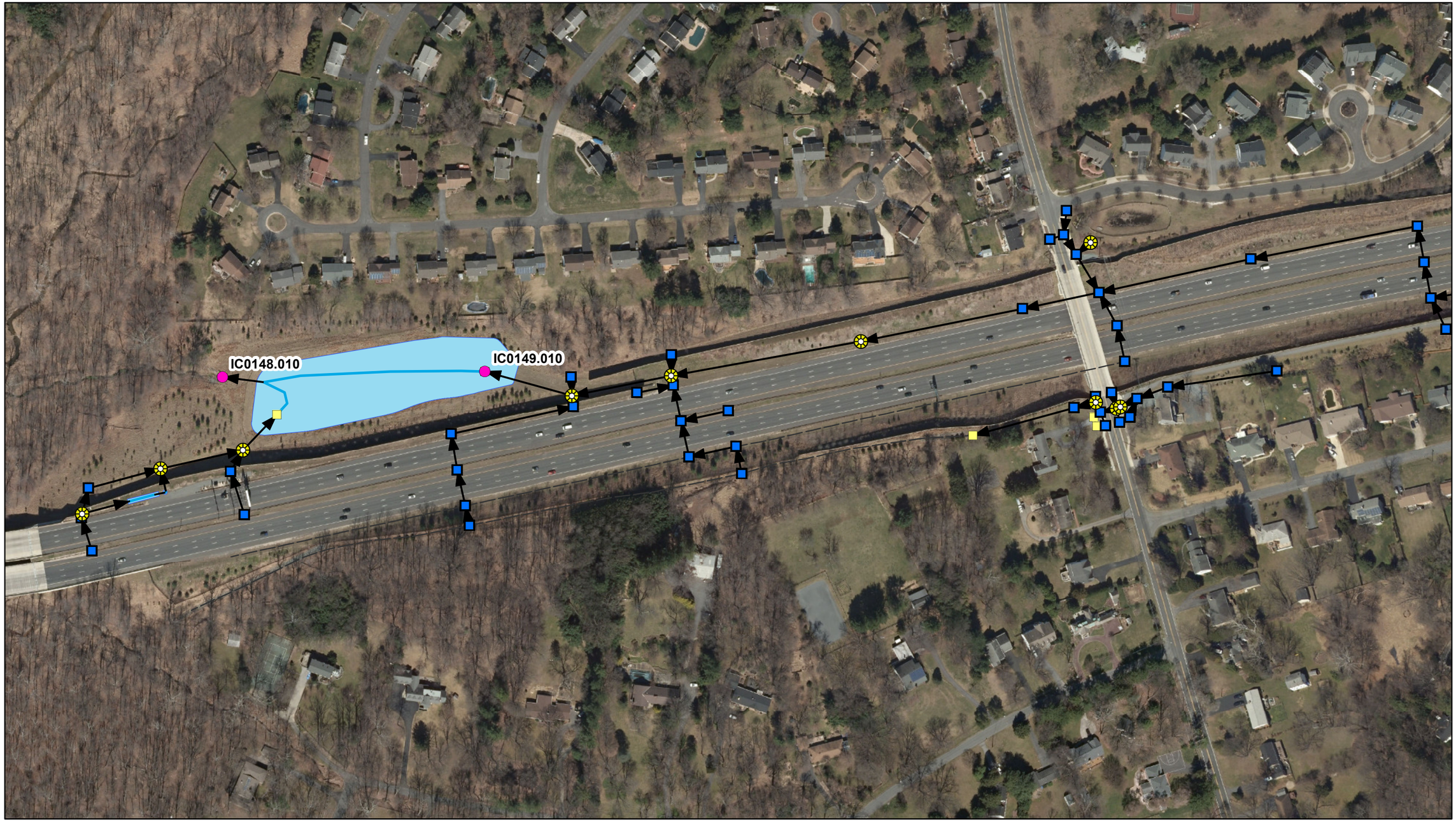
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MDTA MS4 Outfalls - ICC



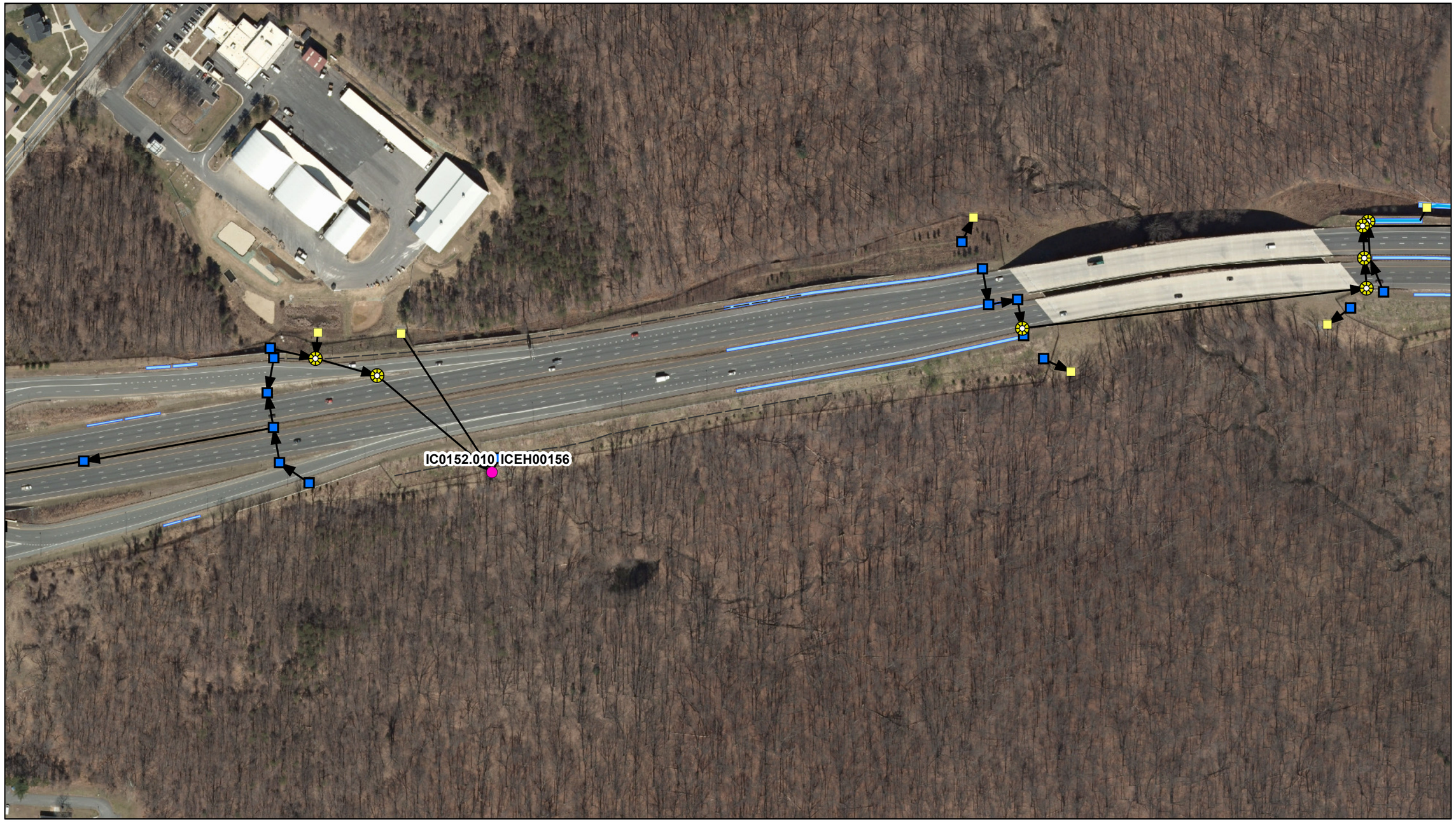
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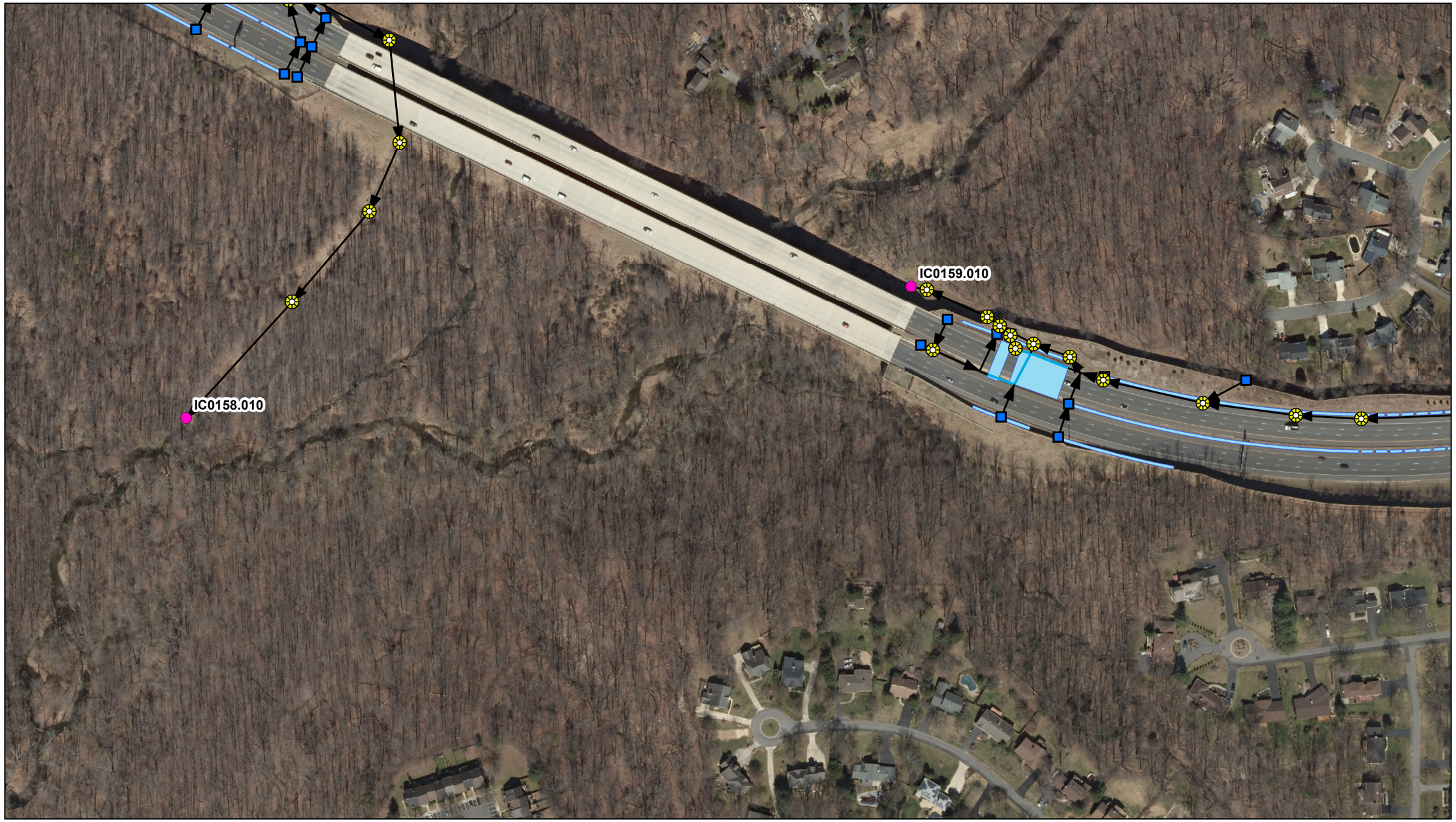
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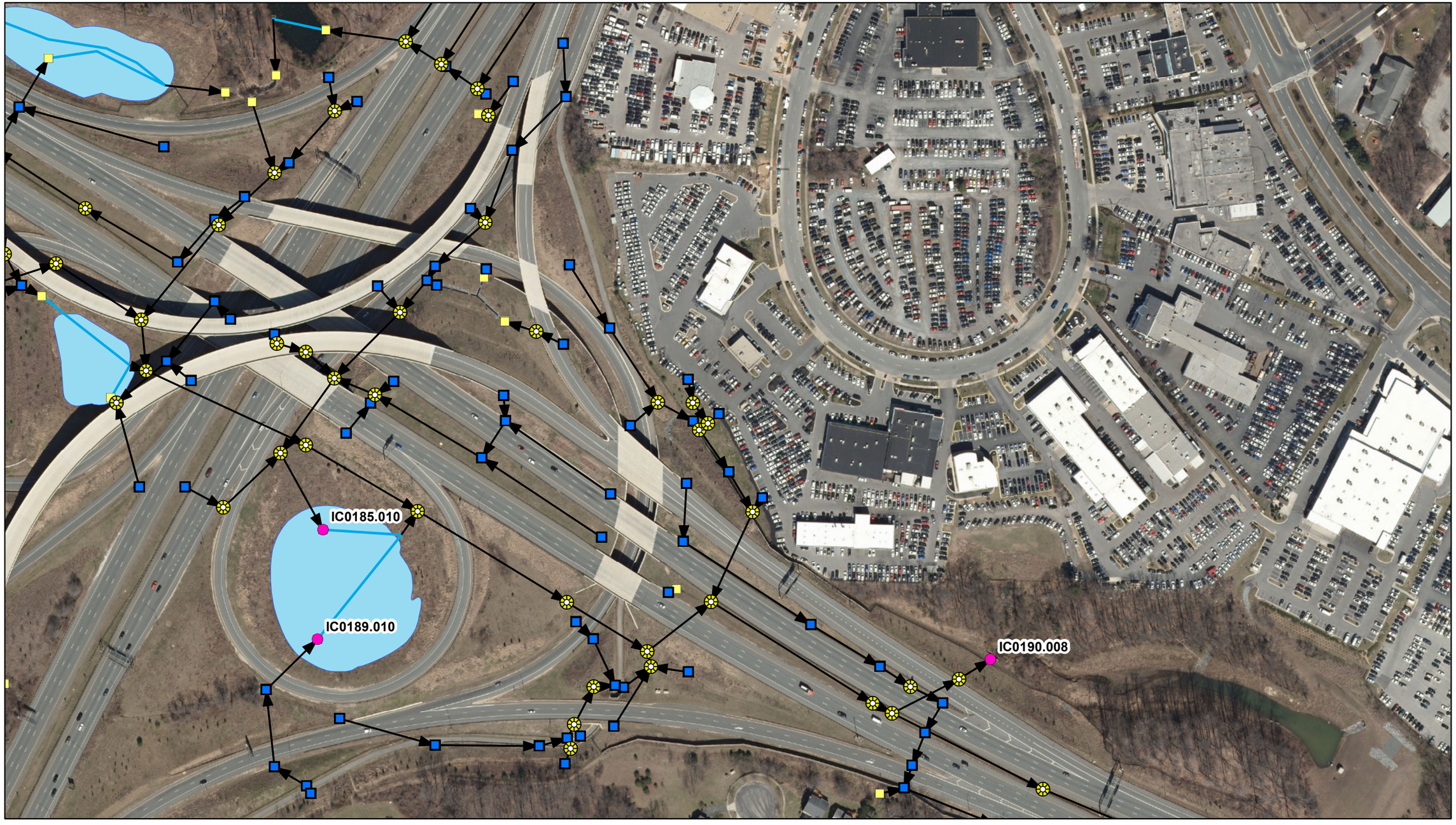
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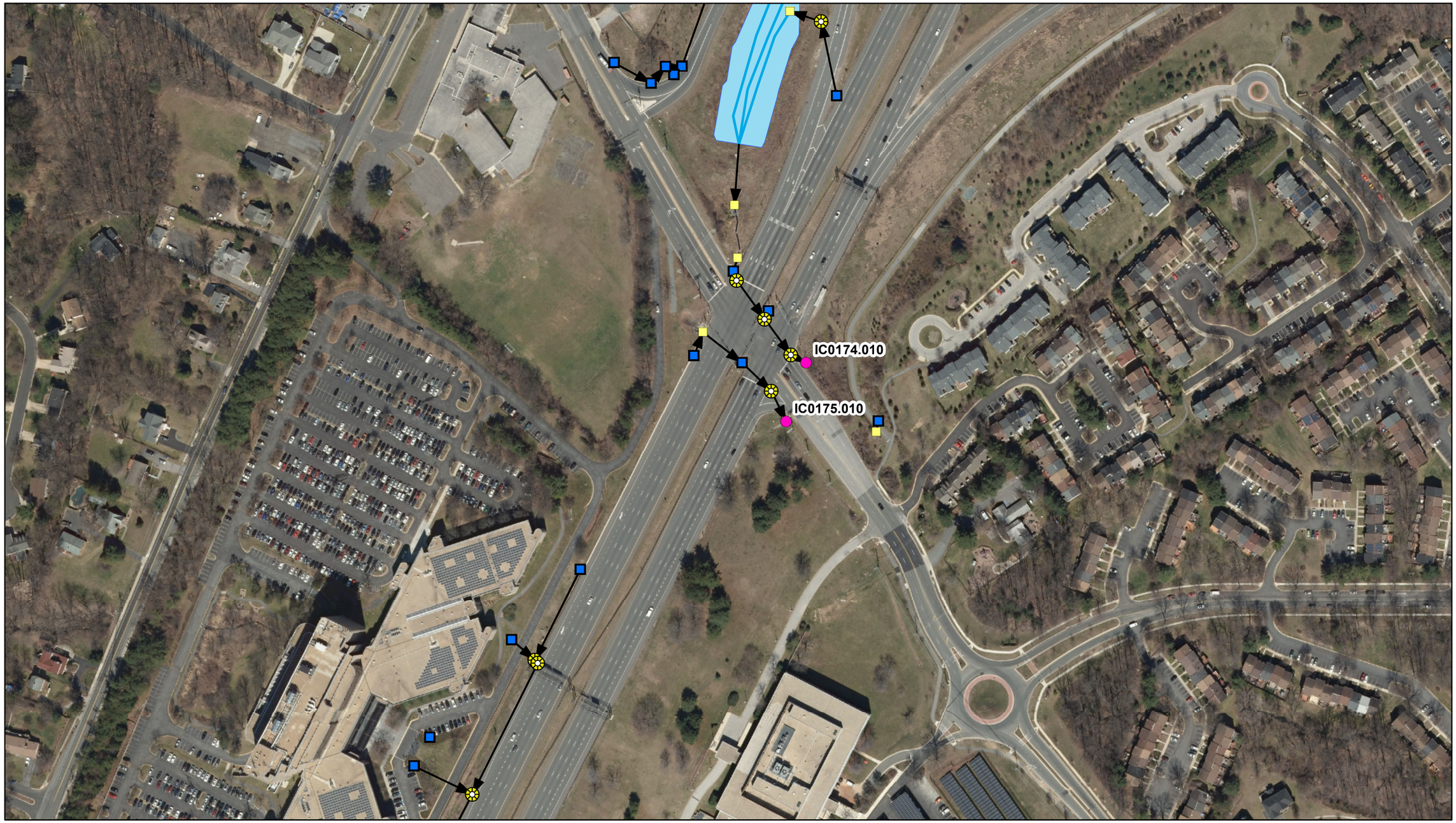
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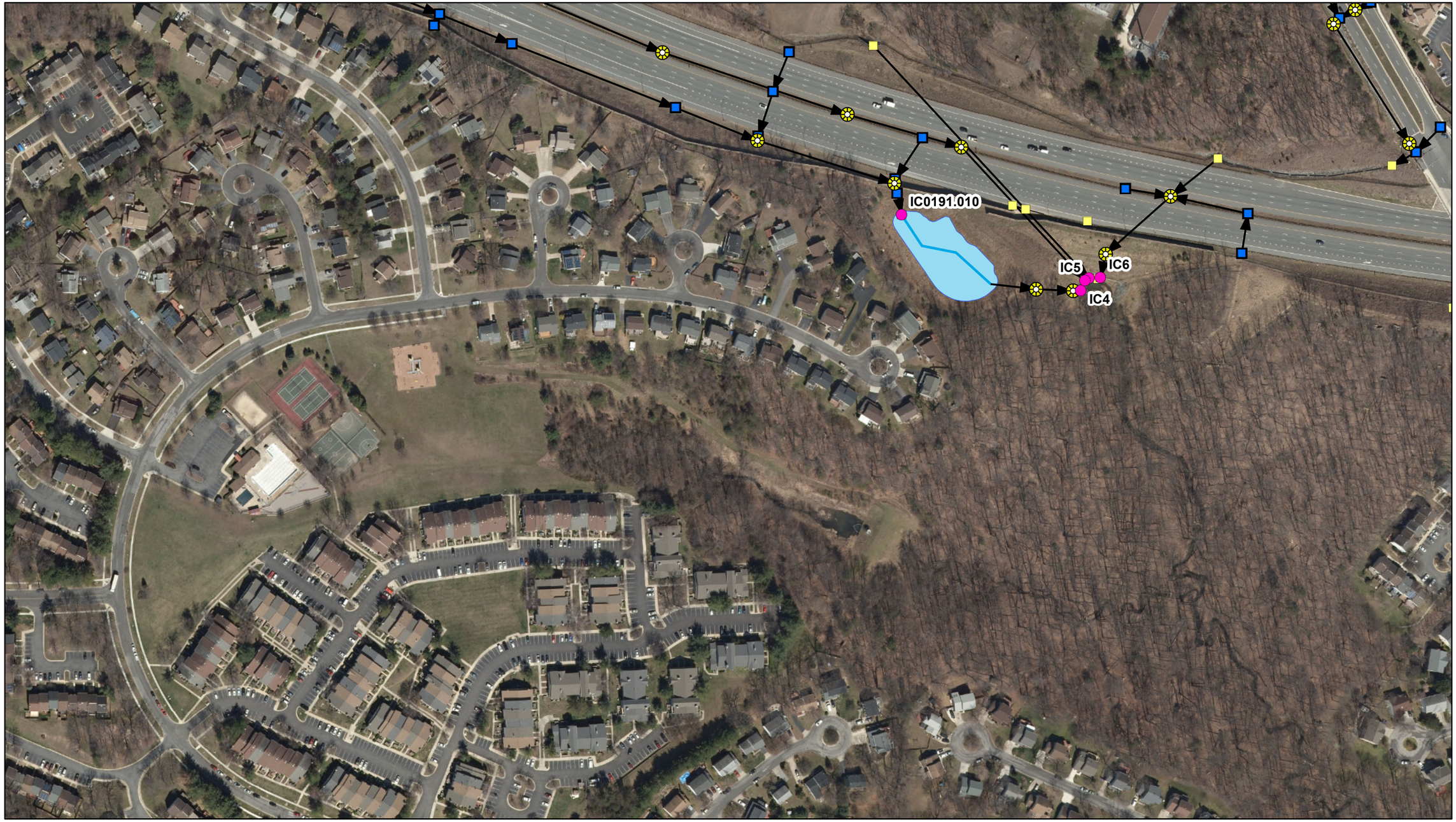
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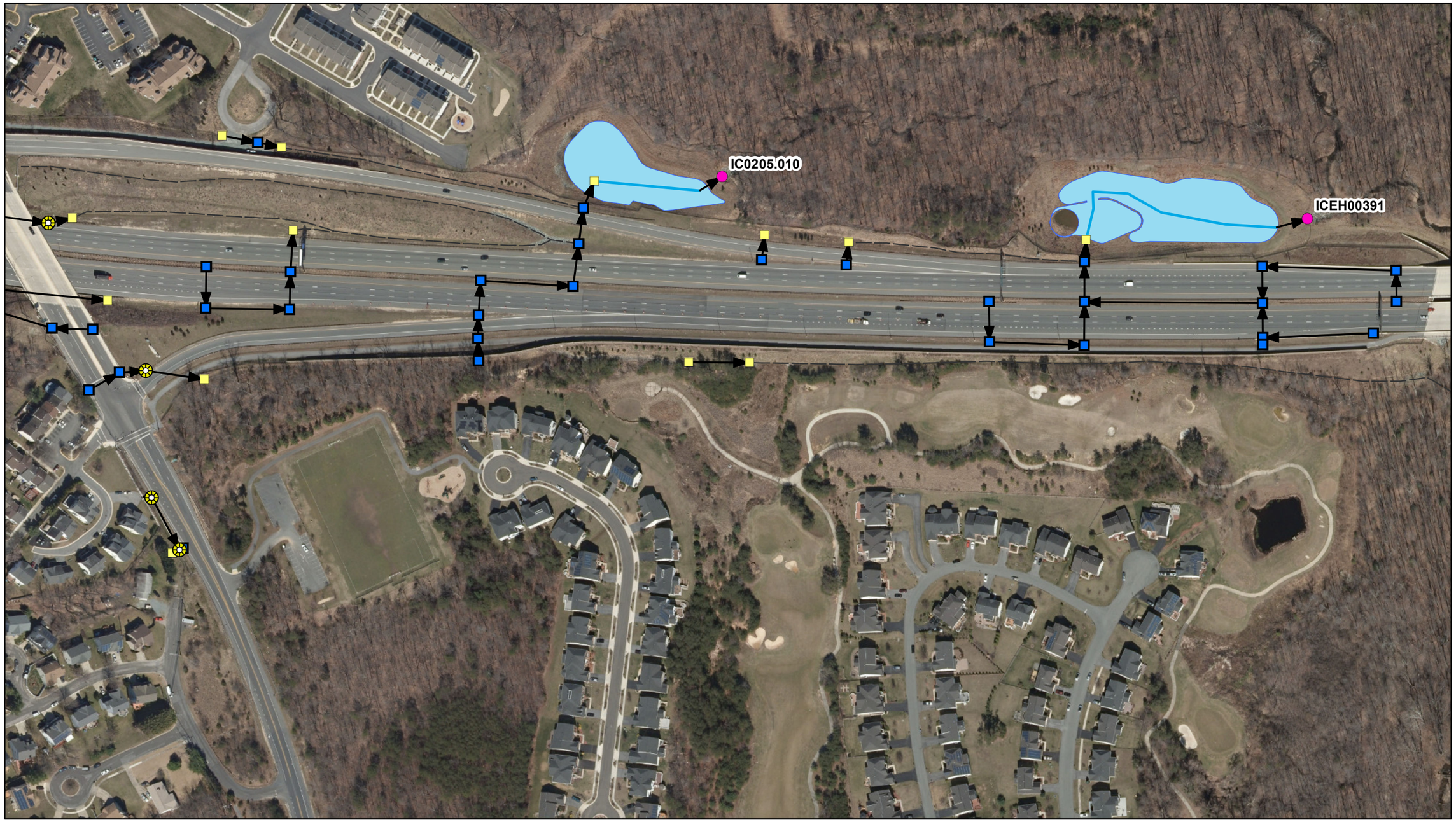
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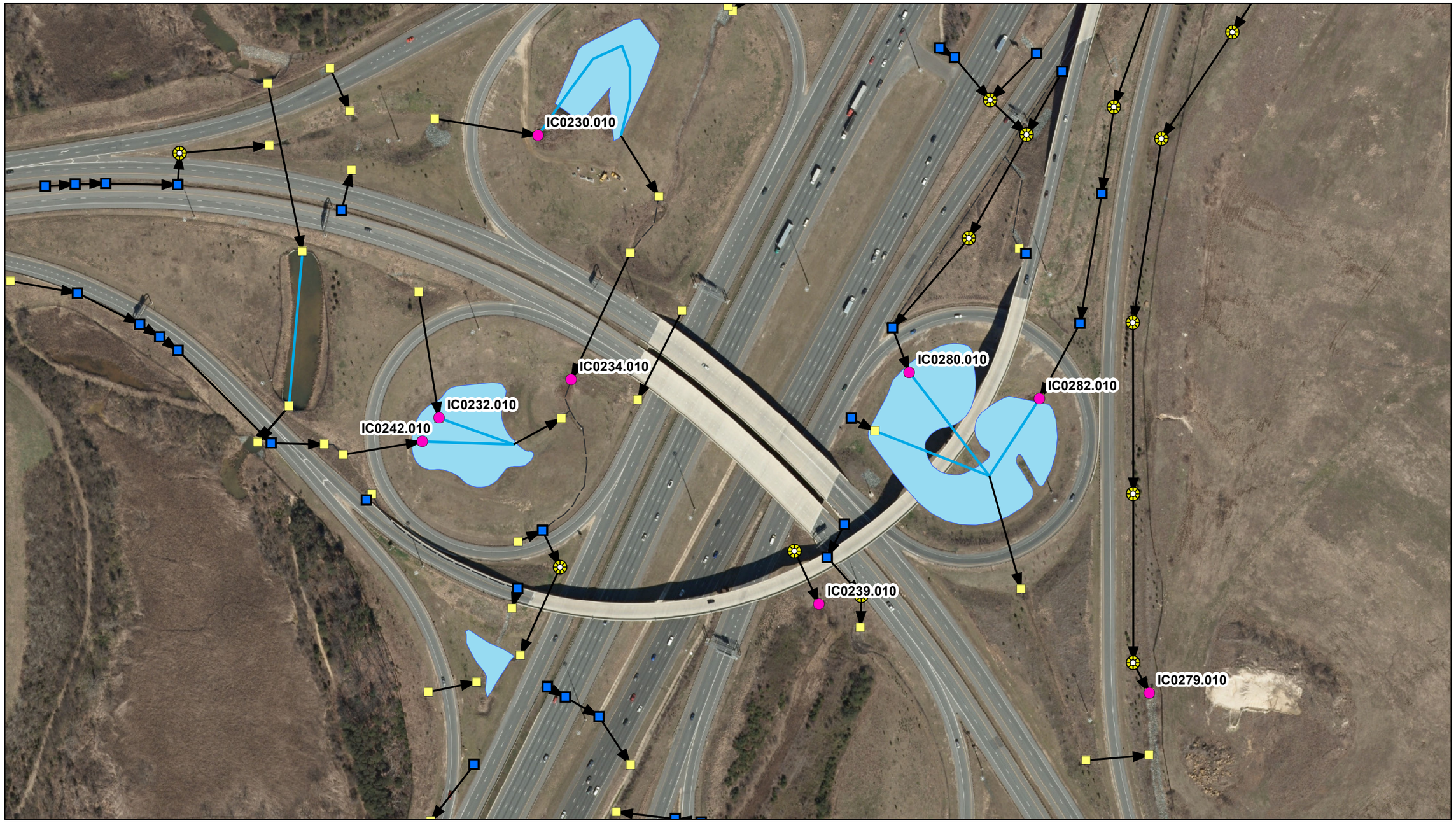
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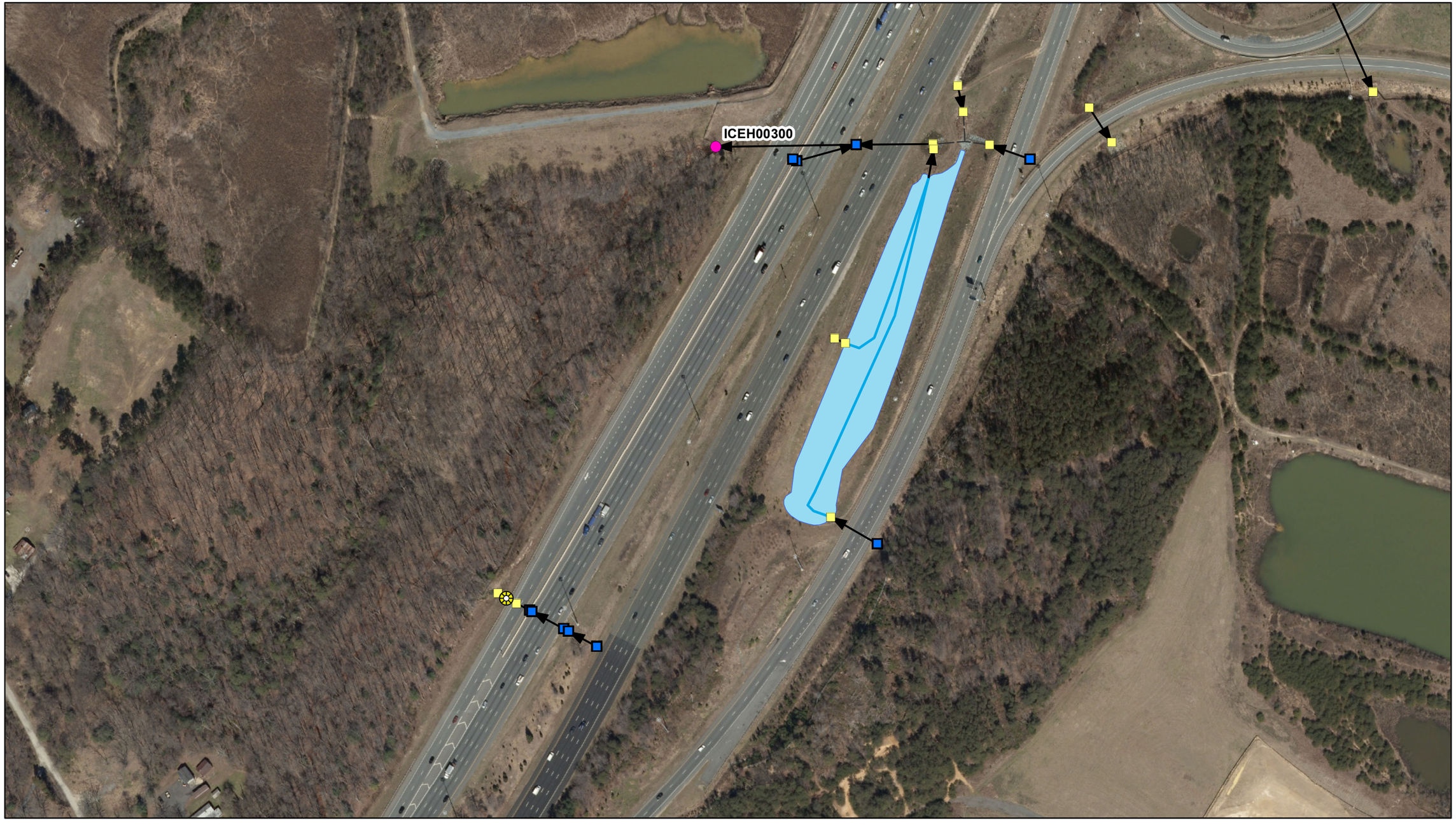
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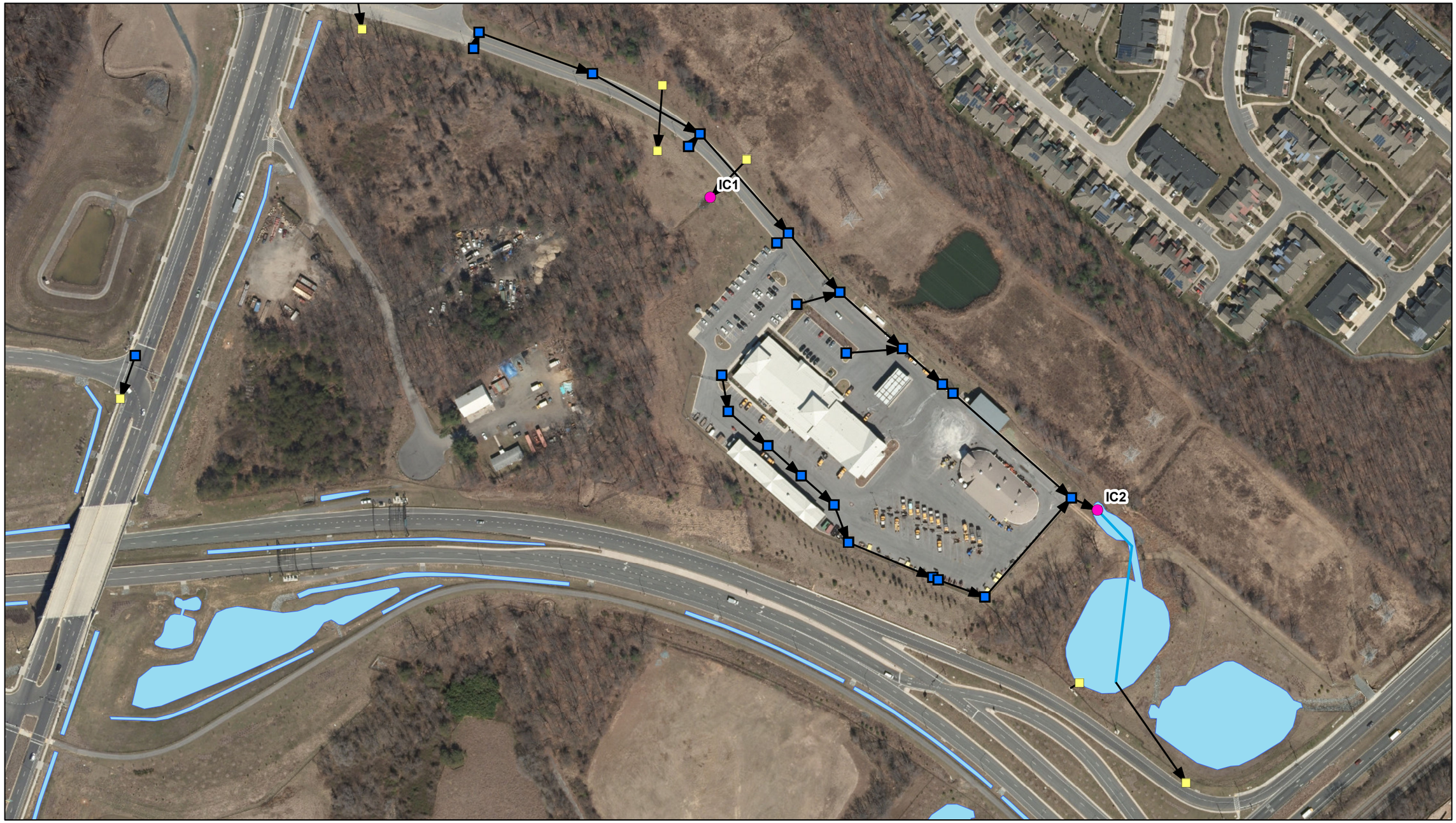
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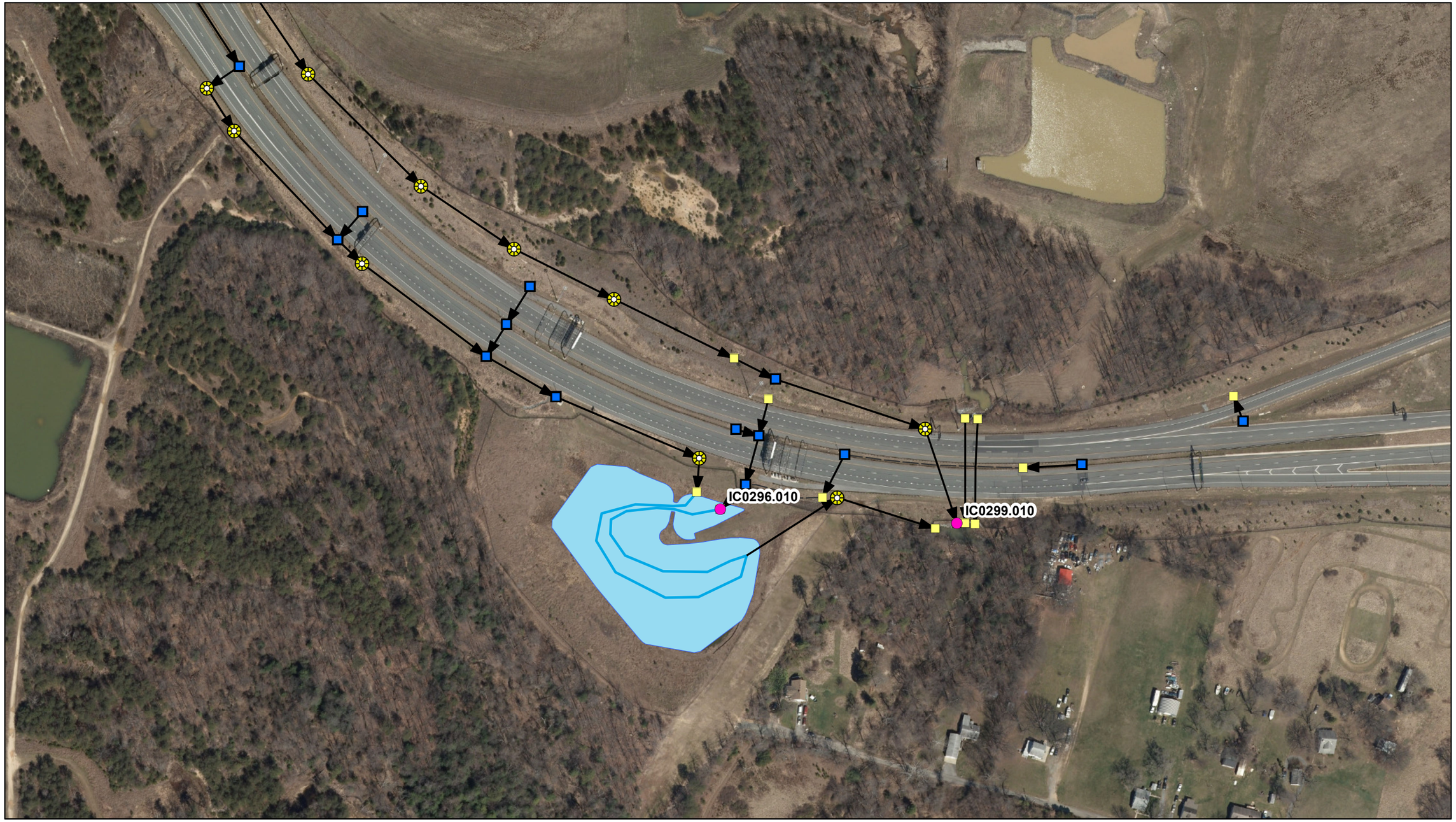
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MDTA MS4 Outfalls - ICC



Outfall
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Inlet
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Culvert
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Ditch
BMP Inventory

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MDTA MS4 Outfalls - ICC



Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

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1 in = 200 feet

N

MDTA MS4 Outfalls - William Preston Lane Bridge



Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

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1 in = 200 feet

N

MDTA MS4 Outfalls - William Preston Lane Bridge



Outfall
Manhole
Inlet
Endwall or Headwall
Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

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MDTA MS4 Outfalls - William Preston Lane Bridge



Outfall
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Culvert
Hydraulic Connection
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BMP Inventory

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MDTA MS4 Outfalls - William Preston Lane Bridge



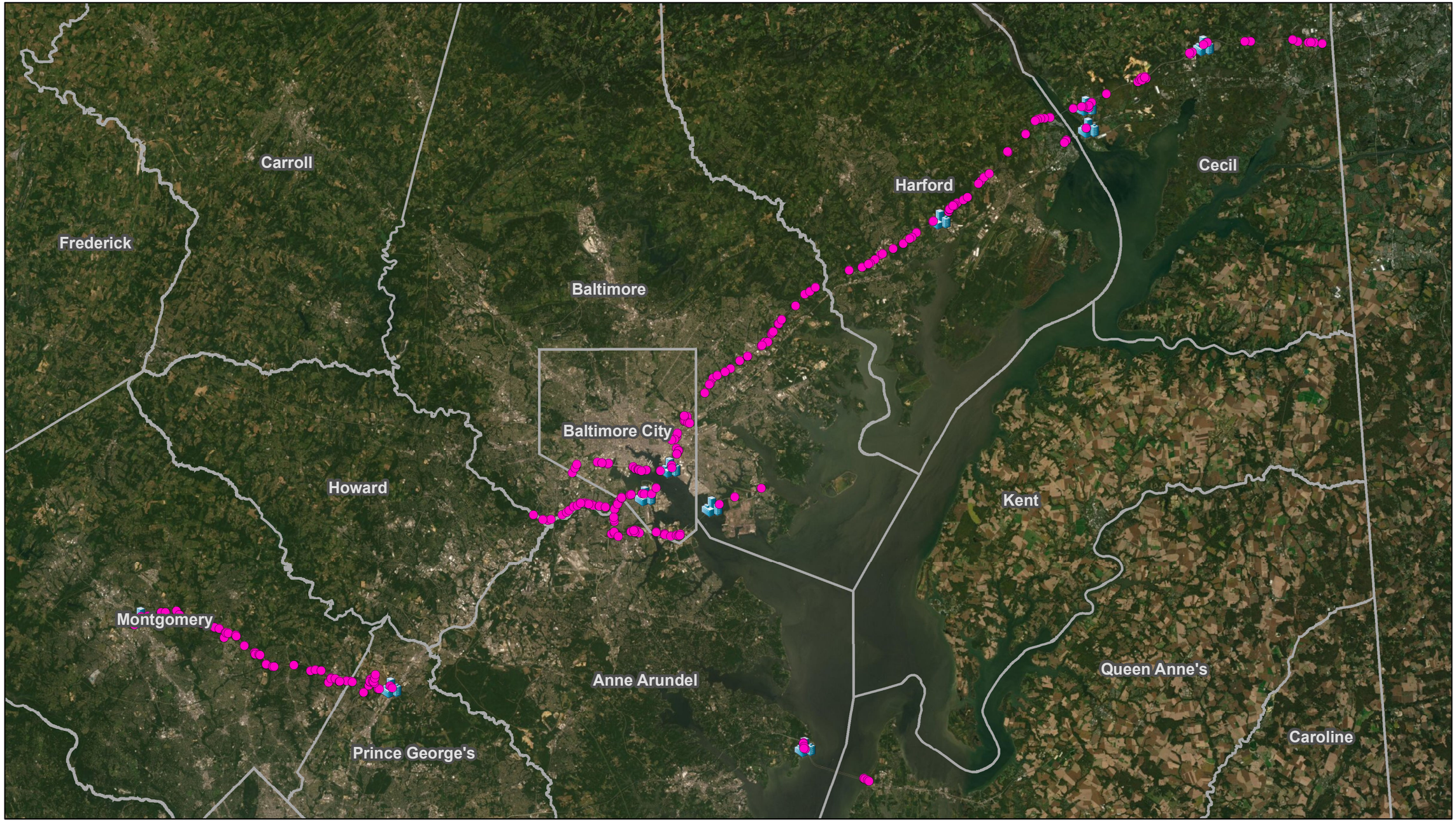
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Storm Drain Pipe
Culvert
Hydraulic Connection
Ditch
BMP Inventory

0 125 250 500 750 1,000 Feet

1 in = 200 feet

N

MDTA MS4 Outfalls - Vicinity Map



Legend

- Outfall Sites
- County Boundaries
- MDTA Facility

0 3.5 7 14 21 28 Miles

1 in = 6 miles

N

Illicit Discharge Detection and Elimination (IDDE)

Procedures and Practices Manual



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Document History Tracking

The Document History table below will track major changes to the document so that it is clear what has been updated when a new version is published.

Table 1 - Document History Table

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OUTFALL INSPECTION PROTOCOL

1.0 INTRODUCTION

This Outfall Inspection Protocol was developed as a guide for performing inspections on storm drain outfalls for the Maryland Transportation Authority (MDTA). Outfall inspections are to be performed as part of the MDTA National Pollutant Discharge Elimination System (NPDES) permit. The permit requires inspection of major NPDES outfalls on a three year cycle. Major NPDES outfalls are defined as storm drain outfalls with a cross-sectional area greater than or equal to 101.8 sq. in. typically a 36" diameter circular pipe, that discharge to Waters of the United States.

Waters of the United States are defined by the following (Clean Water Act 33 CFR Part III, Proposed Definition of "Waters of the United States, Federal Registry Vol. 79, No. 76, pg. 12-13):

1) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2) All interstate waters, including interstate wetlands;
3) The territorial seas;
4) All impoundments of a traditional navigable water, interstate water, the territorial seas or a tributary;
5) All tributaries of a traditional navigable water, interstate water, the territorial seas or impoundment;
6) All waters, including wetlands, adjacent to a traditional navigable water, interstate water, the territorial seas, impoundment or tributary; and
7) On a case-specific basis, other waters, including wetlands, provided that those waters alone, or in combination with other similarly situated waters, including wetlands, located in the same region, have a significant nexus to a traditional navigable water, interstate water or the territorial seas.

Exclusions: The following are not "waters of the United States" notwithstanding whether they meet the terms of (1) through (7) of the previous list:

1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act.
2) Prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act the final authority regarding Clean Water Act jurisdiction remains with EPA.
3) Ditches that are excavated wholly in uplands, drain only uplands, and have less than perennial flow.
4) Ditches that do not contribute flow, either directly or through another water, to a traditional navigable water, interstate water, the territorial seas or a jurisdictional impoundment.
5) The following features:
    - artificially irrigated areas that would revert to upland should application of irrigation water to that area cease;
    - artificial lakes or ponds created by excavating and/or diking dry land and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
    - artificial reflecting pools or swimming pools created by excavating and/or diking dry land;
    - small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons;
    - water-filled depressions created incidental to construction activity;
    - groundwater, including groundwater drained through subsurface drainage systems; and
    - gullies and rills and non-wetland swales.

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Definitions:

1) Adjacent. The term adjacent means bordering, contiguous or neighboring. Waters, including wetlands, separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are “adjacent waters.”
2) Neighboring. The term neighboring, for purposes of the term “adjacent” in this section, includes waters located within the riparian area or floodplain of a water identified in (1) through (5) of the previous list, or waters with a shallow subsurface hydrologic connection or confined surface hydrologic connection to such a jurisdictional water.

During field inspections, some outfalls may be found that discharge into a culvert that conveys Waters of the US. If the culvert is accessible (greater than or equal to five feet in height), the connection between the storm drain and the culvert would be the outfall. However, if the cross culvert is not accessible, the downstream end of the culvert will be considered the outfall.

Although the impetus for the inspection protocol is major NPDES outfalls, this procedure can be followed for any outfalls deemed necessary by MDTA including "hot spots" (i.e. areas where there are concerns about illicit discharges).

In addition to the illicit discharge screening, physical inspections of the outfalls are also to be performed. Ratings of the outfall structure, culvert (pipe), ditches and downstream water course will be conducted in the field. Ratings and screening information can be captured digitally, on paper, or a combination of the two, depending on the capabilities of the team performing the inspection.

2.0 HOT SPOTS

Hot spots are areas defined by MDTA as areas where there are concerns about possible illicit discharges and/or outfall damage. These are often noted by county storm water divisions based upon citizen complaints. The local county government storm water entity should be contacted and informed of the plan to inspect MDTA owned major NPDES outfalls. The offer should be made to inspect known hot spot areas adjacent to MDTA owned property. Inspection data for county owned outfalls is not stored in the NPDES GIS. After the inspection of a hot spot area, a report is prepared and submitted to MDTA describing the results.

3.0 FIELD EQUIPMENT

It is recommended that the following list of field equipment be prepared for outfall inspections:

1. Data Collection Equipment
    - Handheld Data Collecting Device – Some of the data forms to be filled out are available in digital format and are discussed in greater detail under ILLICIT DISCHARGE SCREENING. Additionally, a handheld PC tablet or iPad with ArcCollector displaying the NPDES GIS data coupled with a GPS unit is extremely helpful for locating outfalls
    - GPS unit with extra batteries
    - Digital camera with extra batteries/memory card (these may be part of handheld device)
    - Sampling kit – Temperature, pH, Phenol, Chlorine, Detergents, Copper
    - 300 ml sampling bottles
    - 2 Gallons distilled water for cleaning of test tubes, bottles and other apparatus, and some sampling tests that require clean/distilled water
    - 25 foot measuring tape
    - ADC Map book
    - Machete
    - Manhole puller and/or crowbar

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- Flashlight
- Clipboard and pens
- Location maps of outfalls
- List of outfalls with structure type, pipe size, and pipe type

2. Vehicle Equipment
   - Amber flashing safety light
   - Hang tags
   - Orange traffic cones
   - EZPass (optional but highly recommended)
3. Personal Safety Equipment
   - First aid kit
   - Rubber, neoprene or vinyl gloves
   - Safety vest
   - Waders/hip boots
   - Sturdy work boots
   - Cellular telephone with charged battery
   - Hard hat
   - Bug spray
   - Signed field authorization forms

4.0 ILLICIT DISCHARGE SCREENING

Illicit Discharge Screening will be performed on major NPDES outfalls on a 3-year cycle (yearly for hot spots) as preferred by MDTA, or as required in the MS-4 permit, whichever is stricter. The location of major NPDES outfalls can best be determined by querying the NPDES Geodatabase. A query on the Outfall table, for the fields of NPDESOutfall = Yes and MajorOutfall = Yes will yield all of the major NPDES outfalls in the Facility. If the NPDES Geodatabase has not been completed for the area to be inspected, outfalls will need to be located based upon contract drawings and field inspections.

If the storm drain outfall cannot be located or accessed in the field, then storm drain manholes or inlets upstream of the outfall will be checked for dry weather flow. For storm drain systems that may have changed since previous inspection attempts, it may be necessary to track down the new outfall location using pipe connectivity and topography. If a major NPDES outfall location absolutely cannot be identified, an inspection should be conducted on an upstream structure (inlet/manhole) and a reason should be stated in the comments field of the Field Screen data table why the outfall was not located as well as what type of structure the inspection was conducted on. Site restrictions can include, but are not limited to locations which are:

- Obscured by heavy vegetation
- Behind fences
- Behind sound walls
- Buried
- Submerged
- Within an active construction sites

No confined space-entry to perform inspection will be allowed without prior approval by MDTA. This type of inspection would require OSHA confined-space certification for the inspection crews. The inspectors will notify MDTA if an issue arose that may require confined space entry to support the inspection.

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MDTA does not authorize trespass onto private property to perform field inspections. If a feature is not accessible from MDTA or other public right-of-way and no right-of-entry agreement is obtained, this should be documented on the field form. The inspector should request a right-of-entry agreement through MDTA Office of Real Estate prior to entering private properties.

The NPDES GIS contains several tables to keep track of illicit discharge screening. Data entry for a site can be performed digitally through the use of a portable computer, or manually on printed forms. If digital data capture is intended, it is recommended to have copies of the printed forms as a backup.

4.1 Pre-Field Investigation

The objective is to assemble and review available information to prepare for the field investigation. The information may include mapping, topography, database with drainage inventory and past inspections, design plans, etc. The results provide the inspector with a layout of the drainage features and road network, site logistics, etc.

Based on the review, field maps should be prepared. The most effective ones are developed from current digital mapping. Field mapping should include features such as the roadway under study, intersecting roadways, interchanges, stream crossings, MDTA right-of-way, and if available adjacent residential and industrial development areas, etc. Labeling of these mapping features is beneficial such as road names/route numbers, mile points, utilities, environmental resources, right-of-way and locations of natural streams. For each road under study, the existing storm drain information will be shown on the field maps.

If the existing database contains outdated, inconsistent, or erroneous data, the questionable data shall be identified and reported to MDTA. Upon review, the data will be deleted, corrected, or updated. All modifications of existing data shall be documented by describing the modification and including the date of correction.

The pre-field review also will identify potential safety issues such as access, road hazards, and site conditions. Based on potential conditions, the inspection crew can prepare appropriately for the field investigation. The appropriate pre-approvals for any site access will be obtained.

4.2 Field Site Screening

For the field investigations the field inspector(s) will use the Collector for ArcGIS application. This tool follows the workflow depicted on Figure 1 to collect the data.

When an outfall is located and/or determined to be missing or a different size, the database must be updated with the correct information.

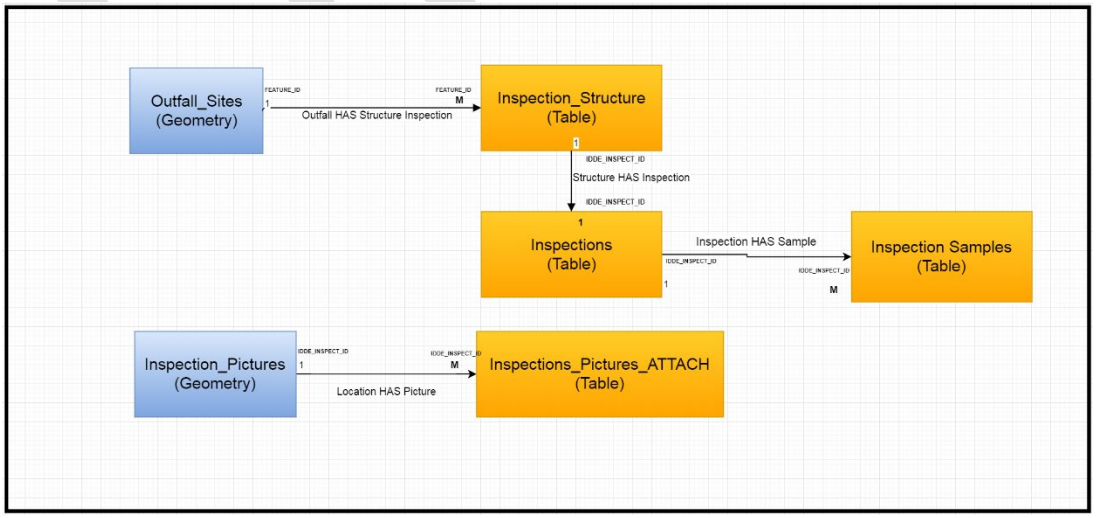


Figure 1 – Collector for ArcGIS workflow

Table 1 Outfall_Sites

Field	Description
CREATEDBY	The Created By field is used to record the name or login of the individual who created the record; A NULL value is not permitted
CREATEDATE	The Creation Date is the date the record was added to the GIS; A NULL value is not permitted
CREATEFIRM	The CREATEFIRM attribute indicates the firm of the user who created the record using codes from the dEngFirm domain; A NULL value is not permitted
EDITOR	The Last Editor field is used to record the name or login of the individual who last edited the attributes of the record; A NULL value is not permitted
EDITDATE	The Last Edit Date field is used to record the date that the attributes of the record was last edited; A NULL value is not permitted
EDITFIRM	The Last Editor Firm attribute indicates the firm of the user who last edited the record using codes from the dEngFirm domain; A NULL value is not permitted
FEATURE_ID	Unique ID number for the related drainage feature from the NPDES GIS database; A NULL value is not permitted
SITE_STATUS	The site status provides information on the monitoring status of the site, such as whether the site is actively monitored or has been removed from monitoring; New records automatically default to “Active”; A NULL value is not permitted
DATE_ADD	The date the site was identified as requiring monitoring; This may be the same as the Creation Date listed above; A NULL value is not permitted
DATE_REM	The date the site was removed from monitoring.
VIC_SCREEN	Vicinity of screening based on ADC map & grid; Format: Map,Grid,Year; Example: (12,F11,1996).
DESC_STATION	Description of screening station; A NULL value is not permitted
DESC_OUTFL	Additional description of outfall type/location
RCN	Average Soil Conservation Service runoff curve number of drainage area to outfall
STREAMDIST	Distance from outfall to “Waters of the US” (feet); A NULL value is not permitted – **THIS SHOULD BE CALCULATED AT THE OFFICE**
COMMENTS	Site comments
LATITUDE	Latitude of the outfall
LONGITUDE	Longitude of the outfall

The **Outfall_Sites** table describes basic information about the screening site. As site information may be updated periodically, the first six fields allow us to account for the users creating and editing records within the **Outfall_Sites** table. The FEATURE_ID connects this table to the other drainage element tables. The SITE_STATUS is filled in using the values in the SiteStatus domain. The DATE_ADD allow us to track how long a site remains on the monitoring site list for potential illicit sites. The DATE_REM will typically correlate with the annual IDDE inspections.

VIC_SCREEN (Vicinity Screen) is the location of the screening point from an ADC map book. The format of VIC_SCREEN should be (map,grid,year), where year is the year of the ADC book that is being referenced. LOC_SCREEN (Location Screen) is a description of the location including the nearest cross streets. The

DESC_STA (Station Description) describes the station where the field screening is performed (i.e., open channel, manhole, or outfall). The valid values for DESC_STA are as follows:

Table 2 DESC_STA Key

Code	Value
OC	Open Channel
MH	Manhole
OU	Outfall
IN	Inlet
UN	Unknown

A simple description of the site material is entered in the DESC_OUTFL field. The Soil Conservation Service Runoff Curve Number is estimated by the soil of the drainage area and the predominant or weighted land use and is recorded in RCN. STREAMDIST is the distance from the end of pipe to the Waters of the U.S. "COMMENTS" contains any general comments about the site. All fields are required to be completed.

4.3 Inspection

4.3.1 Inspection

Illicit discharge samples are only to be taken when preceded by a minimum of 72 hours of dry weather. The following table is to be filled out each time a site is sampled. The following table is the **Inspection** table from the NPDES GIS.

Table 3 Inspections

Field	Description
IDDE_INSPECT_ID	Unique ID number for each inspection; A NULL value is not permitted
FEATURE_ID	Unique ID number for the related drainage feature from the NPDES GIS database; A NULL value is not permitted
INSPECTR	Initials of inspector(s). A NULL value is not permitted
DATE_SCRN	Date of field screening. A NULL Value is not permitted
SCRTIME	Time of field screening. A NULL Value is not permitted
LAST_RAIN	Date of last rain. A NULL Value is not permitted
FLOWOBSERV	Flow observed from the outfall? Yes/No
ALGAEGROW	Algae Growth observed in/around the outfall? Yes/No
ODOR_TYPE	Type of odor at screening location
ODOR_DESC	Description of odor at screening location
DEPOS_TYPE	Type of deposits or stains at screening location
DEPOS_DESC	Description of vegetation at screening location
VEGET_TYPE	Type of vegetation at screening location.
VEGET_DESC	Description of vegetation at screening location.
COND_TYPE	Type of outfall structure condition at screening location.
COND_DESC	Description of outfall structure condition at screening location.
EROS_TYPE	Type of erosion at screening location.
EROC_DESC	Description of erosion at screening location.
DEPTH	Depth of flow in inches.
COMMENTS	Inspection comments.
OUT_SHAPE	Outfall Shape
OUT_DIM	Outfall Dimensions

The **Inspections** table is filled in for every inspection of an outfall. The IDDE_INSPECT_ID field is a unique ID generated for each inspection. The format of the ID is the date of the inspection in YYYYMMDD format

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combined with the Feature ID of the site that inspected (Example "20140618KB00066.010"). The date must match the DATE_SCRN field. This ID links the inspection record back to the Drainage Documents table. FEATURE_ID links the inspection back to both the Drainage Feature Classes (Inlets, Manholes, etc.) and the FLDSC_SITE table.

INSPECTR contains the initials of the inspector(s). The date of the last recorded rainfall is entered in the LAST_RAIN field to verify that at least 72 hours have passed between rainfall and field screening. The format of this date and all others in the database should be MM/DD/YYYY. DATE_SCRN (Date of Field Screening) and SCRTIME (Time of Field Screen) record the date and time of the inspection. In the event of dry weather flow, a second inspection is required between 4 and 24 hours after the first screening for follow-up measurements. In this case a second entry in the **Inspections** table for the outfall is entered with the new DATE_SCRN and SCRTIME values, but using the same IDDE_INSPECT_ID that was used on the prior inspection.

FLOWOBSERV is a Yes/No field determining the presence of a dry weather flow. ALGAEGROW is a Yes/No field and describes any algae that may be present in the water. If access or visibility to the site was restricted and the flow/algae were unable to be reliably observed, "No" should be indicated in both of these fields and a comment should be added to the COMMENTS field.

The next 10 fields are paired. The first field of the pair contains the standard code as prescribed by MDE. The second field of the pair allows additional description if required. Any unusual odors are noted in the ODOR_TYPE field. DEPOS_TYPE (Deposits) describes observations of the structure and surrounding soil. VEGET_TYPE (Vegetation) identifies evidence of enhanced or stunted growth. COND_TYPE (Condition Type) describes the condition of the end of pipe or endwall. EROS_TYPE (Erosion) describes erosion or deposition in and around the outfall and the downstream channel. Valid values for these fields are captured in the dIDDE_OdorType, dIDDE_DeposType, dIDDE_VegetType, dIDDE_CondType, and dIDDE_ErosType domains as found in Section 7.0

If there is flowing water at the outfall, the DEPTH is recorded in inches and the Inspection_Samples table is filled out for the inspection. The COMMENTS field should be used liberally to note characteristics of the pipe and end structure and the downstream channel that may have been affected by pollutant material. These include structural damage, unusual staining, odors, and unusual plant growth or lack thereof, algae growth, floatables such as trash, oil sheen or surface scum, deposits, excessive erosion, land uses or other evidence of illicit connections at the outfalls. Note that a commonly occurring natural bacterium produces a water surface layer that resembles oil sheen. The bacterial surface is "breakable" and not as iridescent as oil sheen and is not indicative of an illicit connection. Iron in the soil is used by several bacterial species and produces a bright orange stain and is also not indicative of an illicit connection.

Photos are used to document conditions, defects, and/or remediation needs. These are necessary for parameters with scores from 3 to 5 to document defects. In addition, an overall site photograph is taken of the drainage features. The location of the photo reference point should be recognizable to allow for repeat photos in future inspections.

4.3.2 Inspection Samples (Flow Measurements)

The presence of flow during dry weather is considered to be one piece of evidence (but not conclusive) indicating the presence of an illicit discharge. All flowing water must be chemically sampled immediately on site. All ponding water must be chemically sampled if there is an indicator of a pollutant observed (such as odor, color, oil sheen, etc.).

Chemical analysis will be performed using field test kits such as the Storm Drain Pollution Control Test Kit manufactured by the LaMotte Company, Chestertown, Maryland or the Hach Storm Water Test Kit. Outfalls will be tested for air temperature, water temperature, pH, phenol, chlorine, detergents, and copper. If the sample does not exceed the values in the table below for any chemical constituents, a follow up inspection is not required. If the sample does exceed the values below, a follow up inspection is

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required for a second sampling between 4 and 24 hours after the first sample was taken. If the second sample still shows a value greater than the values in the table, the consultant is required to attempt to track the source of the dry weather flow, notify MDTA immediately with a report. If evidence exists of a pollutant and the field tests show no pollutants a water sample is to be sent to a laboratory for further testing. The report should include photographs, a description of the location of the illicit discharge and an explanation of the problem. Appendix A contains MDTA – IDDE Major Outfall Field Inspection Form. Tracking the source of the dry weather flow will be limited to only inherently safe activities. Manholes will not be opened within traffic areas, confined space entry will not be performed without MDTA prior approval.

Table 4 Acceptable Chemical Sample Limits or Ranges

pH	6.5 – 8.5
Phenol	< 0.17 mg/L
Chlorine	< 0.40mg/L
Detergents	< 0.50 mg/L
Copper	< 0.21 mg/L

In some situations, the outfalls are not located close to the vehicle. In this case, sampling bottles can be used to transport sample water back to the vehicle rather than carrying the chemical testing equipment. Temperature and pH should always be measured at the outfall. Sample bottles should be thoroughly rinsed with the water being sampled. After the tests are performed at the vehicle, the sampling bottles should be thoroughly rinsed with distilled water.

Illicit discharge samples are only to be taken when preceded by a minimum of 72 hours of dry weather.

The following table shall also be filled out in the event of water in the outfall. The following table is the **Inspection_Samples** table from the NPDES GIS.

Table 5 Inspection_Samples

Field	**Description**
FLOW_CHAR	Unique ID number for each flow characteristic record; The ID is a sequential number that starts at 10000 and a NULL value is not accepted
IDDE_INSPECT_ID	Unique ID number for each inspection; A NULL value is not permitted
FEATURE_ID	Unique ID number for the related drainage feature from the NPDES GIS database; A NULL value is not permitted
COLOR_TYPE	Type of color at screening location
COLOR_DESC	Description of color at screening location
CLAR_TYPE	Type of water clarity at screening location
CLAR_DESC	Description of water clarity at screening location
FLOAT_TYPE	Type of floating material at screening location
FLOAT_DESC	Description of floating material at screening location
WATERTEMP	Water temperature in degrees Fahrenheit
AIRTEMP	Air temperature in degrees Fahrenheit
PH	pH Level of water
PHENOL	Amount of Phenol (mg/L)
CHLORINE	Amount of Chlorine (mg/L)
DETERGENTS	Amount of Detergents (mg/L)
COPPER	Amount of Copper (mg/L)
COMMENTS	Additional Comments on Flow Characteristics
SAM_TYPE	Sample Type (Original or Resample)

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LAB_COLLECT	Sample was sent to a Laboratory

The **Inspection_Samples** table is filled out when flow is observed at the outfall. The IDDE_INSPECT_ID field links the **Inspection_Samples** table to the Inspections table. The COLOR_TYPE, CLAR_TYPE (clarity), FLOAT_TYPE (floatables) fields are paired similar to the INSPECTION table fields, and describe the condition of the water. Refer to the Section 7.0 for the valid values for these fields.

WATERTEMP and AIRTEMP are measured in degrees Fahrenheit. The remaining fields, PH, PHENOL, CHLORINE, DETERGENTS, and COPPER, can be populated with results from a standard testing kit. Any comments relating to the flow can be placed in the COMMENTS field.

4.4 Inspection Photos

Photos are used to document conditions, defects, and/or remediation needs. An overall site photograph is taken of the drainage features as well as the extent of ponding/drainage. The location of the photo reference point should be recognizable to allow for repeat photos in future inspections. Photos should be taken downstream looking upstream towards the outfall structure.

Other photos should also be taken as needed to document field conditions such as severe channel erosion, structure damage, pipe separation, embankment failure, etc. Requirements for all photographs can be found in Section 6.0

5.0 STORM DRAIN AND OUTFALL INSPECTION

A storm drain and outfall inspection will be performed in conjunction with the illicit discharge sampling. Inspectors should record the condition of the outfall, note any problems, and identify the size and pipe material.

Should the outfall show need of repair, it should be rated in accordance with the Facility Inspection Manual (Chapter 4).

Table 6 Inspection_Structures

Field	Description
IDDE_INSPECT_ID	Unique ID number for each inspection; A NULL value is not permitted
Struct_ID	Unique ID number for the related drainage feature from the NPDES GIS database; A NULL value is not permitted
DATE_INSP	Date the structure was inspected
INSPECTR	Initials of the inspector
COM_MOD	
ACCESS	Access (No hindrances, minor, moderate, major ….)
COMPONENTS	Components status? (stable, minor, moderate, major ….)
ROADWAY	Roadway surface impacts (normal, minor, moderate, major ….)
PUB_HAZ	Public Hazard due to the lack of signage or fence
SEDIMENT	Accumulation of sediments (No, 0 to 25%, 26% to 50% …..)
DEBRIS	Presence of debris (No, 0 to 25%, 26% to 50% …..)
CONTAM	Presence residual waste or Hazardous materials
PONDING	Drainage status? (normal, minor, moderate, major ….)
WAT_DEPTH	Water depth in inches
STRUCTURE	Structure status? (stable, good, satisfactory, poor, failing ….)
EMBANKMENT	Embankment status? (stable, minor, moderate, major ….)
DOWNSTREAM	Downstream status? (stable, minor, moderate, major ….)
INVERT	Invert status? (stable, minor, moderate, major ….)
JOINT	Joint status? (stable, minor, moderate, major ….)

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VEGETATION	Vegetation status? (stable, good, satisfactory, poor, failing ….)
INSP_RATING	Inspection rating
INSP_PRIOR	Inspection priority
INSP_ACTION	Inspection action
COM_RESPON	Comment respond
COM_INSP	Comment inspection

If *Access is prevented* selected from the ACCESS field in the **Inspection_Structure** table, all other fields in that table that have domains will automatically be populated with "Not Applicable" (see figure 2) and no record on the table **Inspections** and **Inspection_Sample** should be collected.

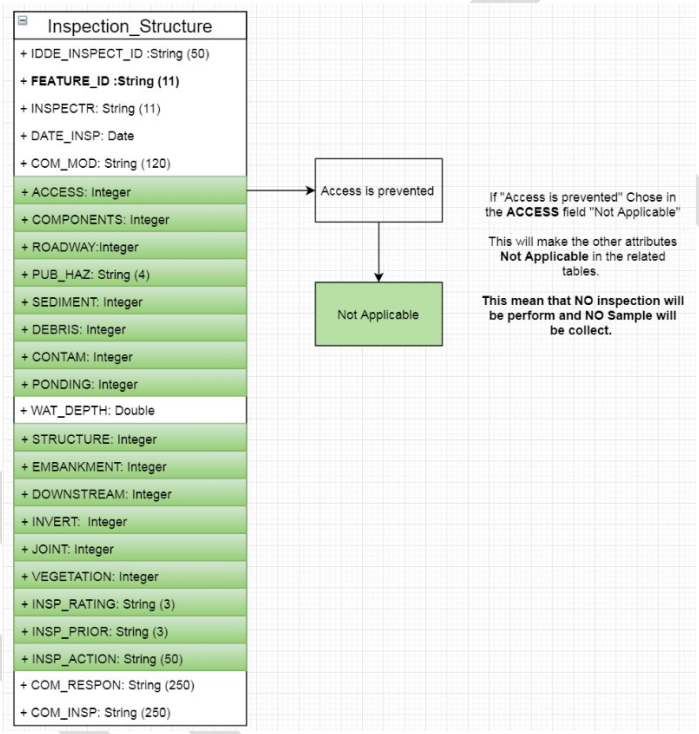


Figure 2 – Access Field in the Inspection_Structure table choice

6.0 PHOTOGRAPHS REQUIREMENTS

To document field conditions and support inspection results, photos are taken during the field investigation. The photo location is important so that future inspections can replicate the location. The following is a list of the typical photos that should be taken during an inspection. Photos looking upstream, downstream and inside should be taken where appropriate.

DO NOT GO INISDE THE STRUCTURE – There should not be any confined space work on this task

7.0 SCHEMA AND DOMAIN

7.1 Schema

The figure 3 shows the feature class and tables that will store the IDDE information.

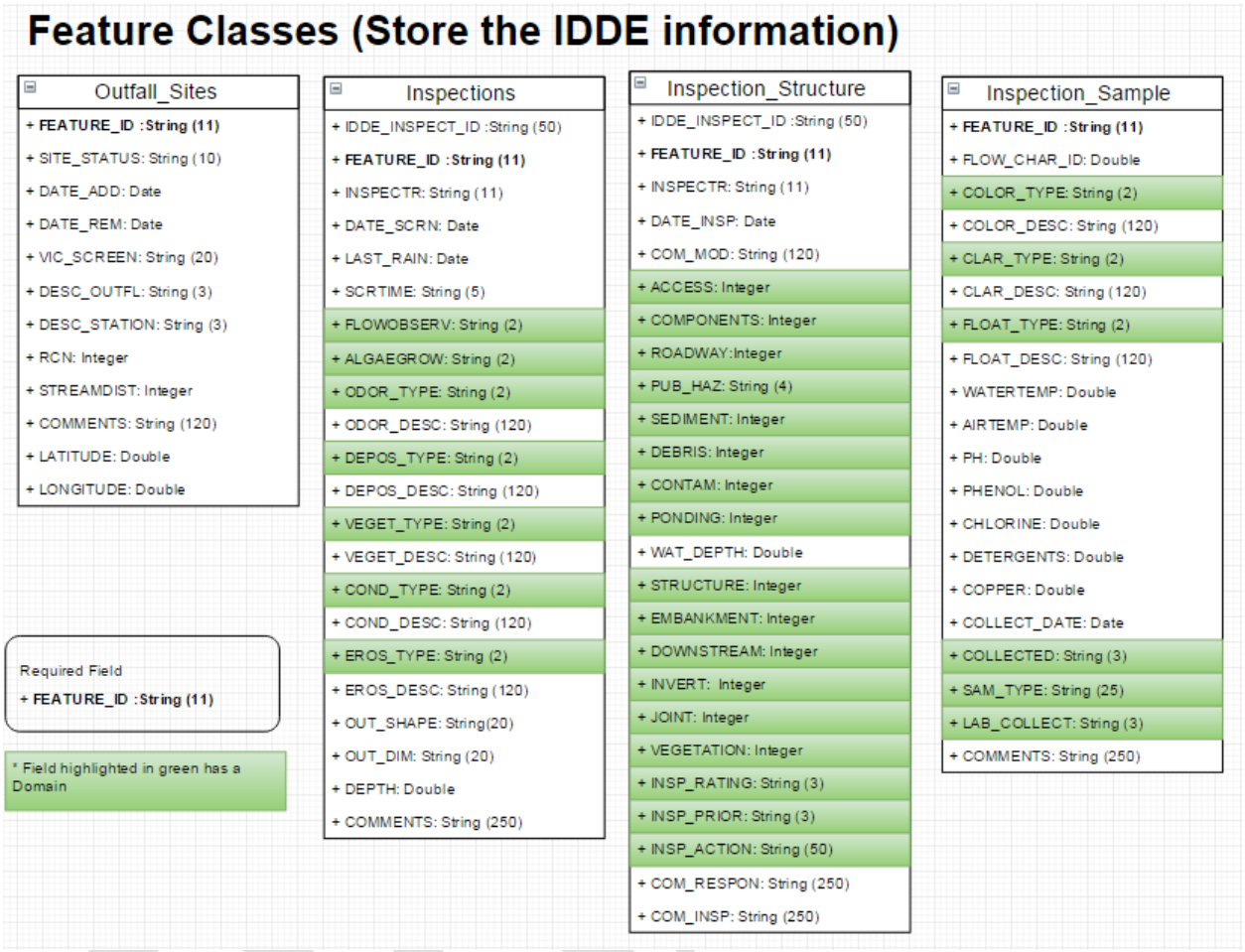


Figure 3 – IDDE database Schema

The figure 4 shows the feature class and tables that will store the photographs.

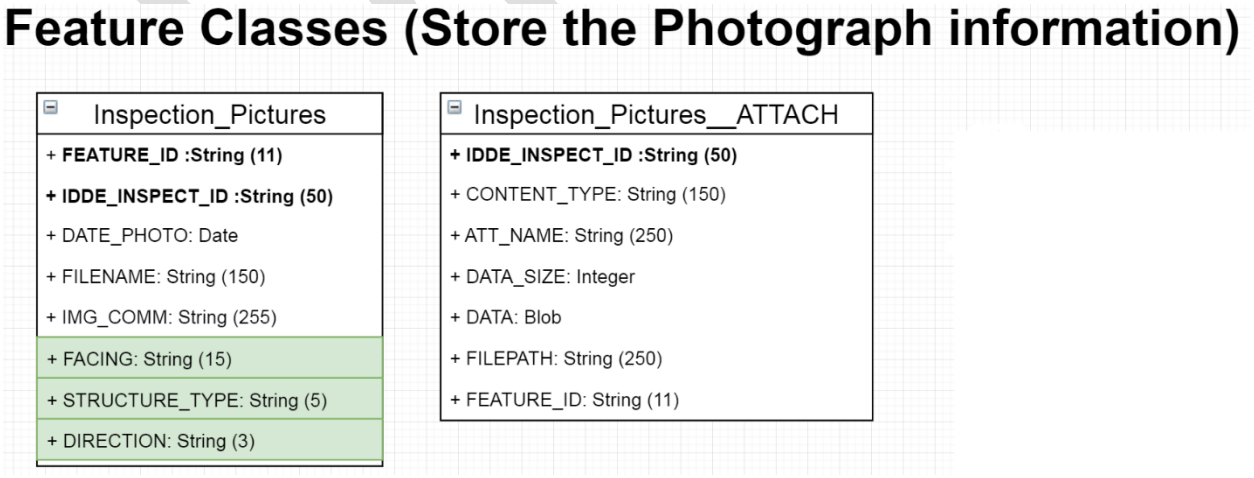
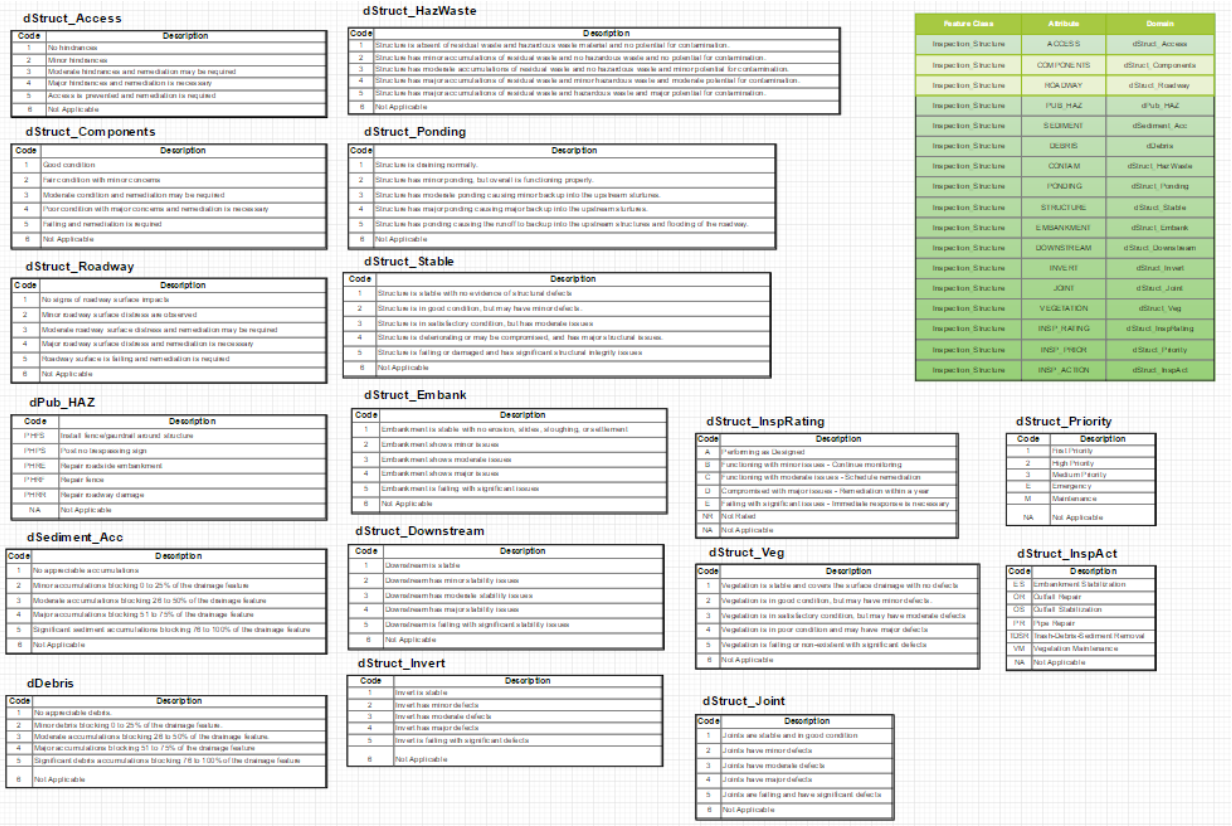


Figure 4 – Photographs database Schema

7.2 Domain

Figures 5,6, 7 and 8 shows the attributes that use domains and the corresponding domains value. Figure 5 shows the attributes with domains used by the **Inspection_Structure** table.



dStruct_Access

Code	Description
1	No hindrances
2	Minor hindrances
3	Moderate hindrances and remediation may be required
4	Major hindrances and remediation is necessary
5	Access is prevented and remediation is required
6	Not Applicable

dStruct_HazWaste

Code	Description
1	Structure is absent of residual waste and hazardous waste material and no potential for contamination.
2	Structure has minor accumulations of residual waste and no hazardous waste and no potential for contamination.
3	Structure has moderate accumulations of residual waste and no hazardous waste and minor potential for contamination.
4	Structure has major accumulations of residual waste and minor hazardous waste and moderate potential for contamination.
5	Structure has major accumulations of residual waste and hazardous waste and major potential for contamination.
6	Not Applicable

Feature Class	Attribute	Domain
Inspection_Structure	ACCESS	dStruct_Access
Inspection_Structure	COMPONENTS	dStruct_Components
Inspection_Structure	ROADWAY	dStruct_Roadway
Inspection_Structure	PUB_HAZ	dPub_HAZ
Inspection_Structure	SEDIMENT	dSediment_Acc
Inspection_Structure	DEBRIS	dDebris
Inspection_Structure	CONTAM	dStruct_HazWaste
Inspection_Structure	PONDING	dStruct_Ponding
Inspection_Structure	STRUCTURE	dStruct_Stable
Inspection_Structure	EMBANKMENT	dStruct_Embank
Inspection_Structure	DOWNSTREAM	dStruct_Downstream
Inspection_Structure	INVERT	dStruct_Invert
Inspection_Structure	JOINT	dStruct_Joint
Inspection_Structure	VEGETATION	dStruct_Veg
Inspection_Structure	INSP_RATING	dStruct_InspRating
Inspection_Structure	INSP_PRIOR	dStruct_Priority
Inspection_Structure	INSP_ACTION	dStruct_InspAct

dStruct_Components

Code	Description
1	Good condition
2	Fair condition with minor concerns
3	Moderate condition and remediation may be required
4	Poor condition with major concerns and remediation is necessary
5	Failing and remediation is required
6	Not Applicable

dStruct_Ponding

Code	Description
1	Structure is draining normally.
2	Structure has minor ponding, but overall is functioning properly.
3	Structure has moderate ponding causing minor backup into the upstream sturtures.
4	Structure has major ponding causing major backup into the upstream sturtures.
5	Structure has ponding causing the runoff to backup into the upstream structures and flooding of the roadway.
6	Not Applicable

dStruct_Roadway

Code	Description
1	No signs of roadway surface impacts
2	Minor roadway surface distress are observed
3	Moderate roadway surface distress and remediation may be required
4	Major roadway surface distress and remediation is necessary
5	Roadway surface is failing and remediation is required
6	Not Applicable

dStruct_Stable

Code	Description
1	Structure is stable with no evidence of structural defects
2	Structure is in good condition, but may have minor defects.
3	Structure is in satisfactory condition, but has moderate issues
4	Structure is deteriorating or may be compromised, and has major structural issues.
5	Structure is failing or damaged and has significant structural integrity issues
6	Not Applicable

dPub_HAZ

Code	Description
PMFS	Install fence/guardrail around structure
PMPS	Post no trespassing sign
PMRE	Repair roadside embankment
PMRF	Repair fence
PMRR	Repair roadway damage
NA	Not Applicable

dStruct_Embank

Code	Description
1	Embankment is stable with no erosion, slides, sloughing, or settlement
2	Embankment shows minor issues
3	Embankment shows moderate issues
4	Embankment shows major issues
5	Embankment is failing with significant issues
6	Not Applicable

dStruct_InspRating

Code	Description
A	Performing as Designed
B	Functioning with minor issues - Continue monitoring
C	Functioning with moderate issues - Schedule remediation
D	Compromised with major issues - Remediation within a year
E	Failing with significant issues - Immediate response is necessary
NR	Not Rated
NA	Not Applicable

dStruct_Priority

Code	Description
1	Not Priority
2	High Priority
3	Medium Priority
E	Emergency
M	Maintenance
NA	Not Applicable

dSediment_Acc

Code	Description
1	No appreciable accumulations
2	Minor accumulations blocking 0 to 25% of the drainage feature
3	Moderate accumulations blocking 26 to 50% of the drainage feature
4	Major accumulations blocking 51 to 75% of the drainage feature
5	Significant sediment accumulations blocking 76 to 100% of the drainage feature
6	Not Applicable

dStruct_Downstream

Code	Description
1	Downstream is stable
2	Downstream has minor stability issues
3	Downstream has moderate stability issues
4	Downstream has major stability issues
5	Downstream is failing with significant stability issues
6	Not Applicable

dStruct_Veg

Code	Description
1	Vegetation is stable and covers the surface drainage with no defects
2	Vegetation is in good condition, but may have minor defects.
3	Vegetation is in satisfactory condition, but may have moderate defects
4	Vegetation is in poor condition and may have major defects
5	Vegetation is failing or non-existent with significant defects
6	Not Applicable

dStruct_InspAct

Code	Description
ES	Embankment Stabilization
OR	Outfall Repair
OS	Outfall Stabilization
PR	Pipe Repair
TDSR	Trash-Debris-Sediment Removal
VM	Vegetation Maintenance
NA	Not Applicable

dDebris

Code	Description
1	No appreciable debris.
2	Minor debris blocking 0 to 25% of the drainage feature.
3	Moderate accumulations blocking 26 to 50% of the drainage feature.
4	Major accumulations blocking 51 to 75% of the drainage feature
5	Significant debris accumulations blocking 76 to 100% of the drainage feature
6	Not Applicable

dStruct_Invert

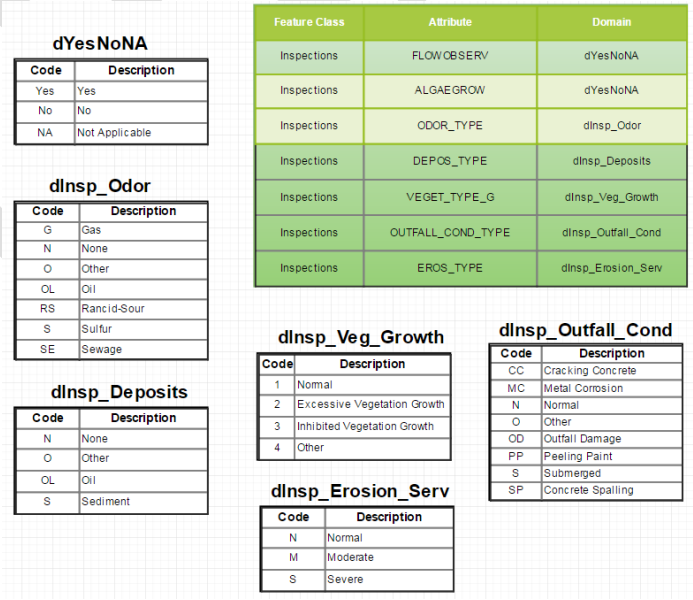
Code	Description
1	Invert is stable
2	Invert has minor defects
3	Invert has moderate defects
4	Invert has major defects
5	Invert is failing with significant defects
6	Not Applicable

dStruct_Joint

Code	Description
1	Joints are stable and in good condition
2	Joints have minor defects
3	Joints have moderate defects
4	Joints have major defects
5	Joints are failing and have significant defects
6	Not Applicable

Figure 5 – Inspections_Structure

Figure 6 shows the attributes with domains used by the **Inspections** table.



dYesNoNA

Code	Description
Yes	Yes
No	No
NA	Not Applicable

dInsp_Odor

Code	Description
G	Gas
N	None
O	Other
OL	Oil
RS	Rancid-Sour
S	Sulfur
SE	Sewage

dInsp_Deposits

Code	Description
N	None
O	Other
OL	Oil
S	Sediment

Feature Class	Attribute	Domain
Inspections	FLOWOBSERV	dYesNoNA
Inspections	ALGAEGROW	dYesNoNA
Inspections	ODOR_TYPE	dInsp_Odor
Inspections	DEPOS_TYPE	dInsp_Deposits
Inspections	VEGET_TYPE_G	dInsp_Veg_Growth
Inspections	OUTFALL_COND_TYPE	dInsp_Outfall_Cond
Inspections	EROS_TYPE	dInsp_Erosion_Serv

dInsp_Veg_Growth

Code	Description
1	Normal
2	Excessive Vegetation Growth
3	Inhibited Vegetation Growth
4	Other

dInsp_Erosion_Serv

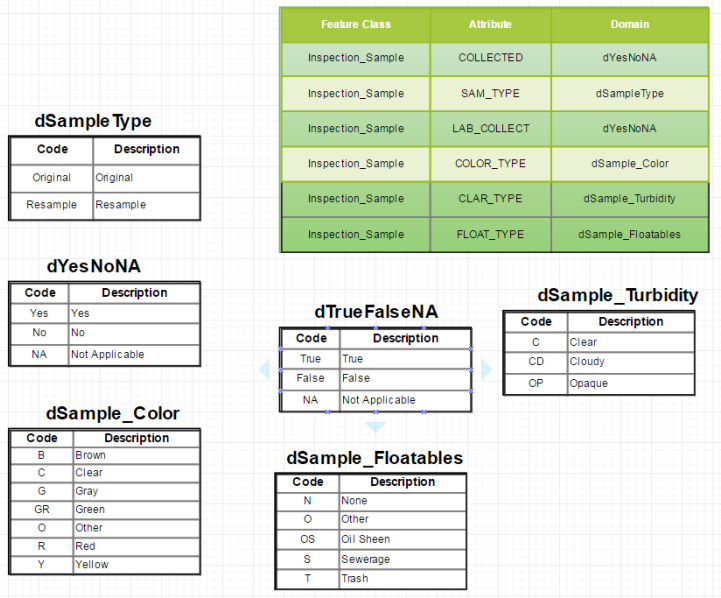
Code	Description
N	Normal
M	Moderate
S	Severe

dInsp_Outfall_Cond

Code	Description
CC	Cracking Concrete
MC	Metal Corrosion
N	Normal
O	Other
OD	Outfall Damage
PP	Peeling Paint
S	Submerged
SP	Concrete Spalling

Figure 6 – Inspections

Figure 7 shows the attributes with domains used by the **Inspection_Sample** table.



Feature Class	Attribute	Domain
Inspection_Sample	COLLECTED	dYesNoNA
Inspection_Sample	SAM_TYPE	dSampleType
Inspection_Sample	LAB_COLLECT	dYesNoNA
Inspection_Sample	COLOR_TYPE	dSample_Color
Inspection_Sample	CLAR_TYPE	dSample_Turbidity
Inspection_Sample	FLOAT_TYPE	dSample_Floatables

dSampleType

Code	Description
Original	Original
Resample	Resample

dYesNoNA

Code	Description
Yes	Yes
No	No
NA	Not Applicable

dSample_Color

Code	Description
B	Brown
C	Clear
G	Gray
GR	Green
O	Other
R	Red
Y	Yellow

dTrueFalseNA

Code	Description
True	True
False	False
NA	Not Applicable

dSample_Turbidity

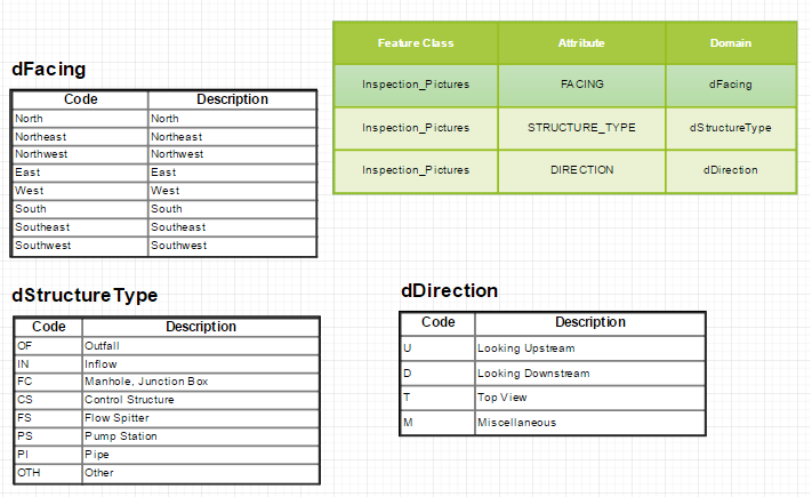
Code	Description
C	Clear
CD	Cloudy
OP	Opaque

dSample_Floatables

Code	Description
N	None
O	Other
OS	Oil Sheen
S	Sewerage
T	Trash

Figure 7 – Inspection_Sample

Figure 8 shows the attributes with domains used by the **Inspection_Pictures** table.



Feature Class	Attribute	Domain
Inspection_Pictures	FACING	dFacing
Inspection_Pictures	STRUCTURE_TYPE	dStructureType
Inspection_Pictures	DIRECTION	dDirection

dFacing

Code	Description
North	North
Northeast	Northeast
Northwest	Northwest
East	East
West	West
South	South
Southeast	Southeast
Southwest	Southwest

dStructureType

Code	Description
OF	Outfall
IN	Inflow
FC	Manhole, Junction Box
CS	Control Structure
FS	Flow Spitter
PS	Pump Station
PI	Pipe
OTH	Other

dDirection

Code	Description
U	Looking Upstream
D	Looking Downstream
T	Top View
M	Miscellaneous

Figure 8 – Inspections_Pictures

Appendix A

MDTA – IDDE Major Outfall Field Inspection Form

Outfall ID #:	
Vicinity/Road/Location:	
Date:	
Time:	
Date of Last Rain:	
Initials of Inspectors:	

SITE DESCRITPTION

INDICATOR	**COMMENTS**
Access	□ Yes □ No, describe:
Embankment	□ Good □ Poor, describe:
Roadway	□ Good □ Poor, describe:
Public Hazard	□ No □ Yes, describe:
General Site Comments:	

OUTFALL DESCRITPTION

LOCATION	**MATERIAL**	**SHAPE**		**DIMENSIONS (IN)**	**SUBMERGED (Add approx. %)**
Storm Sewer (Closed Pipe)	□ACCM □ ASRP □ BCCMP □ CMP □ CIP □ CONC □ HDPE □ PVC □ RCP □ SPP □ TCP □ Other:	□ Circular □ Elliptical □ Box □ Other:	□ Single □ Double □ Triple □ Other:	Diameter/ Dimensions:	In Water: □ No □ Partially □ Fully With Sediment: □ No □ Partially □ Fully
Open Drainage (swale/ditch)	□ Concrete □ Earthen □ Rip-rap □ Other:				
Manhole					

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PHYSICAL INDICATORS

INDICATOR	PRESENT	DESCRIPTION	COMMENTS
Outfall damage	□ Yes □ No	□ Spalling, cracking or chipping □ Peeling paint □ Corrosion	
Deposits/stains	□ Yes □ No	□ Oily □ Paint □ Flow Line □ Other:	
Abnormal vegetation	□ Yes □ No	□ Excessive □ Inhibited	
Poor pool quality	□ Yes □ No	□ Odors □ Floatables □ Colors □ Oil Sheen □ Suds □ Excessive Algae □ Other:	
Pipe algae/growth	□ Yes □ No	□ Brown □ Orange □ Green □ Other:	
Erosion	□ Yes □ No	□ Moderate □ Severe □ Normal	

Do physical indicators suggest an illicit discharge is present?	□ Yes □ No
Dry Weather Flow Present?	□ Yes □ No
Flow Description	□ Trickle □ Moderate □ Substantial

INDICATOR	PRESENT	DESCRIPTION	SEVERITY		
Odor	□ Yes □ No	□ Sewage □ Rancid/sour □ Sulfide □ Petroleum/gas □ Laundry □ Other:	□ Faint	□ Easily detected	□ Noticeable from a distance
Color	□ Yes □ No	□ Clear □ Brown □ Gray □ Yellow □ Green □ Orange/Red □ Multi □ Other:	□ Faint colors in sample bottle	□ Clearly visible in sample bottle	□ Clearly visible in outfall flow
Turbidity	□ Yes □ No		□ Slight cloudiness	□ Cloudy	□ Opaque
Floatables (Does not include trash)	□ Yes □ No	□ Sewage □ Suds and Foam □ Grease □ Other: □ Petroleum (oil sheen)	□ Few/slight, origin not obvious	□ Some, indications of origin	□ Some, origin clear

ON-SITE SAMPLING (Flowing Outfalls ONLY)

PARAMETER	RESULT	ACCEPTABLE RANGE	WITHIN RANGE (Y/N)
Air Temperature		NA	
Water Temperature		NA	
pH		6.5 – 8.5	
Phenol		< 0.17 mg/L	
Chlorine		< 0.40 mg/L	
Detergents		< 0.50 mg/L	
Copper		< 0.21 mg/L	
Sample collected for the lab? □ Yes □ No			

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Applying Practical Science to Improve Communities

Illicit Discharge Detection and Elimination Outfall Inspections

Maryland Transportation Authority



Fiscal Year 2019

I-95 JFK, Hatem Bridge, and Bay Bridge

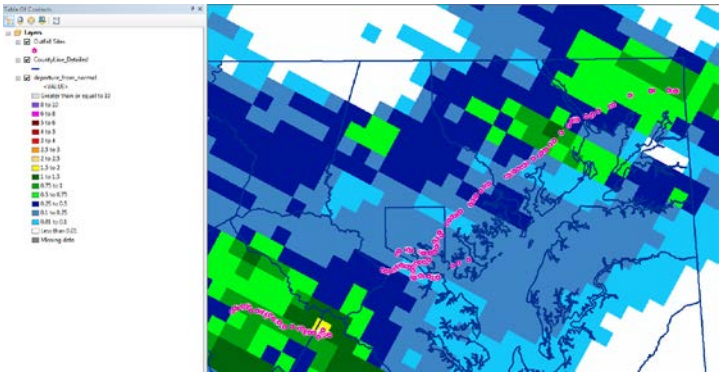
Submitted: December 31, 2019

Revised: February 13, 2020

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@cemscience | cemscience | Chesapeake Environmental Management, Inc.

Executive Summary

The Maryland Department of Transportation, Maryland Transportation Authority (MDOT MDTA) maintains coverage under a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Phase II permit for State and Federal Agencies. MDTA property consists of roadways and campuses which are located in watersheds that range from rural to highly-urbanized. The Phase II permit was issued by the Maryland Department of Environment (MDE) and it includes requirements to comply with the six minimum control measures (MCMs). The Illicit Discharge Detection and Elimination (IDDE) program is one of the MCMs and as such, MDOT MDTA is required to conduct field screening of MDTA's outfalls to identify sources of an illicit discharge and eliminate any illegal connections or illicit discharges to the storm drain system. Per the permit requirements, large properties such as MDTA with area more than 2,000 acres are required to screen 20% of outfalls per year or up to 100 outfalls.



MDTA outfalls with NWS base map

For fiscal year 2019, the CEM\AECOM team performed IDDE field investigations at one hundred ten (110) outfalls along three MDTA properties: Thomas J. Hatem Bridge (Hatem Bridge), John. F. Kennedy Memorial Highway and William Preston Lane Jr. Memorial Bridge (Bay Bridge) from May 2019 through August 2019. If a dry weather flow was detected, the following parameters were tested using field test kits: temperature, pH, chlorine, phenol, copper and detergents. The outfalls were also inspected for structural integrity and structural deficiencies were recorded as a part of the investigations.

CEM prepared field maps based off of the Geographic Information System (GIS) data provided by MDOT MDTA. For the planning and scheduling of field inspections and weather tracking, CEM used an available base map from the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) web site. IDDE screening requires three days of no precipitation events greater than 0.1 inch. The NOAA NWS base map provides daily rain totals that can be used within a GIS platform which enabled CEM staff to accurately estimate if the total precipitation at each of the

outfalls was above the minimum of 0.10 inch of rain. This allowed CEM to efficiently assess whether the three-day dry weather requirement for IDDE could be met prior to mobilizing the field teams.

Of the one hundred ten (110) outfalls investigated, field test kits were used to measure the above-mentioned parameters for the thirty-three (33) outfalls that had dry weather flow. Two (2) of the outfalls were measured to be above the allowable thresholds. Attached individual report for each outfall includes additional details. Twenty-eight (28) outfalls were observed to have structural deficiencies or other concerns and seventeen (17) outfalls had access issues. Provided below is the summary of inspections.

1. **Hatem Bridge**. Five (5) outfalls total were inspected. One (1) outfall had moderate structural issues. One (1) outfall had dry weather flow with parameters below the thresholds.
2. **John F. Kennedy Memorial Highway**. Ninety-five (95) outfalls total were inspected. Eighteen (18) outfalls had structural deficiencies or other concerns. Thirty (30) outfalls had dry weather flow with parameters below the thresholds. Seventeen (17) outfalls had access issues due to construction or fencing. Two (2) outfalls (KHEH00341 & KHEH00489) had parameters that were measured above the allowable thresholds. Dry weather flow at outfall KHEH00341 measured detergents above threshold level and outfall KHEH00489 measured pH above threshold level. CEM performed a follow up field visit on January 22, 2020 to ascertain the source of discharges at these two outfalls.
3. **Bay Bridge**. Ten (10) outfalls total were inspected. Four (4) outfalls had structural deficiencies or other concerns. Five (5) outfalls could not be located from the GIS data that was provided. No dry weather flows were observed at the Bay Bridge outfalls.

In January 2020, CEM re-mobilized to collect additional samples from the two outfalls (KHEH00341 & KHEH00489) with measured parameters that exceeded the allowable limits, as well as trace the discharges observed in these two systems. During the follow up investigation, dry weather flow was observed within the two systems. However, based on the field testing of the most recent samples collected, there were no parameters that were measured above their respective threshold at either outfall and the previous results were unable to be duplicated. Therefore, the previous exceedances may be related to seasonal fluctuations, and does not appear to be a result of on-going illicit discharges to these systems. The fact sheets that were prepared for these two outfalls provide additional details on the follow up investigations conducted at both outfalls and the resulting findings.

MDTA IDDE FY19

Hatem Bridge, I-95 JFK, and Bay Bridge

Outfall Number	Flow	Comments		
Key	*Flow*	*Structural or other concerns*	Flowing with issues	No access
	Total Fow: 35	*Total Number of Concerns: 28*	*3*	*17*
Hatem Bridge				
HBEH00002	No	Moderate cracking and spalling		
HBEH00006	No	None		
HBEH00008	No	None		
HBEH00009	No	Outfall is a different material then what is mapped		
HBEH00012	Yes	Parameters below thresholds		
I-95 JFK				
KHEH00043	Yes	Parameters below thresholds		
KHEH00045		Could not locate outfall		
KHEH00046	Yes	Access restricted due to fence		
KHEH00047	Yes	Parameters below thresholds		
KHEH00078	Yes	Parameters below thresholds		
KHEH00089	Yes	Concrete channel separation; parameters below thresholds		
KHEH00095	Yes	Parameters below thresholds		
KHEH00097	Yes	Parameters below thresholds		
KHEH00110	Yes	Parameters below thresholds		
KHEH00119	Yes	Access restricted due to fence		
KHEH00127	Yes	Parameters below thresholds		
KHEH00128	No	None		
KHEH00129	No	None		
KHEH00130	Yes	End section separated from pipe; paramenters below thresholds		
KHEH00132	No	Partially submerged		
KHEH00133	No	End section separated from pipe		
KHEH00142	No	Completely submerged, needs repair		
KHEH00143	Yes	Access restricted due to fence		
KHEH00184	No	Partially submerged		
KHEH00205	No	Partially submerged		
KHEH00207	Yes	Access restricted due to fence		
KHEH00214	No	Partially submerged		
KHEH00215	No	None		
KHEH00236	No	Erosion at inlet		
KHEH00237	Yes	Could not access inlet		
KHEH00253	Yes	Parameters below thresholds		
KHEH00255	Yes	Parameters below thresholds		
KHEH00257		Could not locate outfall		
KHEH00266	No	Pooled water in outfall		
KHEH00314	No	Almost completely submerged		
KHEH00341	Yes	Parameters (incl. detergents) below threshold during re-inspection		
KHEH00345		Could not access due to construction		
KHEH00352		Could not locate outfall		
KHEH00355	Yes	Parameters below thresholds		
KHEH00366		Could not locate outfall		
KHEH00371	Yes	Flowing but access was restricted by a fence, fully submerged		

MDTA IDDE FY19

Hatem Bridge, I-95 JFK, and Bay Bridge

Outfall Number	Flow	Comments		
Key	*Flow*	*Structural or other concerns*	Flowing with issues	No access
	Total Fow: 35	*Total Number of Concerns: 28*	*3*	*17*
I-95 JFK (continued)				
KHEH00402	No	None		
KHEH00404	No	None		
KHEH00408	No	Fully submerged		
KHEH00413	No	None		
KHEH00419		Unsafe to access outfall		
KHEH00441	No	Almost completely submerged		
KHEH00442	Yes	Parameters below thresholds		
KHEH00448	No	None		
KHEH00450		Access restricted due to fence		
KHEH00461	No	Mostly submerged		
KHEH00470	No	None		
KHEH00472		Access restricted due to fence		
KHEH00489	Yes	Parameters (incl. pH & detergents) below threshold during re-inspection		
KHEH00497	Yes	Parameters below thresholds		
KHEH00503	Yes	Parameters below thresholds		
KHEH00514	Yes	Parameters below thresholds		
KHEH00540		Outfall could not be located or is fully submerged		
KHEH00544	No	Mostly submerged		
KHEH00547	No	None		
KHEH00585	Yes	Parameters below thresholds		
KHEH00607		Could not access due to construction		
KHEH00609	Yes	Flow taken from downstream KHEH00610		
KHEH00610	Yes	Parameters below thresholds		
KHEH00611	Yes	Access restricted due to fence, Honeygo Run flows through culvert		
KHEH00707	No	None		
KHEH00708		Could not locate outfall		
KHEH00710	Yes	Could not access outfall		
KHEH00722		Could not access outfall		
KHEH00728	Yes	Outfall conveys Church Creek; parameters below thresholds		
KHEH00730	Yes	Parameters below thresholds		
KHEH00732	Yes	Parameters below thresholds		
KHEH00749	Yes	Outfall conveys Grays Run, parameters below thresholds		
KHEH00762	Yes	Access restricted by fence		
KHEH00770	No	None		
KHEH00775	No	Minor cracking on headwall		
KHEH00777	No	None		
KHEH00778	Yes	Parameters below thresholds		
KHEH00801	Yes	Parameters below thresholds		
KHEH00804	Yes	Parameters below thresholds		
KHEH00836	No	None		
KHEH00839	No	None		
KHEH00841		Could not access due to construction		

MDTA IDDE FY19

Hatem Bridge, I-95 JFK, and Bay Bridge

Outfall Number	Flow	Comments		
Key	*Flow*	*Structural or other concerns*	Flowing with issues	No access
	Total Fow: 35	*Total Number of Concerns: 28*	*3*	*17*
I-95 JFK (continued)				
KHEH00842		Could not access due to construction		
KHEH00863	Yes	Parameters below thresholds		
KHEH00873	Yes	Parameters below thresholds		
KHEH00885	Yes	Parameters below thresholds		
KHEH00887	Yes	Parameters below thresholds		
KHEH00888	Yes	Parameters below thresholds		
KHEH00892	Yes	Flow undermines concrete channel; parameters below thresholds		
KHEH01026	Yes	Parameters below thresholds		
KHEH01027	Yes	Parameters below thresholds		
KHEH01030	No	Access restricted by fence		
KHEH01032	No	Cracked invert		
KHEH01033	No	None		
KHEH01034	No	None		
KHEH01038	No	None		
KHEH01102		Outfall could not be located or is fully submerged		
KHEH01104		Could not locate outfall		
KHEH01126	Yes	Parameters below thresholds		
Bay Bridge				
LBEH00001	No	Completely submerged, needs repair		
LBEH00008	No	Partially full of sediment		
LBEH00013	No	Partially submerged		
LBEH00016	No	Partially submerged		
LBEH00022		Could not locate outfall		
LBEH00024		Could not locate outfall		
LBEH00026		Could not locate outfall		
LBEH00027		Could not locate outfall		
LBEH00029		Could not locate outfall		
LBEH00036	No	Some sediment accumulation		

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

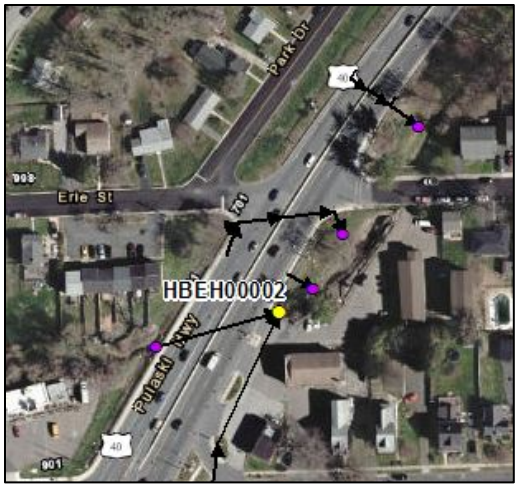
Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site HBEH00002

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 12:45 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
  Phone: (301) 820-3422
  Email: claire.weinrib@aecom.com



General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site HBEH00002 was first visited on Monday June 24, 2019 and was observed to have no flow present.



HBEH00002 – Outfall view facing southwest



HBEH00002 – Close-up of outfall showing moisture in pipe

Observations:

During CEM's initial investigation, the outfall, which is a 36-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall is in good condition with some moderate cracking and spalling around the headwall. There was also some moisture noted in the pipe. HBEH00002 is located adjacent to an 11 foot by 5 foot box culvert under US 40.

Next Steps:

The cracking should be monitored so it does not compromise the structural integrity of the pipe or headwall.



HBEH00002 – Cracking on north side of headwall



HBEH00002 – Downstream view facing northeast



HBEH00002 – View showing outfall adjacent to box culvert

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site HBEH00006

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 1:00 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site HBEH00006 was first visited on Monday June 24, 2019 and was observed to have no flow present.



HBEH00006 – Outfall view facing west



HBEH00006 – Close-up view of north outfall

Observations:

During CEM's initial investigation, the outfall, which are twin 48-inch by 36-inch reinforced concrete pipes (RCP), were found to have no flow present. The outfalls are in good condition with no visible defects.

Next Steps:

No further action is required at this time.



HBEH00006 – Close-up view of south outfall



HBEH00006 – Downstream view facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site HBEH00008

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 1:25 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site HBEH00008 was first visited on Monday June 24, 2019 and was observed to have no flow present.



HBEH00008 – Outfall view facing northeast



HBEH00008 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 15-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



HBEH00008 – Close-up view of outfall



HBEH00008 – Downstream view facing southwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site HBEH00009

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 1:29 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site HBEH00009 was first visited on Monday June 24, 2019 and was observed to have no flow present.



HBEH00009 – Outfall view facing south



HBEH00009 – Outfall view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is mapped as a 15-inch corrugated metal pipe (CMP) was not located. A 15-inch high-density polyethylene (HDPE) pipe was found and it was assumed the CMP had been replaced with the HDPE pipe. The pipe was found to have no flow present. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



HBEH00009 – Downstream where outfall was mapped, facing north



HBEH00009 – Downstream view facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site HBEH00012

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 12:55 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site HBEH00012 was first visited on Monday June 24, 2019 and was observed to have a moderate flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



HBEH00012 – West outfall view facing south



HBEH00012 – View showing double box culvert

Observations:

During CEM's initial investigation, the outfall, which are two 116-inch by 34-inch concrete box culverts that span under Superior Street, had a moderate flow present. A sample was collected on June 24, 2019. The water temperature was recorded as 76.0°F, with a pH of 7.80. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



HBEH00012 – View through west box culvert



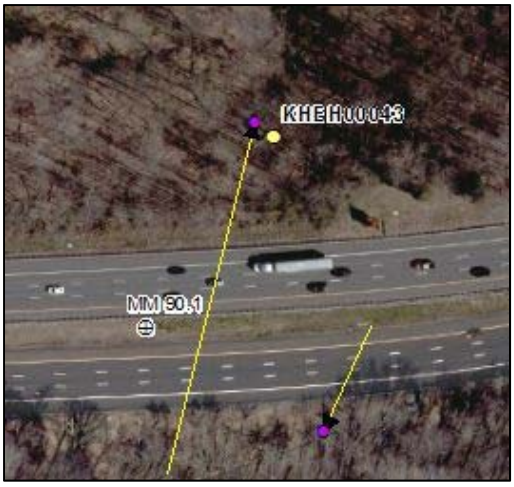
HBEH00012 – Downstream view facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00043

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 1:46 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00043 was first visited on Monday July 15, 2019 and was observed to have a moderate flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



KHEH00043 – Outfall view facing southwest



KHEH00043 – Outfall view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch reinforced concrete pipe (RCP), had a moderate flow present. A sample was collected on July 15, 2019. The water temperature was recorded as 74.4°F, with a pH of 6.90. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00043 – Downstream view facing north



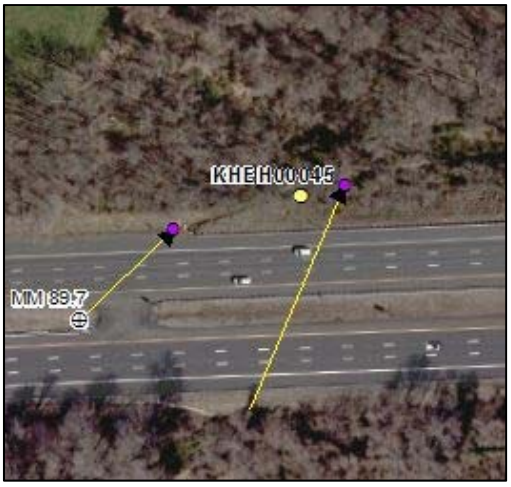
KHEH00043 – View of iron deposits at outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00045

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 2:04 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00045 was first visited on Monday July 15, 2019 and was not able to be located.



KHEH00045 – Mapped outfall location facing east



KHEH00045 – Mapped outfall location facing north

Observations:

During CEM's initial investigation, the outfall could not be located due to dense vegetation and steep slopes.

Next Steps:

Clearing of vegetation needed to verify outfall location.



KHEH00045 – Mapped outfall location facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00046

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 2:17 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00046 was first visited on Monday July 15, 2019 and was not able to be located.



KHEH00046 – Fence restricting access, facing west



KHEH00046 – View of outfall through fence, facing west

Observations:

During CEM's initial investigation, the outfall could not be accessed due to a fence. The outfall was viewed to have flow present.

Next Steps:

Install access to the outfall.



KHEH00046 – View of outfall through fence, facing west



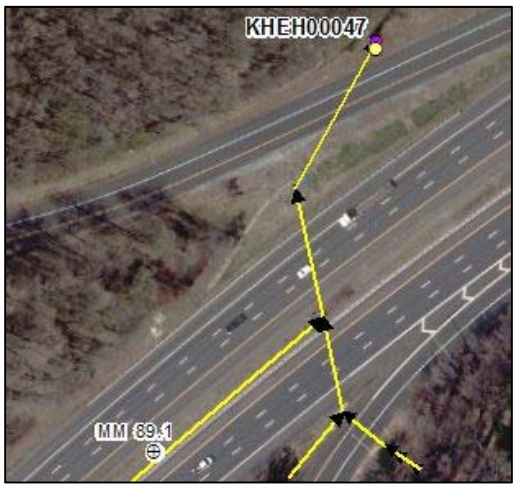
KHEH00046 – View of fence restricting access, facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00047

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 10:55 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00047 was first visited on Friday June 28, 2019 and was observed to have a moderate flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



KHEH00047 – Outfall view facing southwest



KHEH00047 – View showing flow and algae growth in pipe

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP), had a moderate flow present. A sample was collected on June 28, 2018. The water temperature was recorded as 68.7°F, with a pH of 6.95. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00047 – Downstream view facing northeast



KHEH00047 – View of algae and flow inside pipe



KHEH00047 – Top view of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00078

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 11:49 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00078 was first visited on Monday June 24, 2019 and was observed to have a moderate flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



KHEH00078 – Outfall view facing northwest



KHEH00078 – View of flow coming from south side of headwall

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch reinforced concrete pipe (RCP), had a moderate flow present. A sample was collected on June 28, 2018. The water temperature was recorded as 72.1°F, with a pH of 7.17. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00078 – View of flow within pipe



KHEH00078 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00089

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 8:24 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:



KHEH00089 – Outfall view facing north

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00089 was first visited on Friday June 28, 2019 and was observed to have minor flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



KHEH00089 – View showing concrete channel separation from headwall

Observations:

During CEM's initial investigation, the outfall, which is a 24-inch reinforced concrete pipe (RCP), had a minor flow present. A sample was collected on June 28, 2018. The water temperature was recorded as 72.0°F, with a pH of 7.34. Field test results for chlorine resulted in a concentration of 0.2 mg/L, for detergents was 0.1 mg/L, both below stated thresholds. Tests for phenols and copper resulted in non-

detectable levels, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

The concrete channel should be fixed so that the discharge no longer flows under it, endangering the stability of the outfall.



KHEH00089 – Downstream view facing south



KHEH00089 – Top view of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

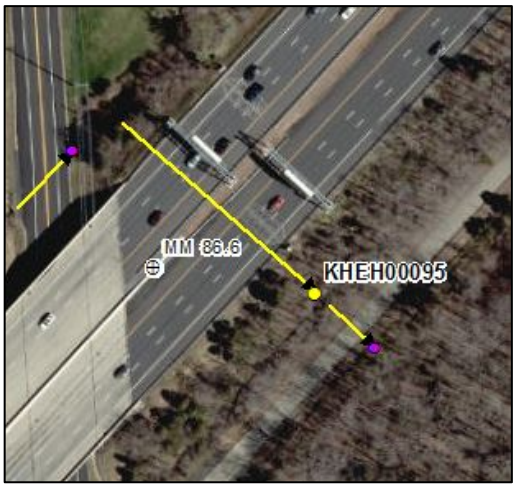
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00095

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 10:24 AM
- Crew Contact Information: Rob Swam, CEM
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KHEH00095 – Outfall view facing northwest



KHEH00095 – Downstream view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 54-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Monday June 24 and the water temperature was recorded at 69.5°F with a pH of 7.31. A test for chlorine resulted in 0.2 mg/L, which is below the allowed threshold of 0.4 mg/L. Follow up tests for copper, detergents, and phenols resulted in non-detectable values. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00095 – Downstream through other outfall facing southeast



KHEH00095 – Close-up of downstream flow

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00097

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 10:24 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00097 was first visited on Monday June 24, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00097 – Outfall view facing northwest



KHEH00097 – Pooled water in outfall

Observations:

During CEM's initial investigation, the outfall, which is a 54-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Monday June 24 and the water temperature was recorded at 69.1°F with a pH of 7.14. A test for chlorine resulted in 0.2 mg/l, which is below the stated threshold of 0.4 mg/L. Follow up tests for copper, detergents, and phenols resulted in non-detectable values. There was minor ponding in the pipe and thick vegetation on and around the outfall.

Next Steps:

Clearing of vegetation on and around the outfall.



KHEH00097 – Top view of outfall through vegetation



KHEH00097 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

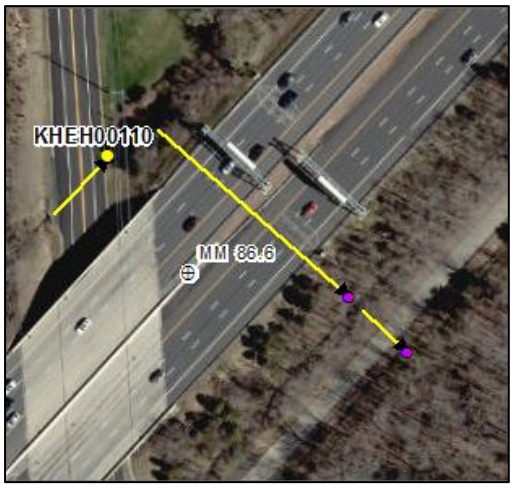
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00110

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 11:13 AM
- Crew Contact Information: Rob Swam, CEM
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  Claire Weinrib, AECOM
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General Project Information:

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KHEH00110 – Outfall view facing southwest



KHEH00110 – Close-up of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Monday June 24 and the water temperature was recorded at 72.6°F with a pH of 6.85. A test for chlorine resulted in 0.2 mg/L, which is below the stated threshold of 0.4 mg/L. Follow up tests for copper, detergents, and phenols resulted in non-detectable values, which indicate that no further investigation is required. The outfall is in

good condition with no visible defects. There was some excessive vegetation noted on and around the outfall headwall.

Next Steps:

Clearing of vegetation around the headwall.



KHEH00110 – Close-up of outfall flow



KHEH00110 – Downstream view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00119

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 2:16 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00119 was first visited on Monday July 15, 2019 and was not able to be accessed.



KHEH00119 – View of fence restricting access, facing north



KHEH00119 – View looking downstream through fence

Observations:

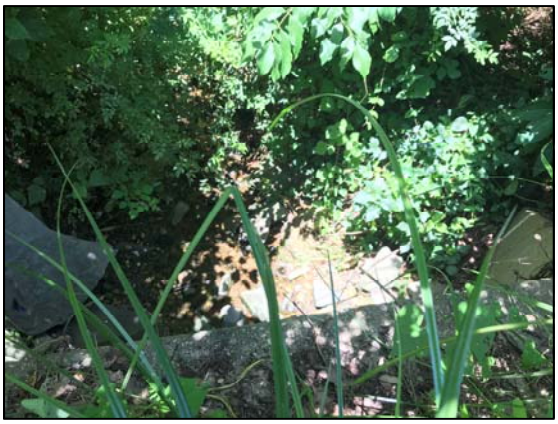
During CEM's initial investigation, the outfall could not be accessed due to a fence, but flow was observed.

Next Steps:

The installation of a way to access the outfall.



KHEH00119 – View of vegetation on fence



KHEH00119 – View of flow, facing north



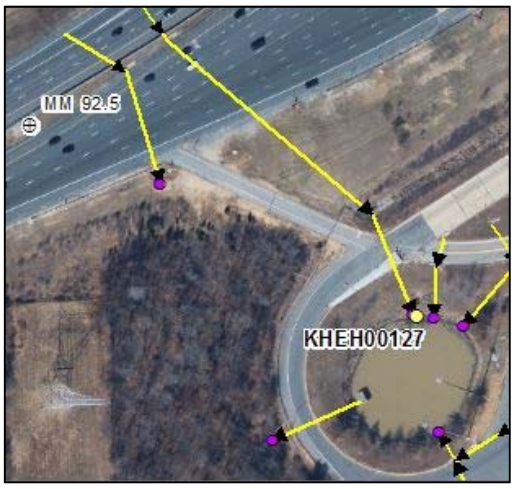
KHEH00119 – View of fence, facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00127

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 9:02 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:



KHEH00127 – Outfall view facing north

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00127 was first visited on Friday June 28, 2019 and was observed to have a moderate flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



KHEH00127 – Downstream view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP), had a moderate flow present. A sample was collected on June 28, 2018. The water temperature was recorded as 74.0°F, with a pH of 7.33. A test for detergents yielded a result of 0.01 mg/L, which is below the stated threshold of 0.5 mg/L. Follow up tests for chlorine, phenols, and copper resulted in non-detectable values, which indicate that no further investigation is required.

The outfall is in fair condition with moderate ponding caused by the downstream vegetation collecting sediment and clogging the downstream channel.

Next Steps:

Downstream should be cleared out and the vegetation removed to allow for proper drainage from the outfall.



KHEH00127 – View of vegetation growing adjacent to outfall



KHEH00127 – View of vegetation growing adjacent to outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00128

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 9:25 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00128 was first visited on Friday June 28, 2019 and was observed to have no flow present



KHEH00128 – Outfall view facing northwest



KHEH00128 – Pooled water downstream of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 36-inch reinforced concrete pipe (RCP), had no flow present. The outfall is in fair condition with moderate ponding caused by the downstream vegetation collecting sediment and clogging the downstream channel.

Next Steps:

Downstream should be cleared out and the vegetation removed to allow for proper drainage from the outfall.



KHEH00128 – Outfall view facing north



KHEH00128 – Downstream view facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00129

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 9:39 AM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00129 was first visited on Friday June 28, 2019 and was observed to have no flow present



KHEH00129 – Outfall view facing northwest



KHEH00129 – Downstream view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 24-inch reinforced concrete pipe (RCP), had no flow present. The outfall is in good condition with no notable defects. There was some moisture noted on the headwall.

Next Steps:

No further action is required at this time.



KHEH00129 – Close-up view of outfall



KHEH00129 – Moisture on headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00130

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 9:43 AM
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General Project Information:



KHEH00130 – Outfall view facing northwest

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00130 was first visited on Friday June 28, 2019 and was observed to have minor flow present. It was determined that a follow-up visit was not required because there were no measured levels of contaminants that exceeded the stated thresholds.



KHEH00130 – Close-up view of outfall showing headwall separation

Observations:

During CEM's initial investigation, the outfall, which is a 24-inch reinforced concrete pipe (RCP), had a minor flow present. The outfall end section has separated from the pipe segment, allowing water to flow both on the headwall and underneath it. A flow sample was taken from a downstream riffle. A test for chlorine yielded 0.2 mg/L, which is below the stated threshold of 0.4 mg/L. Follow

up tests for copper, phenols, and detergents resulted in non-detectable values, which indicate that no further investigation is required

Next Steps:

The end section should be reattached to the outfall pipe to re-establish flow.



KHEH00130 – Moisture on headwall



KHEH00130 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00132

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday June 28, 2019 / 9:50 AM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00132 was first visited on Friday June 28, 2019 and was observed to have no flow present.



KHEH00132 – Outfall view facing southeast



KHEH00132 – Looking downstream at pooled water

Observations:

During CEM's initial investigation, the outfall, which is a 24-inch reinforced concrete pipe (RCP), had no flow present. The outfall was partially submerged in 18 inches of water. The outfall had no additional visible defects.

Next Steps:

The downstream area should be fixed to allow for proper outfall drainage.



KHEH00132 – Outfall view facing north



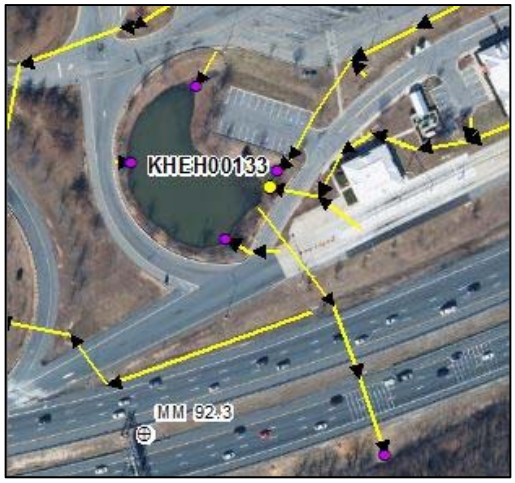
KHEH00132 – Close-up view of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00133

MDTA Contract No. 2794



Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00133 was first visited on Friday June 28, 2019 and was observed to have no flow present.



KHEH00133 – Outfall view facing east



KHEH00133 – Outfall view showing moisture on headwall

Observations:

During CEM's initial investigation, the outfall, which is a 24-inch reinforced concrete pipe (RCP), had no flow present. There was some moisture noted on the headwall but it was not flowing. The pipe was separated from the end section.

Next Steps:

The pipe should be reattached to the end section to maintain structural integrity.



KHEH00133 – Close-up view inside outfall showing pipe separation



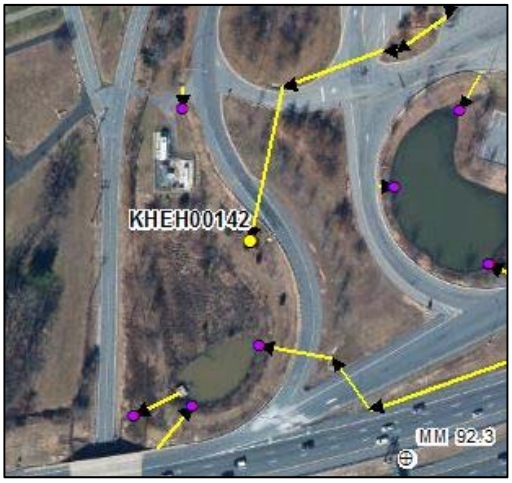
KHEH00133 – Downstream view facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00142

MDTA Contract No. 2794



Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00142 was first visited on Friday June 28, 2019 and was observed to have no flow present.



KHEH00142 – Outfall view facing north



KHEH00142 – Close-up view showing the submerged outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was completely submerged. There was no obvious flow present. The downstream pool was estimated to be at least 36 inches in depth.

Next Steps:

Repair the downstream area to allow for the outfall to properly drain.



KHEH00142 – Outfall view facing north



KHEH00142 – Downstream view facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00143

MDTA Contract No. 2794



Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00143 was first visited on Friday July 26, 2019 and was not able to be accessed.



KHEH00143 – View of outfall behind fence, facing southwest



KHEH00143 – View of outfall behind fence, facing southwest

Observations:

During CEM's initial investigation, the outfall could not be accessed due to a fence, but flow was observed. The pipe is an estimated 60-inch corrugated metal pipe (CMP).

Next Steps:

The installation of a way to access the outfall.



KHEH00143 – View of outfall channel facing southwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00184

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 1:12 PM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00184 was first visited on Monday July 15, 2019 and was observed to no flow present.



KHEH00184 – Outfall view facing south



KHEH00184 – View of pooled water downstream of outfall

Observations:

During CEM's initial investigation, the outfall, which is an 18 inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall was absent of any visible defects but did have approximately 6 inches of standing water in the pipe and the downstream pool

Next Steps:

Maintenance may be required to allow for proper drainage from the outfall and downstream channel.



KHEH00184 – Close-up view of pooled water in outfall



KHEH00184 – Downstream view facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00205

MDTA Contract No. 2794

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00205 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00205 – Outfall view facing east



KHEH00205 – Outfall view facing east

Observations:

During CEM's initial investigation, the outfall, which is an estimated 42 inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall was absent of any visible defects but did have approximately 4 inches of standing water in the pipe and the downstream pool.

Next Steps:

Maintenance may be required to allow for proper drainage from the outfall and downstream channel.



KHEH00205 – Close-up view of pooled water in outfall



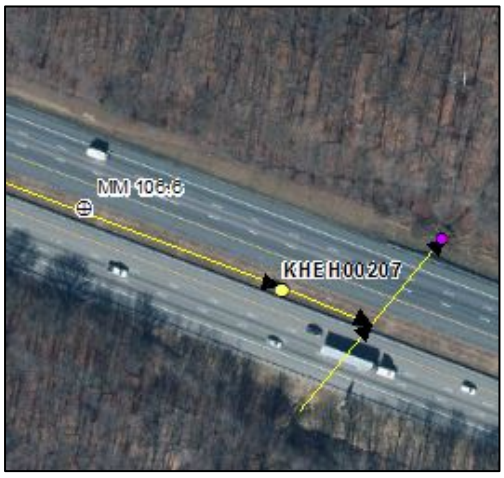
KHEH00205 – Close-up view of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00207

MDTA Contract No. 2794



Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00207 was first visited on Monday July 22, 2019 and was not able to be accessed.



KHEH00207 – View of inlet facing southeast



KHEH00207 – View inside inlet

Observations:

During CEM's initial investigation, the inlet was found to have flow present. However both the inlet and the downstream structure could not be accessed. The inlet is in good condition with no visible defects.

Next Steps:

The installation of a way to access the inlet to collect a water sample.



KHEH00207 – View inside inlet



KHEH00207 – View of pipe on south side of inlet



KHEH00207 – View of pipe on north side of inlet



KHEH00207 – View of outfall that could not be accessed



KHEH00207 – View of outfall that could not be accessed

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00214

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 12:25 PM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00214 was first visited on Monday July 15, 2019 and was observed to no flow present.



KHEH00214 – Outfall view facing northeast



KHEH00214 – View of pooled water downstream of outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall was partly submerged in about 24 inches of water, but was not observed to have any flow present.

Next Steps:

Maintenance may be required to allow for proper drainage from the outfall and downstream channel.



KHEH00214 – View of vegetation downstream constricting drainage



KHEH00214 – View of outfall facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00215

MDTA Contract No. 2794

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00215 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00215 – Top view of inlet



KHEH00215 – Inside inlet

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24 inch corrugated metal pipe (CMP), was observed to have no flow present. The inlet did have some standing water inside but no flow was noted.

Next Steps:

No further action is required at this time.



KHEH00215 – View of inlet

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00236

MDTA Contract No. 2794

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00236 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00236 – Inlet view facing northeast



KHEH00236 – View inside inlet

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch reinforced concrete pipe (RCP), was observed to have no flow present. There was significant erosion present on the north side of the inlet structure.

Next Steps:

Repair erosion adjacent to inlet.



KHEH00236 – Erosion on north side of inlet



KHEH00236 – Inlet view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00237

MDTA Contract No. 2794

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00237 was first visited on Friday July 26, 2019 and was observed to have minor flow present. A sample was unable to be taken from the inlet.



KHEH00237 – Inlet view facing east



KHEH00237 – View inside inlet

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch corrugated metal pipe (CMP), was observed to have minor flow present. Access to the outfall was restricted from the inlet, so no sample could be taken.

Next Steps:

Access inlet to obtain water sample.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00253

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 10:10 AM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00253 was first visited on Monday July 15, 2019 and was observed to have minor flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00253 – Upstream at outfall, facing west



KHEH00253 – Looking downstream from outfall, facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 42-inch reinforced concrete pipe (RCP) had a minor flow. A sample was taken Monday July 15 and the water temperature was recorded at 71.0°F with a pH of 7.07. A field test for detergents resulted in a value of 0.1 mg/L, which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols resulted in values below the detectable levels. There were iron deposits noted in the outfall pipe.

Next Steps:

No further action is required at this time.



KHEH00253 – View inside outfall



KHEH00253 – Downstream view facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00255

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 10:25 AM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00255 was first visited on Monday July 15, 2019 and was observed to have minor flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00255 – Outfall view facing northeast



KHEH00255 – Looking downstream from outfall, facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 42-inch reinforced concrete pipe (RCP) had a minor flow. A sample was taken Monday July 15 and the water temperature was recorded at 74.1°F with a pH of 7.52. Field tests for chlorine, copper, detergents, and phenols resulted in values below the detectable levels. There was minor cracking noted on the north side of the headwall.

Next Steps:

Monitor the cracking on the headwall.



KHEH00255 – Outfall view facing northeast



KHEH00255 – Minor cracking on north side of the outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

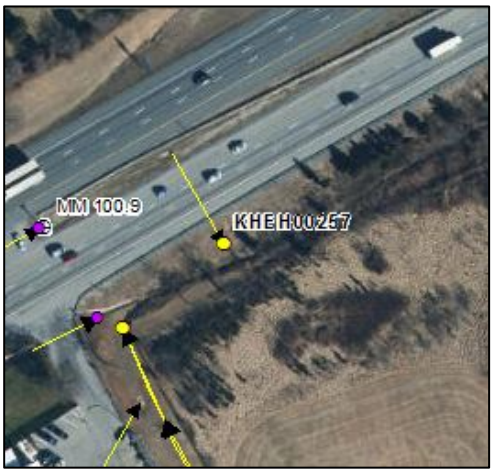
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00257

MDTA Contract No. 2794

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00257 was first visited on Monday July 15, 2019 and was not able to be located.



KHEH00257 – Outfall location facing south



KHEH00257 – Outfall location facing south

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch pipe, could not be located due to steep slopes and thick vegetation.

Next Steps:

Clear vegetation to confirm outfall location.



KHEH00257 – Outfall location facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00266

MDTA Contract No. 2794

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00266 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00266 – Outfall view facing northwest



KHEH00266 – Outfall view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP), was observed to have no flow present. There was thick vegetation growing in the downstream channel, causing approximately 4 inches of water to pool within the outfall.

Next Steps:

Clearing of vegetation in the downstream channel to allow for proper drainage. Also monitor the erosion on the south side of the headwall.



KHEH00266 – View of pooled water in outfall



KHEH00266 – Downstream view facing northeast



KHEH00266 – Minor erosion on south side of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00314

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 10:03 AM
- Crew Contact Information: Seth Hinder, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00314 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00314 – Outfall view facing south



KHEH00314 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall was almost completely covered in sediment and had heavy vegetation growth downstream.

Next Steps:

Clearing of vegetation in the downstream channel to allow for proper drainage and the cleaning out of sediment in the outfall pipe.



KHEH00314 – Outfall view facing south



KHEH00314 – Downstream view facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection and Network Investigation

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00341

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday January 22, 2022 / 1:00 PM
- Crew Contact Information: Steven Wicker, CEM
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  Email: swicker@cemscience.com

  Kevin DiMartino, CEM
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KHEH00341 – General overview of outfall location

General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00341 was first visited on Monday June 24, 2019 and was observed to have moderate flow. Based on observations and testing conducted in June and August 2019, the outfall was revisited on January 22, 2020.



KHEH00341 – Detail view of outfall structure

Observations:

During CEM's initial investigation, the outfall, which is a 42-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was collected Monday June 24 and the water temperature was recorded at 75.0°F with a pH of 6.15. A field test for detergents resulted in a concentration of 0.5 mg/L, which exceeded the stated threshold. Follow up tests for chlorine, copper, and phenols resulted in values less than the acceptable thresholds. Due to precipitation events, follow up tests were conducted approximately one month after the initial inspection on August 6 and 7 for detergents and resulted in a concentrations of 0.5 mg/L, respectively.

Next Steps:

Based on the inspection and testing conducted in June and August 2019, follow up visits were recommended to verify the detergent exceedances. The outfall structure was revisited on January 22, 2020 to perform a follow-up inspection and retesting. Similar to the initial investigation, the outfall was found to be in good condition with moderate flow. Additionally, CEM noted the following: floatables at the outfall structure, shallow groundwater seepage upstream of the outfall structure (south side of 95 northbound), standing water and shallow groundwater seepage up-gradient of the upstream structures (north side of 95 southbound), and moderate flow up-gradient of the upstream structures (north side of 95 southbound). Observations made along the upstream structures, specifically shallow groundwater seepage up-gradient along the adjacent hillside, suggested possible evidence pertaining to elevated concentrations of detergents (i.e., natural source) with respect to the stated threshold. Samples were collected from both the upstream structure and the outfall (the same location as the prior events) and retested to determine if the results from the June and August 2019 events were repeatable. Similar to the June and August 2019 events, tests for copper, chlorine, and phenols resulted in values less than the stated thresholds at the downstream outfall. A test for detergents resulted in a value of 0.2 mg/L, which was less than the 0.5 mg/L threshold. The measured pH value of 7.2 was within the stated range of 6.5 to 8.5. Additionally, tests for copper, chorine, and phenols at the upstream structure resulted in values less than the stated thresholds. A test for detergents resulted in a value of 0.2 mg/L, which was less than the 0.5 mg/L threshold. The measure pH value of 6.9 was within the stated range of 6.5 to 8.5.

Test results obtained from the June and August 2019 sampling events were not repeatable during the January 2020 sampling event. Additionally, test results from the January 2020 sampling event were within the stated thresholds at both the outfall and upstream structures. This discrepancy can be attributed to a number of reasons; however, the most likely reasons are associated with dilution caused by recent rainfall events (January 18, 2020) or seasonal fluctuations in the natural water sources observed up-gradient of the upstream structure. Continued monitoring of the outfall structure is recommended and possible sampling for indicators such as fluoride, ammonia, and potassium may be warranted.



KHEH00341 – Detail of floatables observed at outfall structure.



KHEH00341 – Downstream of outfall structure.



KHEH00341 – Upstream structure with moderate flow.



KHEH00341 – Moderate flow to upstream structure (north of 95 southbound).



KHEH00341 – Representative standing water and shallow groundwater seepage near upstream structure.



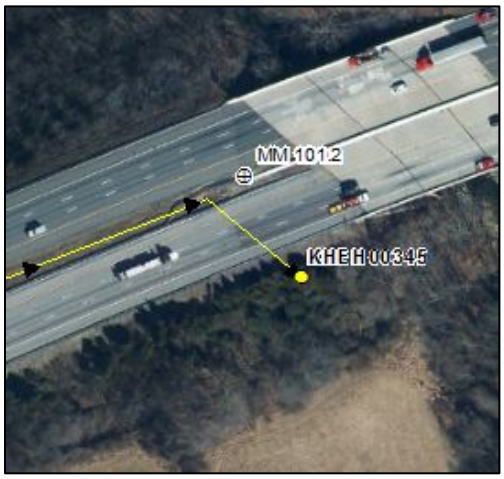
KHEH00341 – Detail of seepage and flow to upstream structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00345

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 9:46 AM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00345 was first visited on Friday July 26, 2019 and was not able to be accessed.

Observations:

During CEM's initial investigation, the outfall could not be accessed due to it being located within an active construction site.

Next Steps:

Access the outfall once construction is completed.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00352

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 12:10 PM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00352 was first visited on Monday July 15, 2019 and was not able to be located.



KHEH00352 – Outfall location facing southwest



KHEH00352 – Outfall location facing northeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch pipe, could not be located.

Next Steps:

Confirm outfall location.



KHEH00352 – Outfall location facing southwest



KHEH00352 – Outfall location facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00355

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 11:49 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00355 was first visited on Monday July 15, 2019 and was observed to have minor flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00355 – Outfall view facing northwest



KHEH00355 – Close-up of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 50-inch corrugated metal pipe (CMP) had a minor flow. A sample was taken Monday July 15 and the water temperature was recorded at 76.8°F with a pH of 7.67. A field test for detergents resulted in a value of 0.05 mg/L which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols resulted in values below the detectable levels. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00355 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00366

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 9:37 AM
- Crew Contact Information: Rob Swam, CEM
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00366 was first visited on Monday July 15, 2019 and was not able to be located.



KHEH00366 – Outfall location facing south



KHEH00366 – Outfall location facing southwest

Observations:

During CEM's initial investigation, the outfall, which is an estimated 42-inch pipe, could not be located.

Next Steps:

Confirm outfall location.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00371

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 9:53 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00371 was first visited on Monday July 15, 2019 and was not accessible but viewable.



KHEH00371 – Outfall location facing south



KHEH00371 – Downstream view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 42-inch pipe, was completely submerged but did appear to have moderate flow present. A sample was not able to be taken due to a fence surrounding the outfall. There was also a small sinkhole noted upstream of the outfall.

Next Steps:

Repair outfall to allow for proper drainage, install an access point, and repair sinkhole upstream of outfall.



KHEH00371 – Fence restricting access



KHEH00371 – Submerged outfall



KHEH00371 – Sinkhole upstream from outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

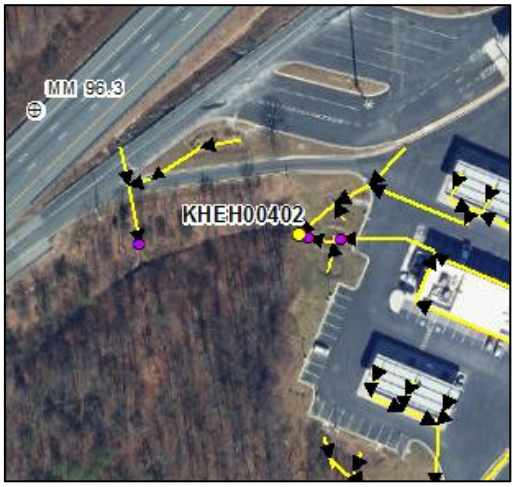
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00402

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 1:47 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00402 was first visited on Monday June 24, 2019 and was observed to no flow present.



KHEH00402 – Outfall view facing east



KHEH00402 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 15 inch High-density polyethylene (HDPE) pipe, was observed to have no flow present. The outfall was absent of any visible defects.

Next Steps:

No further action is required at this time.



KHEH00402 – Downstream view facing west



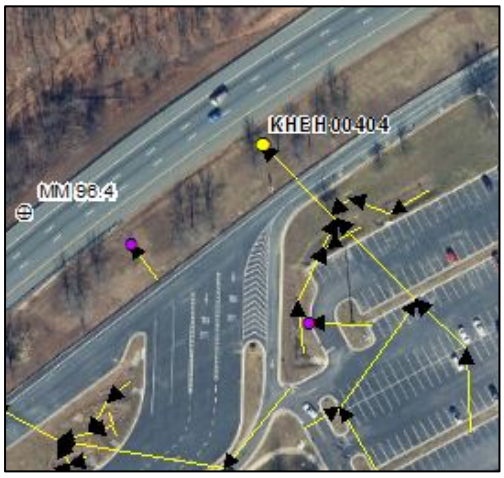
KHEH00402 – Outfall view facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00404

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 10:24 AM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00404 was first visited on Friday July 26, 2019 and was found to have no flow present.



KHEH00404 – View of outfall facing south



KHEH00404 – View of sediment accumulation in outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch reinforced concrete pipe (RCP), had no flow present. The RCP has approximately 3 inches of sediment accumulated in the pipe. There was also erosion noted along the roadway shoulder.

Next Steps:

Monitor the sediment accumulation in the outfall and repair the erosion adjacent to the roadway.



KHEH00404 – Outfall view facing south



KHEH00404 – Downstream view facing north



KHEH00404 – Erosion adjacent to the roadway

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00408

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 10:15 AM
- Crew Contact Information: Seth Hinder, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00408 was first visited on Friday July 26, 2019 and was found to have no flow present.



KHEH00408 – View of outfall facing north



KHEH00408 – View of submerged outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch pipe of unknown material, was completely submerged and buried. There did not appear to be any flow present at the time of inspection.

Next Steps:

Repair the outfall to allow for proper drainage.



KHEH00408 – Outfall location facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00413

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 1:47 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00413 was first visited on Monday June 24, 2019 and was observed to no flow present.



KHEH00413 – Outfall view facing north



KHEH00413 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 15 inch corrugated metal pipe (CMP), was observed to have no flow present. The outfall was absent of any visible defects.

Next Steps:

No further action is required at this time.



KHEH00413 – Outfall view facing north



KHEH00413 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

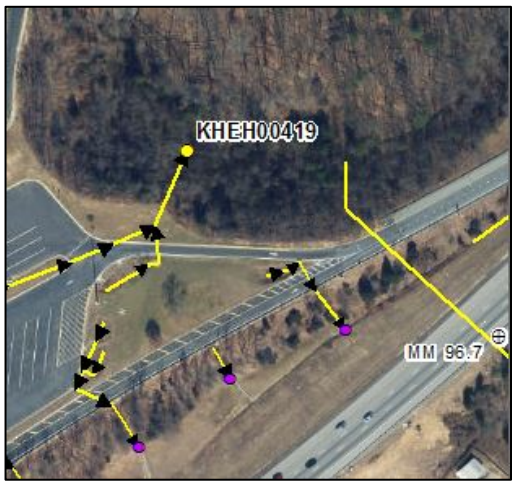
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00419

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 2:41 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00419 was first visited on Monday June 24, 2019 and could not be located.



KHEH00419 – Outfall embankment facing north

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18" pipe of unknown material. Could not be safely accessed or located due to the steep slopes and thick vegetation.

Next Steps:

Confirmation of outfall location and access remediation.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

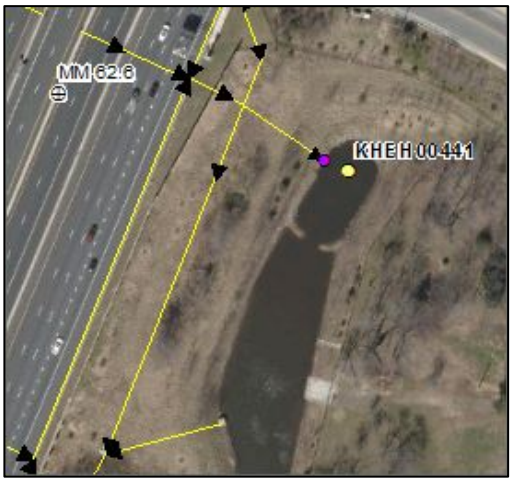
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00441

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Tuesday August 6, 2019 / 11:05 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00441 was first visited on Tuesday August 6, 2019 and was observed to have no flow present.



KHEH00441 – Outfall view facing west



KHEH00441 – View of outfall in stormwater management pond

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch reinforced concrete pipe (RCP) was mostly submerged in a stormwater management pond. The outfall did not appear to have any flow present.

Next Steps:

Repair the outfall to allow for proper drainage.



KHEH00441 – View of submerged outfall



KHEH00441 – View of submerged outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

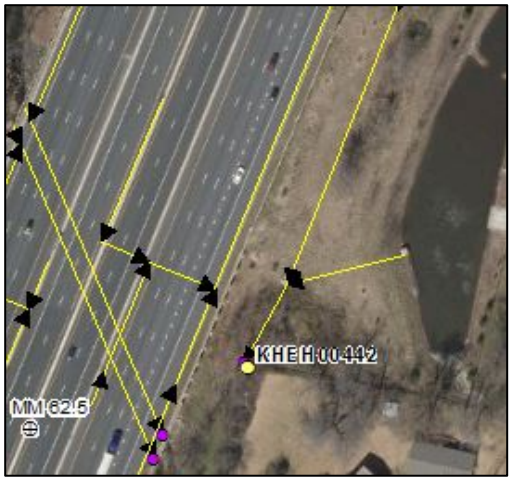
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00442

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Tuesday August 6, 2019 / 11:09 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00442 was first visited on Tuesday August 6, 2019 and was observed to have a moderate flow present. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00442 – Outfall view facing southeast



KHEH00442 – View of foam in downstream pool

Observations:

During CEM's initial investigation, the outfall, which is a 42-inch reinforced concrete pipe (RCP), had moderate flow present. A sample was taken Tuesday August 6 and the water temperature was recorded at 82.7°F with a pH of 7.69. A field test for detergents resulted in a value of 0.15 mg/L which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols resulted in

values below the detectable levels. The outfall is in good condition with no visible defects. There were bubbles noted in the downstream pool.

Next Steps:

No further action is required at this time.



KHEH00442 – Close-up view of outfall



KHEH00442 – Close-up view of flow



KHEH00442 – Downstream view facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

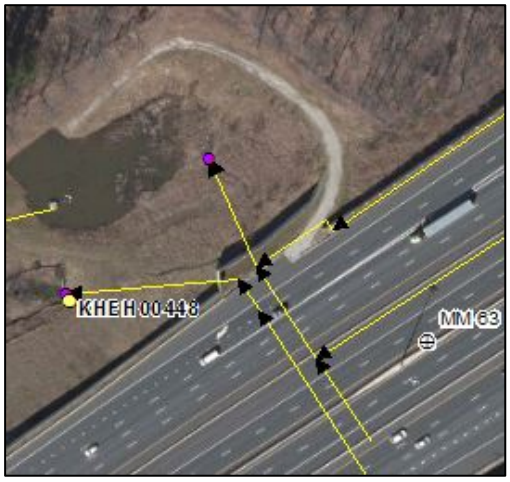
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00448

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Tuesday August 6, 2019 / 10:31 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00448 was first visited on Tuesday August 6, 2019 and was observed to have no flow present.



KHEH00448 – Outfall view facing east



KHEH00448 – View of pooled water at outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 54-inch reinforced concrete pipe (RCP) was partially submerged in an estimated 4 inches of water. The outfall did not appear to have any flow present. The outfall appears to be in good condition with no visible defects

Next Steps:

Repair the outfall to allow for proper drainage.



KHEH00448 – View of downstream pool



KHEH00448 – Downstream view facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

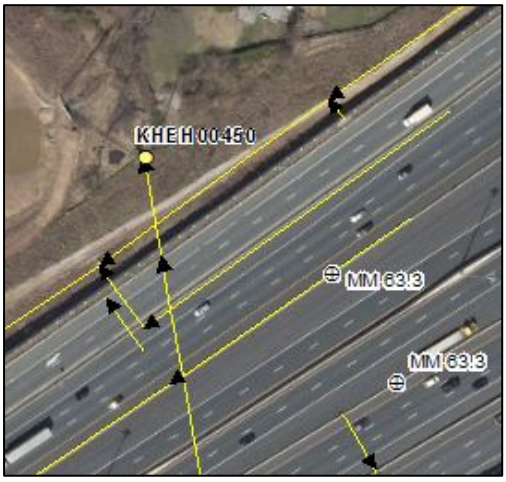
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00450

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Tuesday August 6, 2019 / 9:40 AM
- Crew Contact Information: Rob Swam, CEM
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  Kristen Hyde, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00450 was first visited on Tuesday August 6, 2019 and was not able to be accessed.



KHEH00450 – View of fence restricting access



KHEH00450 – View of fence restricting access

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch reinforced concrete pipe (RCP) was not able to be accessed due to a fence.

Next Steps:

Install a way to safely access the outfall.



KHEH00450 – View of fence restricting access

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

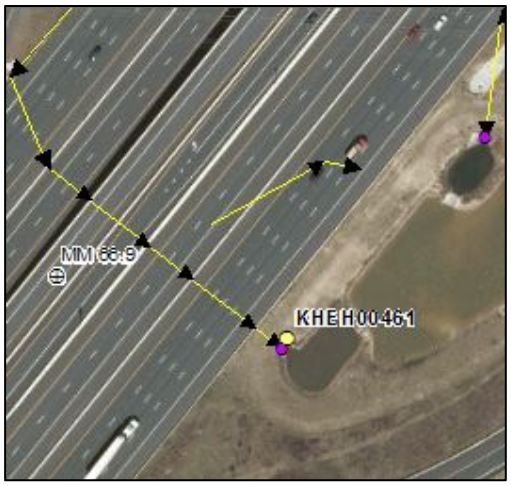
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00461

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 22, 2019 / 12:08 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00461 was first visited on Monday July 22, 2019 and was observed to no flow present.



KHEH00461 – Outfall view facing northeast



KHEH00461 – Outfall view facing northeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 42 inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall was mostly submerged with water and had heavy sediment deposits.

Next Steps:

Clearing of vegetation and sediment to allow for proper outfall drainage.



KHEH00461 – View of vegetation at outfall



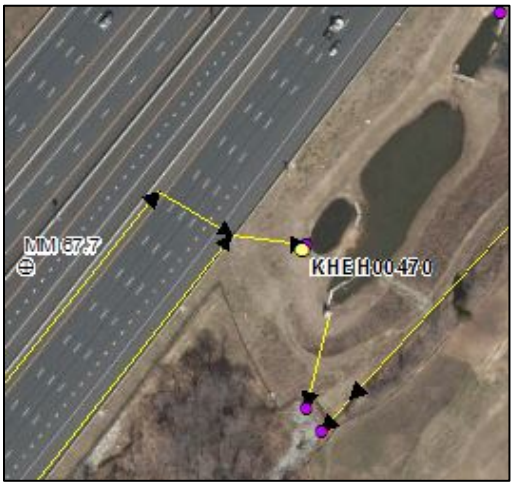
KHEH00461 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00470

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 2:07 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00470 was first visited on Wednesday July 17, 2019 and was observed to no flow present.



KHEH00470 – Outfall view facing northwest



KHEH00470 – Outfall view facing west

Observations:

During CEM's initial investigation, the outfall, which is a 42 inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall has some minor cracking on the north end.

Next Steps:

Monitor outfall cracking.



KHEH00470 – Cracking on north side of headwall



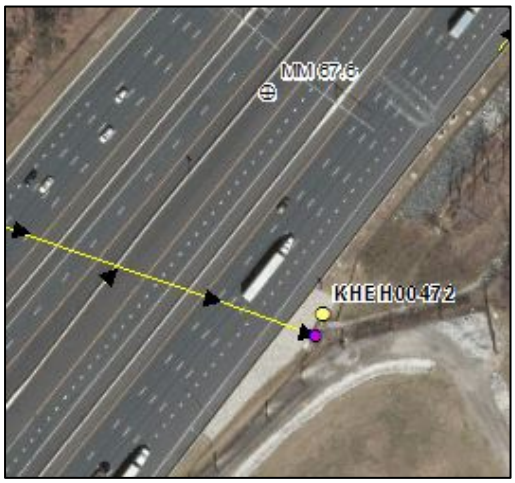
KHEH00470 – Downstream view facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00472

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 2:15 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00472 was first visited on Wednesday July 17, 2019 and was observed to no flow present.



KHEH00472 – Fence and retaining wall restricting access



KHEH00472 – Fence restricting access

Observations:

During CEM's initial investigation, the outfall, which is an estimated 42 inch pipe, was not able to be accessed or located.

Next Steps:

Confirm outfall location and install access point.



KHEH00472 – Fence restricting access

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection and Network Investigation

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00489

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday January 22, 2022 / 10:00 AM
- Crew Contact Information: Steven Wicker, CEM
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  Email: swicker@cemscience.com

  Kevin DiMartino, CEM
  Phone: (410) 893-9016
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KHEH00489 – General overview of outfall location

General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00489 was first visited on Wednesday July 17, 2019 and was observed to be submerged but have flow. Based on observations and testing conducted in July 2019, the outfall was revisited on January 22, 2020.



KHEH00489 – Detail view of outfall structure

Observations:

During CEM's initial investigation, the outfall, which was an estimated 48 inch reinforced concrete pipe (RCP), was found to be mostly submerged. However flow was heard from within the pipe, so a sample was collected from the outfall. The temperature was measured as 86.9°F with a pH of 9.57. A field test for detergents resulted in a concentration of 0.05 mg/L, which was less than the 0.5 mg/L threshold. Tests for copper, chlorine, and phenols resulted in values less than detectable levels. Due to precipitation events, follow up tests were conducted

three weeks after the initial inspection on August 6 and 7, 2019 and resulted in a pH values of 9.65 and 9.57, respectively. The measured pH values exceeded the stated threshold of 8.5.

Next Steps:

Based on the inspection and testing conducted in July 2019, follow up visits were recommended to determine the pH values upstream. The outfall structure was revisited on January 22, 2020 to perform a follow-up inspection and retesting. Similar to the initial investigation, the outfall was found to be mostly submerged with little to no flow. Additionally, CEM noted the following: a surface water drainage culvert along the north end of the retention pond that contained evidence of unregulated dumping including ceramic tile; refuse along the banks of the retention pond and submerged in the retention pond (including tires and municipal waste); several feet of water in the retention pond and the outfall; recent construction activities in the general vicinity of the outfall structure; and unregulated dumping up-gradient of the outfall structure associated with a historical farm (previously located along Rossville Blvd). The upstream structures were inspected with no immediate evidence resulting in elevated pH values; however, the upstream structures were observed to have municipal waste accumulated in and around the structures. The upstream structures could not be sampled due to lack of flowing water, as well as accessibility issues (locked drain grates). The outfall was retested in the same location as the prior event(s) to determine if the results from the July 2019 event were repeatable. Similar to the July 2019 event, tests for copper, chlorine, and phenols resulted in values less than detectable levels. A field test for detergents resulted in a value of 0.4 mg/L, which was less than the 0.5 mg/L threshold. The measured pH value of 7.1 was within the stated range of 6.5 to 8.5.

Test results obtained from the July and August 2019 sampling events were not repeatable during the January 2020 sampling event. Additionally, all test results from the January 2020 sampling event were within the stated thresholds. This discrepancy can be attributed to a number of reasons; however, the most likely reasons are associated with dilution caused by recent rainfall events (January 18, 2020) or an isolated dumping event in close proximity to the outfall that caused an intermittent increase in pH. Continued monitoring of the pH at the outfall structure is recommended and possible sampling of upstream structures may be warranted.



KHEH00489 – Downstream view of submerged structure, facing northeast.



KHEH00489 – Construction activity in the general vicinity of the structure.



KHEH00489 – Ceramic tile in surface water drainage feature, facing north.



KHEH00489 – Unregulated dumping up-gradient of structure (i.e., former farm dump).



KHEH00489 – Upstream structure, facing southwest.



KHEH00489 – Upstream structure, facing northeast.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

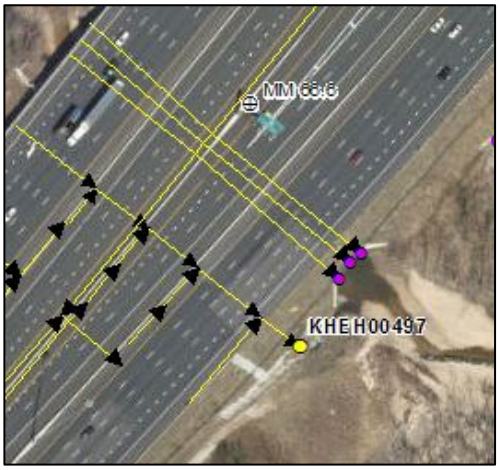
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00497

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 1:24 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00497 was first visited on Wednesday July 17, 2019 and was observed to have minor flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00497 – Outfall view facing northwest



KHEH00497 – Close-up of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 36-inch reinforced concrete pipe (RCP) had a minor flow. A sample was taken Wednesday July 17 and the water temperature was recorded at 81.6°F with a pH of 8.24. A field test for detergents resulted in a value of 0.20 mg/L which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols resulted in values below the detectable levels. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00497 – View of outfall flow



KHEH00497 – Downstream view facing southeast



KHEH00497 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00503

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 10:02 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00503 was first visited on Wednesday July 17, 2019 and was observed to have minor flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00503 – Outfall view facing southwest



KHEH00503 – Outfall view facing southwest

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP) had a minor flow. A sample was taken Wednesday July 17 and the water temperature was recorded at 76.1°F with a pH of 8.26. A field test for detergents resulted in a value of 0.20 mg/L which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols resulted in values below the detectable levels. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00503 – Close-up of outfall



KHEH00503 – Downstream view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00514

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 11:09 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00514 was first visited on Wednesday July 17, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00514 – Outfall view facing northeast



KHEH00514 – Close-up inside outfall

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP) had a minor flow. A sample was taken Wednesday July 17 and the water temperature was recorded at 79.4°F with a pH of 7.59. A field test for detergents resulted in a value of 0.10 mg/L which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols resulted in values below the detectable levels, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00514 – Downstream view facing southwest



KHEH00514 – Outfall view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

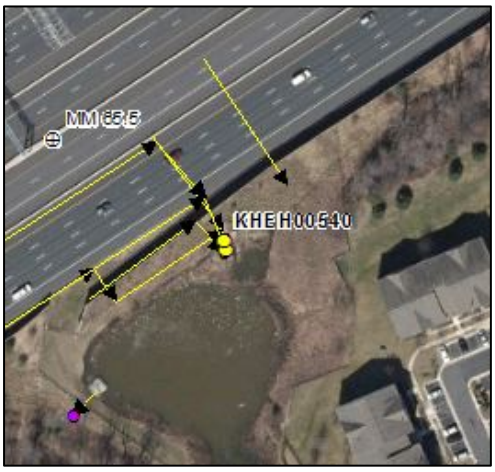
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00540

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 12:35 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00540 was first visited on Wednesday July 17, 2019 and was not located.



KHEH00540 – Top view of headwall



KHEH00540 – View of pond south of headwall

Observations:

During CEM's initial investigation, the outfall could not be located. A concrete headwall was noted on the bank of the adjacent pond. However no outfall pipe could be seen on the headwall.

Next Steps:

Confirm outfall location.



KHEH00540 – Pond view facing northeast



KHEH00540 – Pond view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00544

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 12:35 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00544 was first visited on Wednesday July 17, 2019 and did not have flow present.



KHEH00544 – Outfall view facing southwest



KHEH00544 – Top view of outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall was submerged in approximately 24 inches of water and flows into a stormwater management pond.

Next Steps:

Monitor the outfall condition.



KHEH00544 – Downstream view facing northwest



KHEH00544 – Erosion on north side of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00547

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 22, 2019 / 11:55 AM
- Crew Contact Information: Rob Swam, CEM
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  Phone: (443) 752-2114
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00547 was first visited on Monday July 22, 2019 and was observed to no flow present.



KHEH00547 – Outfall view facing northeast



KHEH00547 – Outfall view facing northeast

Observations:

During CEM's initial investigation, the outfall, which is a 36 inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall had no visible defects.

Next Steps:

No further action is required at this time.



KHEH00547 – View of moisture on headwall



KHEH00547 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

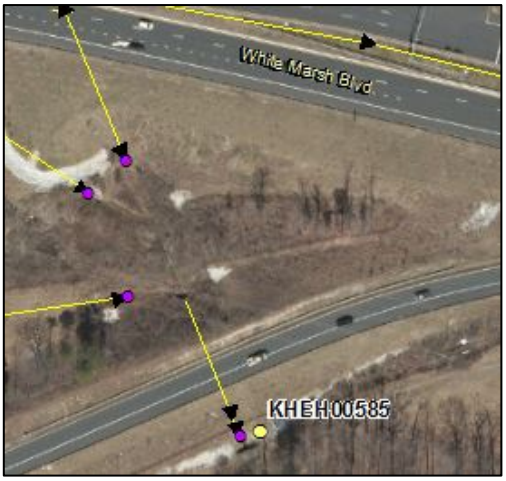
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00585

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Tuesday August 6, 2019 / 8:59 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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  Email: khyde@cemscience.com



General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00585 was first visited on Tuesday August 6, 2019 and was observed to have a moderate flow present. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00585 – Outfall view facing northwest



KHEH00585 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch corrugated metal pipe (CMP), had moderate flow present. A sample was taken Tuesday August 6 and the water temperature was recorded at 78.1°F with a pH of 7.53. A field tests for detergents, chlorine, copper, and phenols resulted in values below the detectable levels. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00585 – Outfall view facing northwest



KHEH00585 – Downstream view facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00607

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Tuesday August 6, 2019 / 12:26 PM
- Crew Contact Information: Rob Swam, CEM
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  Kristen Hyde, CEM
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  Phone: (443) 466-4181
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00607 was first visited on Tuesday August 6, 2019 and was not able to be accessed.

Observations:

During CEM's initial investigation, the outfall, which is an estimated 72-inch reinforced concrete pipe (RCP) was not able to be accessed due to construction taking place where the outfall is located.

Next Steps:

Access the outfall once the construction has been completed.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

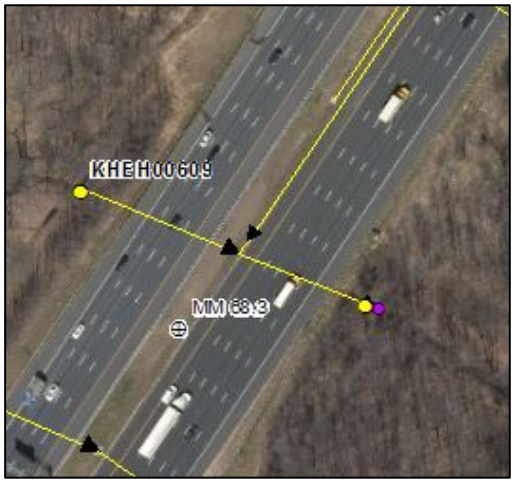
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00609

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 9:17 AM
- Crew Contact Information: Rob Swam, CEM
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  Phone: (443) 752-2114
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00609 was first visited on Tuesday July 17, 2019 and was observed to have moderate flow present.



KHEH00609 – Outfall view facing north



KHEH00609 – Outfall view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 72-inch reinforced concrete pipe (RCP), was observed to have moderate flow present. A sample was not taken from this outfall as it was an inflow to the MDTA system. Flow was taken at the downstream structure KHEH00610 where the flow discharges from the MDTA system. There was woody debris noted at the outfall pipe.

Next Steps:

No further action is required at this time.



KHEH00609 – View of debris on outfall



KHEH00609 – View upstream from outfall



KHEH00609 – View downstream in outfall pipe

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00610

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 2:33 PM
- Crew Contact Information: Rob Swam, CEM
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  Email: claire.weinrib@aecom.com

General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00610 was first visited on Wednesday July 17, 2019 and was observed to have moderate flow present. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00610 – Outfall view facing north



KHEH00610 – Downstream view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 72-inch reinforced concrete pipe (RCP), was observed to have moderate flow present. A sample was taken Wednesday July 17 and the water temperature was recorded at 84.1°F with a pH of 7.55. A field test for detergents resulted in a value of 0.10 mg/L which is below the 0.5 mg/L threshold. Follow up tests for chlorine, copper, and phenols

resulted in values below detectable levels, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00610 – Close-up view of outfall



KHEH00610 – View of foam in downstream pool

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00611

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 2:12 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
  Phone: (301) 820-3422
  Email: claire.weinrib@aecom.com

General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00611 was first visited on Wednesday July 17, 2019 and was observed to have stream flow present.



KHEH00611 – View of flow through fence facing southeast



KHEH00611 – Fence restricting access

Observations:

During CEM's initial investigation, the outfall could not be accessed due to a fence and retaining wall. Flow was visible from the top of the retaining wall. Flow was noted to be perennial Honeygo Run, which indicated that the outfall should possibly be excluded from future IDDE outfall inspections.

Next Steps:

Install an access point.



KHEH00611 – Fence restricting access

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00707

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 11:08 AM
- Crew Contact Information: Seth Hinder, CEM
  Staff Scientist
  Phone: (410) 983-1239
  Email: shinder@cemscience.com

  Austin Vogel, CEM
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00707 was first visited on Friday July 26, 2019 and did not have flow present.



KHEH00707 – View of outfall behind fence, facing southwest



KHEH00707 – View of CMP inside inlet

Observations:

During CEM's initial investigation, the outfall, which is an 18-inch corrugated metal pipe (CMP), was observed to have no flow present. The inlet and pipe are in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00707 – View of inlet facing northeast



KHEH00707 – Top view of inlet

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

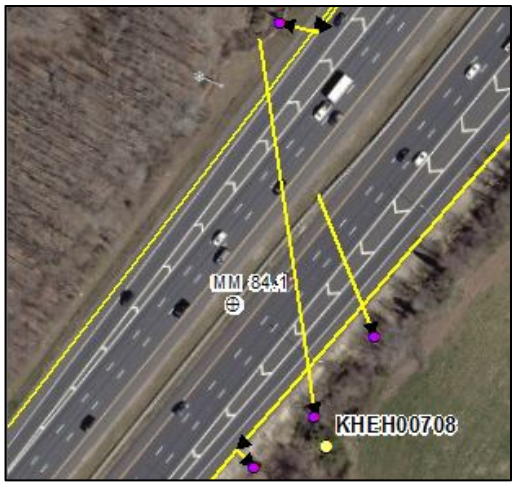
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00708

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 1:47 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00708 was first visited on Monday June 24, 2019 and was not located.



KHEH00708 – Outfall location facing southeast



KHEH00708 – Outfall location showing thick *Phragmites*

Observations:

During CEM's initial investigation, the outfall, which is an estimated 54-inch reinforced concrete pipe according to the upstream structure, could not be located.

Next Steps:

Trimming of vegetation and confirmation of outfall location.



KHEH00708 – Outfall location facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

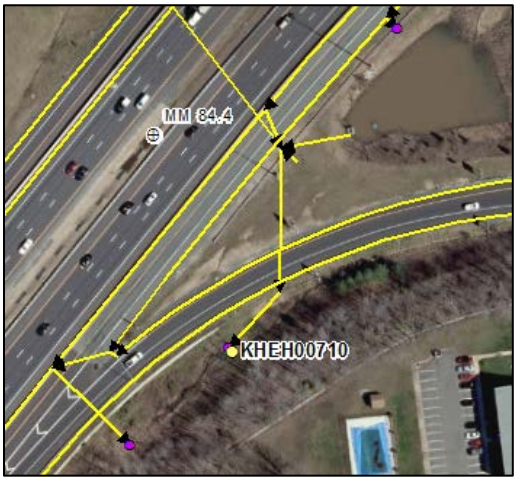
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00710

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 11:51 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00710 was first visited on Thursday May 23, 2019. The outfall could not be accessed.



KHEH00710 – View from upslope showing outfall location



KHEH00710 – Looking southeast at vegetation restricting outfall access

Observations:

During CEM's initial investigation, the outfall could not be located. There was a retaining wall with a fence along the ramp preventing access. A manhole upstream of the outfall was examined to confirm the outfall location and flow was observed within the manhole, however it was too deep to safely collect a sample.

Next Steps:

Removal of the vegetation or the installation of a gate to allow safe access to the outfall.



KHEH00710 – Manhole upstream of outfall, missing a cover

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

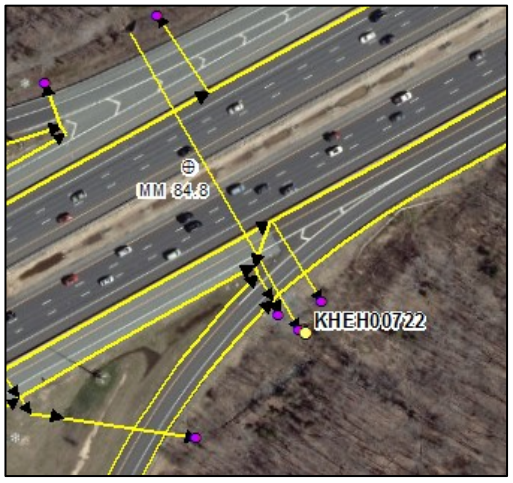
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00722

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 1:00 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00722 was first visited on Wednesday May 22, 2019. The outfall could not be accessed.



KHEH00722 – Outfall location facing southeast



KHEH00722 – Outfall location facing southeast

Observations:

During CEM's initial investigation, the outfall could not be located. There was a fence at the toe-of-slope which prevented further investigation to locate the outfall.

Next Steps:

Clearing of vegetation to allow for access to the outfall.



KHEH00722 – Outfall location facing southwest



KHEH00722 – Outfall location facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00728

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 11:03 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00728 was first visited on Wednesday May 22, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00728 – Upstream at outfall, facing northwest



KHEH00728 – Looking downstream from outfall, facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch corrugated metal pipe (CMP) had a moderate flow. A sample was taken Wednesday May 22 and the water temperature was recorded at 66.3°F with a pH of 7.54. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. There was minor erosion noted along the north side of the headwall. It was also noted that outfall conveys Use I Church Creek and may need to be excluded from future IDDE outfall inspections.

Next Steps:

Monitor the erosion around the headwall.



KHEH00728 – Close-up of outfall



KHEH00728 – minor erosion on north side of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

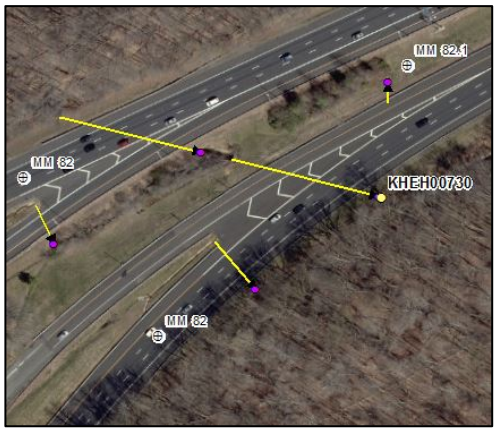
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00730

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 10:54 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00730 was first visited on Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00730 – Top view of outfall



KHEH00730 – Outfall view facing southwest

Observations:

During CEM's initial investigation, the outfall, which is a 72-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 66.1°F with a pH of 7.55. Field tests for detergents, chlorine, copper, and phenols resulted in values below the detectable levels, which indicate that no further investigation is required. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00730 – Downstream pool from outfall



KHEH00730 – Outfall view facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

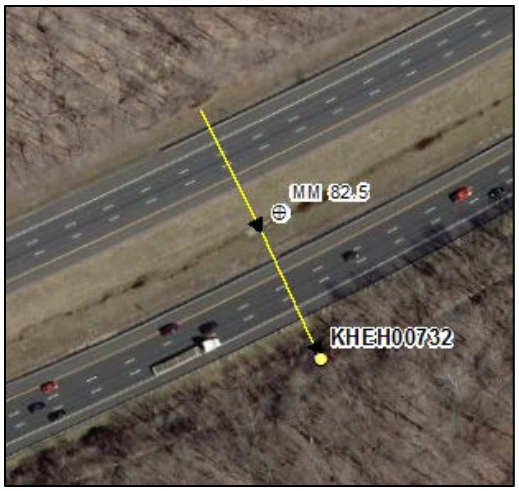
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00732

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 12:28 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00732 was first visited on Wednesday May 22, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00732 – Upstream at outfall, facing northwest



KHEH00732 – Outfall view, facing northwest

Observations:

During CEM's initial investigation, the outfall, which is a 54-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Wednesday May 22 and the water temperature was recorded at 65.3°F with a pH of 7.40. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. There were no structural defects noted at the time of inspection.

Next Steps:

Monitor the trees that are growing around the concrete.



KHEH00732 – Outfall looking downstream, facing south



KHEH00732 – Top view of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00749

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 11:35 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00749 was first visited on Thursday May 23, 2019 and was observed to have heavy flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00749 – Upstream at outfall, facing southwest



KHEH00749 – Looking downstream from outfall, facing south

Observations:

During CEM's initial investigation, the outfall, which are two 8-foot by 12-foot box culverts, had a heavy flow. A sample was taken Thursday May 23 and the water temperature was recorded at 69.5°F with a pH of 7.32. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. It was also noted that outfall conveys Use I Grays Run, which indicates that the outfall should possibly excluded from future IDDE outfall inspections.

Next Steps:

No further action is required at this time.



KHEH00749 – South box culvert



KHEH00749 – North box culvert



KHEH00749 – Large pool directly downstream from outfall

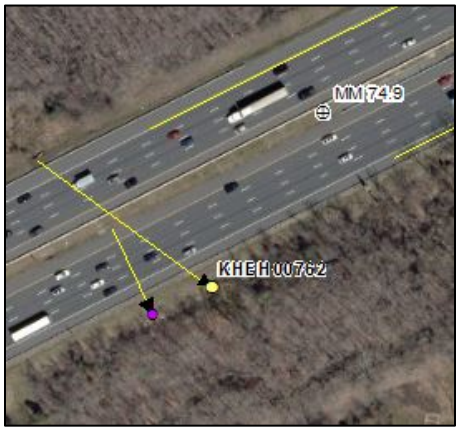
FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00762

MDTA Contract No. 2794

Field Crew Information:



- Inspection date and time: Thursday May 23, 2019 / 9:02 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00762 was first visited on Thursday May 23, 2019 and was not able to be accessed due to a fence but flow was observed through fence.



KHEH00762 – Fence restricting access



KHEH00762 – Fence restricting access

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch reinforced concrete pipe (RCP), could not be accessed.

Next Steps:

Install a way to safely access the outfall.



KHEH00762 – View through fence at outfall channel



KHEH00762 – Fence restricting access

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

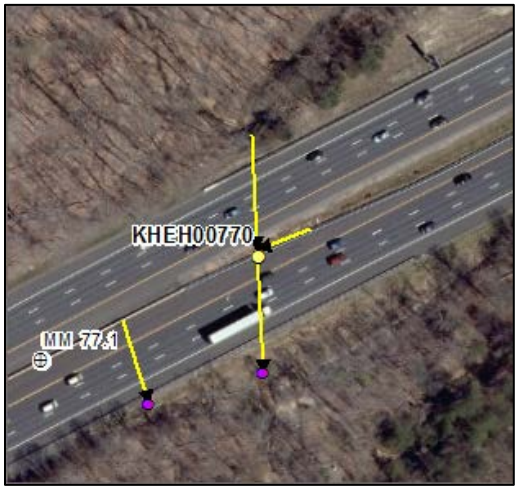
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00770

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 9:48 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00770 was first visited on Wednesday May 22, 2019 and no flow was observed.



KHEH00770 – Outfall located within box culvert



KHEH00770 – Close-up of outfall in box culvert

Observations:

During CEM's initial investigation, the outfall, which is an 18-inch corrugated metal pipe (CMP), was found to have no flow present. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH00770 – Box culvert, facing north



KHEH00770 – Downstream from box culvert, facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

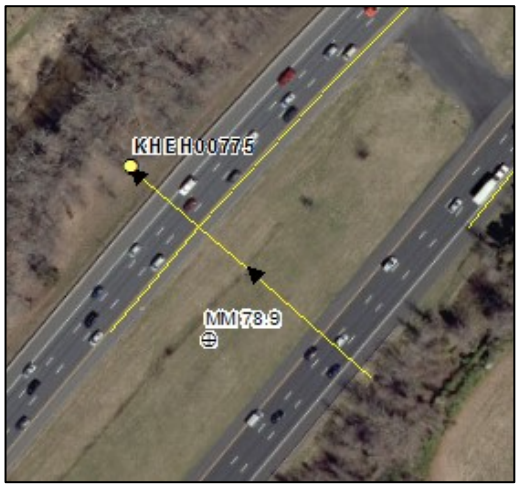
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00775

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 1:16 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00775 was first visited on Wednesday May 22, 2019 and no flow was observed.



KHEH00775 – Outfall view facing southeast



KHEH00775 – Downstream view facing northwest

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall is in good condition with no visible defects. There was approximately 1.5 inches of water pooled in the outfall. Minor cracking was also noted where the pipe meets the headwall.

Next Steps:

No further action is required at this time.



KHEH00775 – View of pooled water at outfall



KHEH00775 – Minor cracking at headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

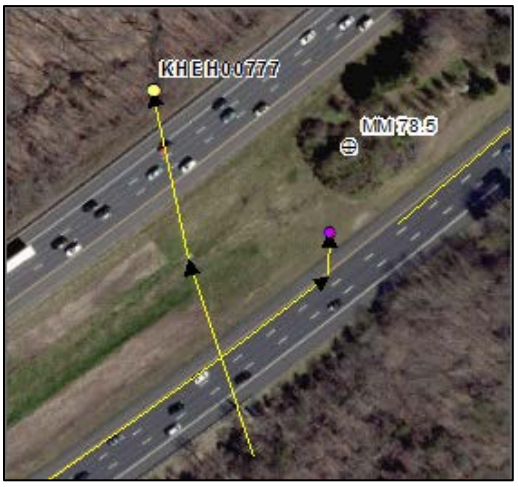
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00777

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 1:58 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00777 was first visited on Thursday May 23, 2019 and was observed to have no flow present.



KHEH00777 – Outfall located within box culvert



KHEH00777 – Close-up of outfall in box culvert

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall is in good condition with some cracking around the headwall. There was also iron deposits in the pipe.

Next Steps:

No further action is required at this time.



KHEH00777 – Box culvert, facing north



KHEH00777 – Downstream from box culvert, facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00778

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 1:35 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00778 was first visited on Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00778 – Upstream at outfall, facing south



KHEH00778 – Outfall view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 36-inch corrugated metal pipe (CMP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 72.2°F with a pH of 6.82. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. There was minor cracking and spalling noted where the pipe meets the headwall. Iron deposits were also noted in the pipe and in the downstream channel.

Next Steps:

Monitor the cracking of the outfall and erosion around the headwall.



KHEH00778 – Outfall looking downstream, facing north



KHEH00778 – Minor erosion on north side of headwall



KHEH00778 – Close-up view of flow

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00801

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 2:35 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
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  Email: claire.weinrib@aecom.com



General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00801 was first visited on Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00801 – Upstream at outfall, facing northeast



KHEH00801 – Outfall view facing northeast

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 70.0°F with a pH of 6.90. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. Iron deposits were noted in the pipe and in the downstream channel.

Next Steps:

No further action is required at this time.



KHEH00801 – Outfall looking downstream, facing southwest



KHEH00801 – Iron deposits in flow

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

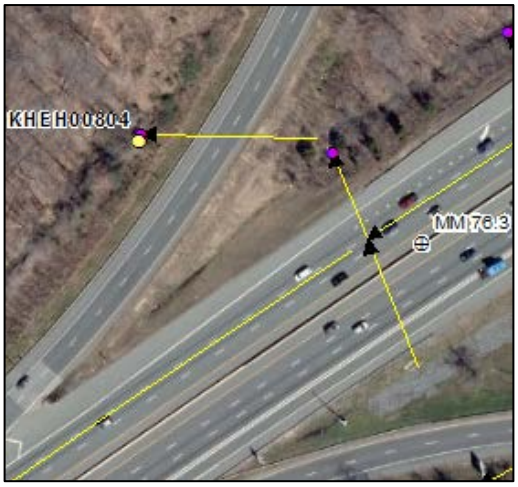
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00804

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 2:47 PM
- Crew Contact Information: Rob Swam, CEM
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00804 was first visited on Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00804 – Close-up view of outfall



KHEH00804 – Outfall view east

Observations:

During CEM's initial investigation, the outfall, which is a 72-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 69.0°F with a pH of 6.77. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. There was minor spalling around the edge of the pipe. Iron deposits were also noted in the pipe and in the downstream channel.

Next Steps:

No further action is required at this time.



KHEH00804 – Outfall looking downstream, facing southwest



KHEH00804 – Adjacent concrete channel confluence



KHEH00804 – Erosion on south side of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

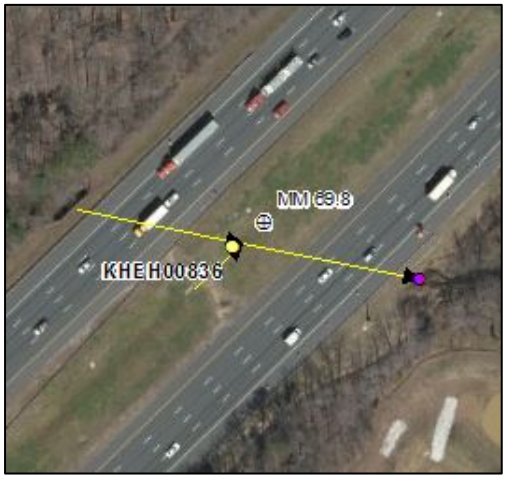
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00836

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 11:58 AM
- Crew Contact Information: Seth Hinder, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00836 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00836 – View of inlet facing southwest



KHEH00836 – View inside inlet

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch reinforced concrete pipe (RCP), was observed to have no flow present. There is some minor cracking and spalling around where the pipe joins the inlet.

Next Steps:

No further action is required at this time.



KHEH00836 – View inside inlet



KHEH00836 – Top view of inlet

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

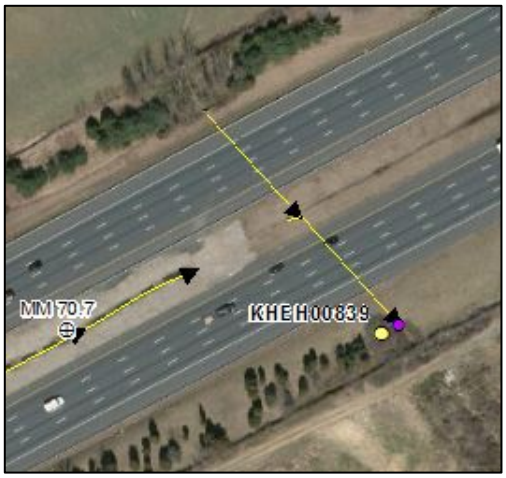
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00839

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 12:14 PM
- Crew Contact Information: Seth Hinder, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00839 was first visited on Friday July 26, 2019 and was observed to no flow present.



KHEH00839 – Top view of outfall



KHEH00839 – View of outfall facing northwest

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch reinforced concrete pipe (RCP), was observed to have no flow present. There was some minor sediment accumulated noted in the pipe.

Next Steps:

No further action is required at this time.



KHEH00839 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

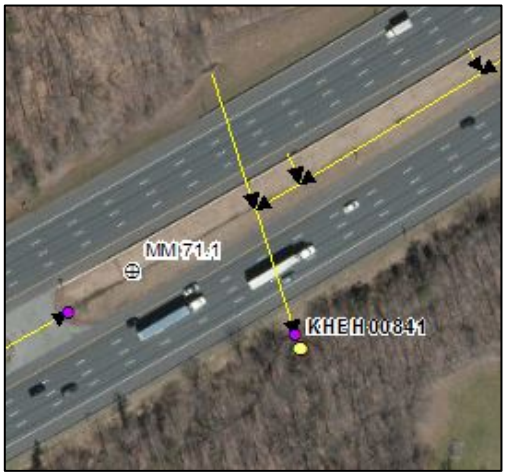
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00841

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 12:20 PM
- Crew Contact Information: Seth Hinder, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00841 was first visited on Friday July 26, 2019 and was not able to be accessed.

Observations:

During CEM's initial investigation, the outfall, which is an estimated 72-inch reinforced concrete pipe (RCP), was not able to be accessed due to the construction of the Bradshaw Road overpass.

Next Steps:

Access the outfall once construction has been completed.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00842

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 12:30 PM
- Crew Contact Information: Seth Hinder, CEM
  Staff Scientist
  Phone: (410) 983-1239
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00842 was first visited on Friday July 26, 2019 and was not able to be accessed.

Observations:

During CEM's initial investigation, the outfall, which is an estimated 48-inch reinforced concrete pipe (RCP), was not able to be accessed due to the construction of the Bradshaw Road overpass.

Next Steps:

Access the outfall once construction has been completed.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00863

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 10:11 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00863 was first visited on Wednesday May 22, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00863 – Outfall view facing north



KHEH00863 – Downstream view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 36-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Wednesday May 22 and the water temperature was recorded at 66.1°F with a pH of 7.40. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. Access was through a hole in the fence north of the outfall.

There was significant ponding of 5 inches within the outfall pipe. Some iron deposits were also noted in the pooled water.

Next Steps:

Monitor the erosion on the headwall, stabilize the downstream to avoid ponding in the pipe, and install an access gate.



KHEH00863 – Riffle where sample was taken



KHEH00863 – Close-up view of outfall



KHEH00863 – Erosion on north side of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

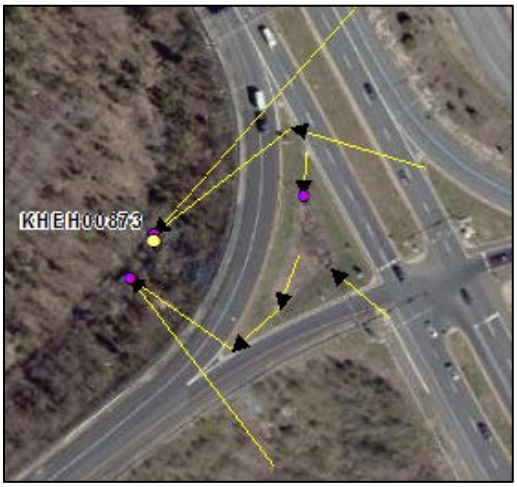
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00873

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 1:08 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00873 was first visited Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00873 – Outfall view facing east



KHEH00873 – Downstream view facing southwest

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 71.3°F with a pH of 7.17. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. Access was through a hole in the fence east of the outfall. There were some iron deposits noted adjacent to the outfall and in the pipe. There was minor concrete spalling along the bottom of the pipe

Next Steps:

Install an access gate.



KHEH00873 – Close-up view of flow and adjacent smaller outfall



KHEH00873 – Close-up view of showing iron deposits

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00885

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 1:08 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00885 was first visited Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00885 – Dual outfall view facing east



KHEH00885 – Main outfall, facing east

Observations:

During CEM's initial investigation, the outfall, which are two 48-inch reinforced concrete pipes (RCP) had a moderate flow. A sample was taken Thursday May 23 from the north outfall and the water temperature was recorded at 72.1°F with a pH of 7.33. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. The outfall flows from a riser structure to the east. The second outfall is thought to be an overflow pipe. Access was

through a hole in the fence southeast of the outfall along the on ramp. There were also some iron deposits noted in the pipe and downstream of the outfall.

Next Steps:

Install an access gate and watch the trees growing on the headwall.



KHEH00885 – Downstream from outfall, facing west



KHEH00885 – Close-up view of showing iron deposits



KHEH00885 – View showing trees growing adjacent to headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

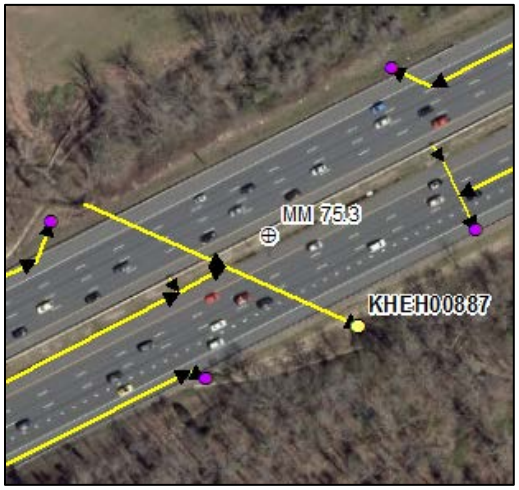
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00887

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 9:51 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00887 was first visited Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00887 – Upstream view, facing northwest



KHEH00887 – Pooled water downstream of outfall

Observations:

During CEM's initial investigation, the outfall, which is a 72-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 69.2°F with a pH of 7.86. Follow up tests for chlorine, copper, detergents, and phenols resulted in values below the acceptable thresholds. There was a significant amount of water pooled at the outfall that was also cloudy. The sample was taken from a riffle downstream of

the pooled water. The outfall was accessed underneath a fence along a concrete channel.

Next Steps:

Install an access gate and clear vegetation from around the headwall.



KHEH00887 – Close-up view of outfall



KHEH00887 – Looking downstream, facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

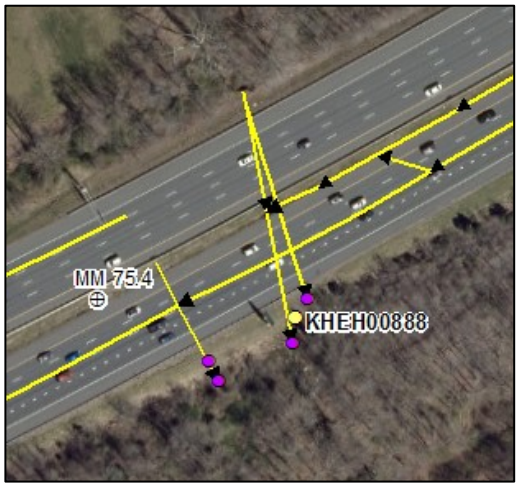
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00888

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Thursday May 23, 2019 / 9:22 AM
- Crew Contact Information: Rob Swam, CEM
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00888 was first visited Thursday May 23, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00888 – Upstream view, facing northwest



KHEH00888 – Downstream view facing south

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Thursday May 23 and the water temperature was recorded at 69.2°F with a pH of 7.86. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. There was excessive vegetation growth noted around the headwall.

Next Steps:

Clear vegetation from around outfall and headwall.



KHEH00888 – Close-up view of outfall



KHEH00888 – Looking downstream showing downstream vegetation coverage

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH00892

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 1:35 PM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH00892 was first visited Wednesday May 22, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH00892 – Outfall view facing west



KHEH00892 – View of flow going under concrete channel

Observations:

During CEM's initial investigation, the outfall, which is a 48-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Wednesday May 22 and the water temperature was recorded at 66.2°F with a pH of 6.88. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. The flow from the outfall flows underneath of the downstream concrete channel. There was also a tree noted growing in the concrete channel.

Next Steps:

The outfall channel should be evaluated for future stability of the pipe, endwall, and adjacent Winters Run. The tree growing in the channel should also be removed.



KHEH00892 – View of flow under concrete channel



KHEH00892 – Downstream view facing east, at Winters Run

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

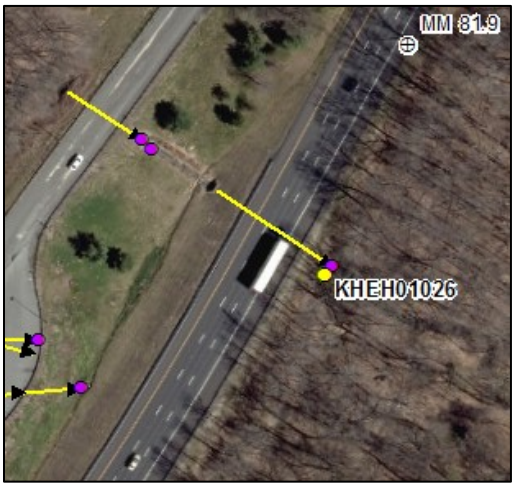
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01026

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 11:15 AM
- Crew Contact Information: Rob Swam, CEM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01026 was first visited Wednesday May 22, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH01026 – Outfall view facing northwest



KHEH01026 – Downstream view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is a 60-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Wednesday May 22 and the water temperature was recorded at 66.2°F with a pH of 6.88. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. There was minor erosion noted on the south side of the headwall.

Next Steps:

Monitor the erosion on the headwall.



KHEH01026 – View of erosion on south side of headwall



KHEH01026 – Outfall view facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

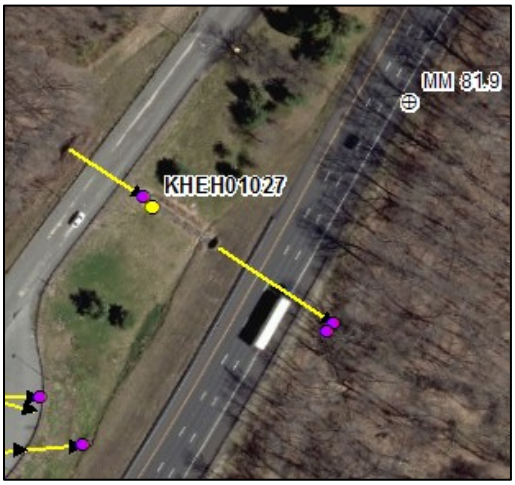
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01027

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday May 22, 2019 / 11:53 AM
- Crew Contact Information: Rob Swam, CEM
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01027 was first visited Wednesday May 22, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH01027 – Outfall view facing northwest



KHEH01027 – Erosion on south side of headwall

Observations:

During CEM's initial investigation, the outfall, which is a 52-inch reinforced concrete pipe (RCP) had a moderate flow. A sample was taken Wednesday May 22 and the water temperature was recorded at 65.8°F with a pH of 7.66. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required. There was minor erosion noted on the south side of the headwall.

Next Steps:

Monitor the erosion on the south side of the headwall.



KHEH01027 – Close-up view of outfall



KHEH01027 – Downstream view facing southeast



KHEH01027 – Erosion on south side of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

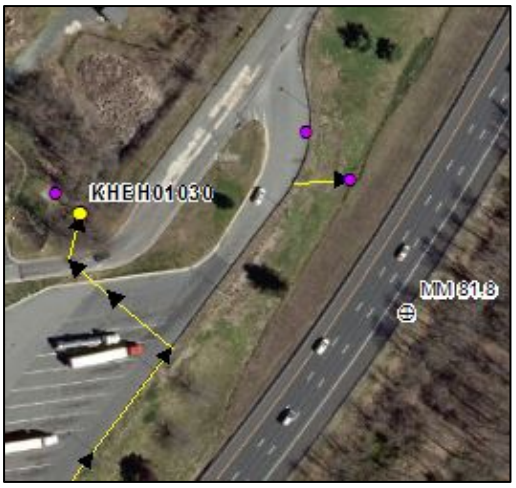
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01030

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 10:36 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01030 was first visited Monday June 24, 2019 and was observed to have no flow present.



KHEH01030 – Outfall view facing west



KHEH01030 – Outfall view behind a fence

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP) had no flow present. The outfall was located behind a fence in a stormwater management facility.

Next Steps:

Access to outfall needed.



KHEH01030 – Outfall view facing northwest



KHEH01030 – Downstream view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01032

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Friday July 26, 2019 / 11:39 AM
- Crew Contact Information: Seth Hinder, CEM
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  Austin Vogel, CEM
  GIS Specialist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01032 was first visited on Friday July 26, 2019 and was observed to have no flow present.



KHEH01032 – Outfall view facing southeast



KHEH01032 – Close-up view of outfall showing cracking at invert

Observations:

During CEM's initial investigation, the outfall, which is a 15-inch reinforced concrete pipe (RCP), was observed to have no flow present. The outfall was in fair condition with the headwall invert being cracked and missing.

Next Steps:

Repair the cracked invert on the headwall.



KHEH01032 – Downstream view facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

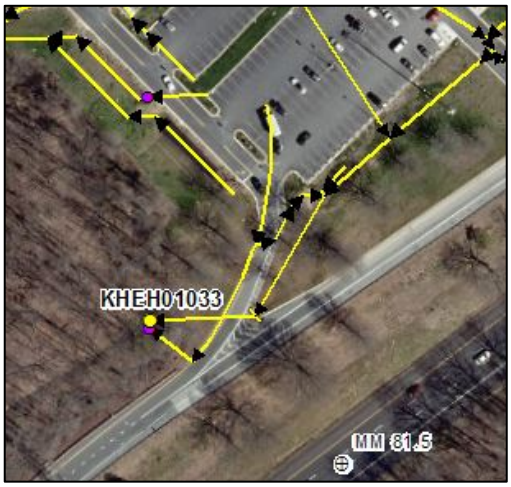
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01033

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 9:24 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
  Phone: (301) 820-3422
  Email: claire.weinrib@aecom.com



General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01033 was first visited Monday June 24, 2019 and was observed to have no flow present.



KHEH01033 – Outfall view facing northeast



KHEH01033 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch corrugated metal pipe (CMP), had no flow present. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH01033 –View of outfall adjacent to KHEH01032



KHEH01033 – Downstream view facing southwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

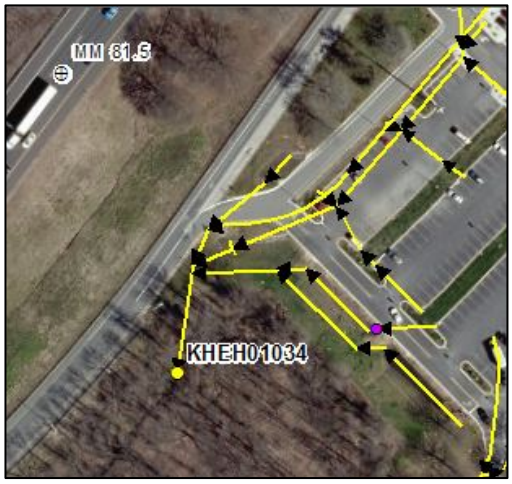
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01034

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 9:32 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
  Civil/Water Resources Design Engineer
  Phone: (301) 820-3422
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01034 was first visited Monday June 24, 2019 and was observed to have no flow present.



KHEH01034 – Outfall view facing northeast



KHEH01034 – View of downstream pooled water

Observations:

During CEM's initial investigation, the outfall, which is an 18-inch corrugated metal pipe (CMP), had no flow present. There was a small amount of sediment in the outfall pipe. The pipe is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH01034 – Close-up view of outfall



KHEH01034 – Downstream view facing southwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01038

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 9:32 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01038 was first visited Monday June 24, 2019 and was observed to have no flow present.



KHEH01038 – Outfall view facing west



KHEH01038 – Close-up view of outfall

Observations:

During CEM's initial investigation, the outfall, which is an 18-inch reinforced concrete pipe (RCP), had no flow present. The outfall is in good condition with no visible defects.

Next Steps:

No further action is required at this time.



KHEH01038 –Riprap downstream of outfall



KHEH01038 – Downstream view facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

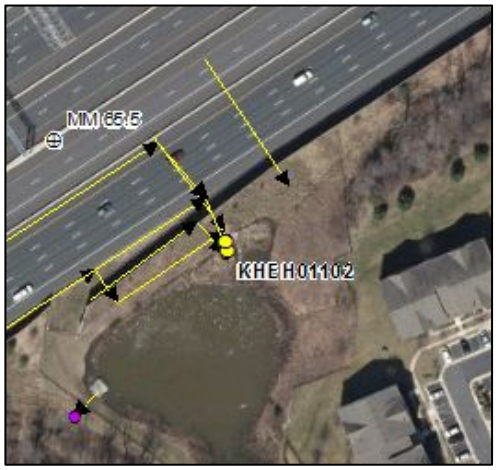
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01102

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 17, 2019 / 12:35 PM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01102 was first visited on Wednesday July 17, 2019 and was not located.



KHEH01102 – Top view of headwall



KHEH01102 – View of pond south of headwall

Observations:

During CEM's initial investigation, the outfall could not be located. A concrete headwall was noted on the bank of the adjacent pond. However no outfall pipe could be seen on the headwall.

Next Steps:

Confirm outfall location.



KHEH01102 – Pond view facing northeast



KHEH01102 – Pond view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

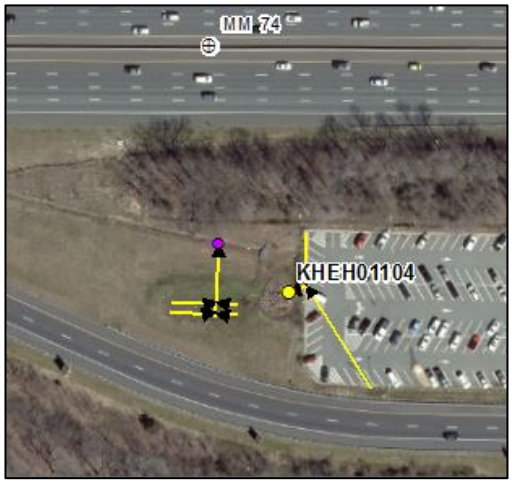
Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01104

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday June 24, 2019 / 9:02 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01104 was first visited Monday June 24, 2019 and was not able to be located.



KHEH01104 – Outfall location facing south



KHEH01104 – Close-up of outfall location buried in sediment

Observations:

During CEM's initial investigation, the outfall, which is an estimated 18-inch reinforced concrete pipe (RCP), could not be located. The outfall was mapped in a thick patch of *Phragmites*. The outfall is thought to be buried in sediment.

Next Steps:

Clearing of sediment to allow outfall to drain.



KHEH01033 – Inlet that flows to outfall from MD 152 Park and Ride

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on JFK Outfall Site KHEH01126

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Monday July 15, 2019 / 11:07 AM
- Crew Contact Information: Rob Swam, CEM
  Environmental Scientist
  Phone: (443) 752-2114
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  Claire Weinrib, AECOM
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site KHEH01126 was first visited on Monday July 15, 2019 and was observed to have moderate flow. A sample was taken and it was determined that a follow-up visit was not required due to parameters falling below the acceptable thresholds.



KHEH01126 – Outfall view facing southwest



KHEH01126 – Close-up view of outfalls

Observations:

During CEM's initial investigation, the outfall, which are two 18-inch reinforced concrete pipes (RCP), was found to have a moderate flow present. A sample was taken Monday July 15 and the water temperature was recorded as 75.0°F with a pH of 7.27. Field test results showed non-detectable levels of chlorine, phenol, copper and detergents, which indicate that no further investigation is required.

Next Steps:

No further action is required at this time.



KHEH01126 – Close-up view of south outfall pipe



KHEH01126 – Close-up view of north outfall pipe



KHEH01126 – Downstream view facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00001

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 9:50 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00001 was first visited on Wednesday July 31, 2019 and was observed to have no flow present.



LBEH00001 – View of outfall facing southwest



LBEH00001 – Outfall view facing north

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was found to be completely submerged in approximately 12 inches of water. There was also moderate sediment accumulation noted within the pipe.

Next Steps:

Clearing out the pipe to allow for proper drainage.



LBEH00001 – Top view of headwall



LBEH00001 – Downstream view facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00008

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 9:38 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
  Email: avogel@cemscience.com

General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00008 was first visited on Wednesday July 31, 2019 and was observed to have no flow present.



LBEH00008 – Outfall view facing southeast



LBEH00008 – Outfall view facing southeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 30-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall has minor sediment accumulation causing pooling of approximately 6 inches of water.

Next Steps:

Clearing of downstream extent to allow for proper pipe drainage.



LBEH00008 – Close-up of pooled water and sediment accumulation



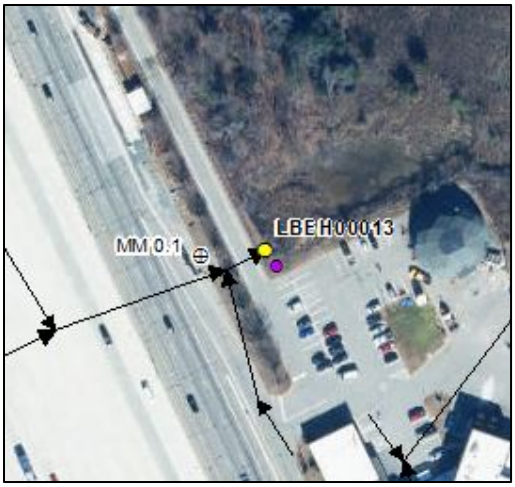
LBEH00008 – Downstream view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00013

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 9:30 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
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  Austin Vogel
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  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00013 was first visited on Wednesday July 31, 2019 and was observed to have no flow present.



LBEH00013 – Outfall view facing southwest



LBEH00013 – Outfall view facing southwest

Observations:

During CEM's initial investigation, the outfall, which is an estimated 36-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall has minor sediment accumulation causing pooling of approximately 10 inches of water.

Next Steps:

Clearing of downstream extent to allow for proper pipe drainage.



LBEH00013 – Downstream view facing west



LBEH00013 – View of pooled water

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00016

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 9:13 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00016 was first visited on Wednesday July 31, 2019 and was observed to have no flow present.



LBEH00016 – Outfall view facing northeast



LBEH00016 – Outfall view facing northeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall has minor sediment accumulation causing pooling of approximately 6 inches of water.

Next Steps:

Clearing of downstream sediment to allow for proper pipe drainage.



LBEH00016 – Outfall view facing northeast



LBEH00016 – Downstream view facing southwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00022

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 10:55 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
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  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00022 was first visited on Wednesday July 31, 2019 and was not able to be located.



LBEH00022 – Outfall location facing southeast



LBEH00022 – Outfall location facing southeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was not able to be located.

Next Steps:

Confirm outfall location.



LBEH00022 – Outfall location facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00024

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 10:48 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00024 was first visited on Wednesday July 31, 2019 and was not able to be located.



LBEH00024 – Outfall location facing south



LBEH00024 – Outfall location facing northeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was not able to be located.

Next Steps:

Confirm outfall location.



LBEH00024 – Outfall location facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00026

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 10:32 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
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  Austin Vogel
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  Phone: (443) 417-6166
  Email: avogel@cemscience.com



General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00026 was first visited on Wednesday July 31, 2019 and was not able to be located.



LBEH00026 – Outfall location facing south



LBEH00026 – Outfall location facing southeast

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was not able to be located.

Next Steps:

Confirm outfall location.



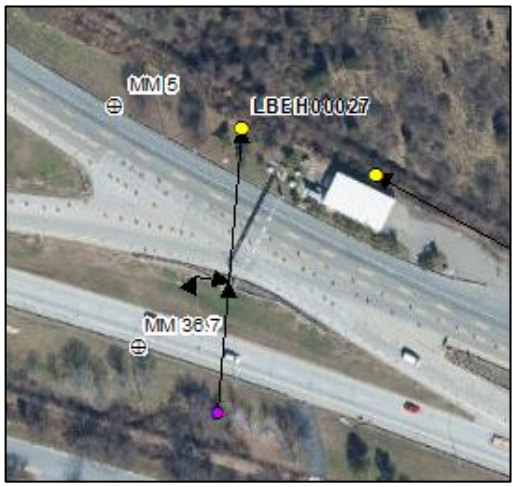
LBEH00026 – Outfall location facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00027

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 10:23 AM
- Crew Contact Information: Rob Swam
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  Phone: (443) 752-2114
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  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00027 was first visited on Wednesday July 31, 2019 and was not able to be located.



LBEH00027 – Outfall location facing southeast



LBEH00027 – Outfall location facing northwest

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was not able to be located.

Next Steps:

Confirm outfall location.



LBEH00027 – Outfall location facing south



LBEH00027 – Outfall location facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

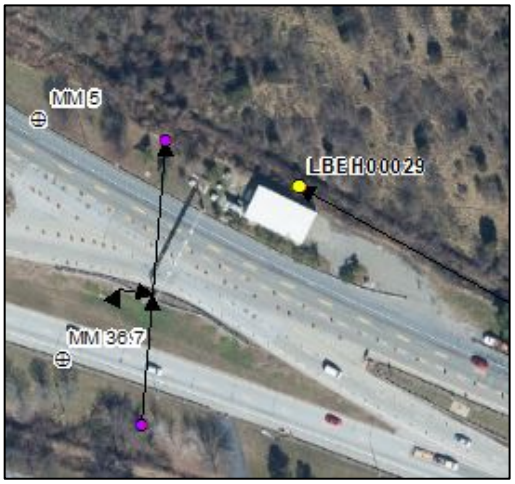
Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00029

MDTA Contract No. 2794

Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 10:21 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
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  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00029 was first visited on Wednesday July 31, 2019 and was not able to be located.



LBEH00029 – Outfall location facing southeast



LBEH00029 – Outfall location facing south

Observations:

During CEM's initial investigation, the outfall, which is an estimated 24-inch reinforced concrete pipe (RCP), was not able to be located.

Next Steps:

Confirm outfall location.



LBEH00029 – Outfall location facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Hatem Bridge Outfall Site LBEH00036

MDTA Contract No. 2794



Field Crew Information:

- Inspection date and time: Wednesday July 31, 2019 / 9:23 AM
- Crew Contact Information: Rob Swam
  Environmental Scientist
  Phone: (443) 752-2114
  Email: rswam@cemscience.com

  Austin Vogel
  GIS Specialist
  Phone: (443) 417-6166
  Email: avogel@cemscience.com

General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls on the MDTA-regulated I-95 (JFK) facility as well as sites at the Bay and Hatem Bridges. Outfall site LBEH00036 was first visited on Wednesday July 31, 2019 and did not have any flow present.



LBEH00036 – Outfall view facing northeast



LBEH00036 – Outfall location facing northeast

Observations:

During CEM's initial investigation, the outfall, which is a 24-inch reinforced concrete pipe (RCP), did not have any flow present. There was some minor sediment accumulation noted in the outfall pipe.

Next Steps:

Monitor the sediment accumulation to ensure it does not impede drainage of the outfall pipe.



LBEH00036 – Outfall view facing northeast



LBEH00036 – Downstream view facing southwest

Applying Practical Science to Improve Communities

Illicit Discharge Detection and Elimination Outfall Inspections

Maryland Transportation Authority



Fiscal Year 2020

Ft McHenry Tunnel, Harbor Tunnel, Key Bridge, I-95 JFK, Bay Bridge, and Nice Bridge

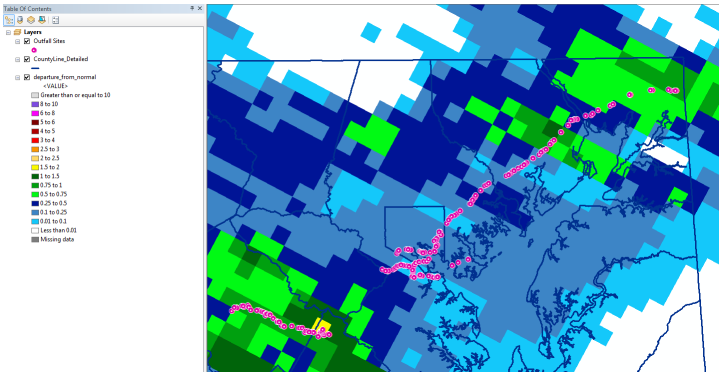
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Executive Summary

The Maryland Department of Transportation's Maryland Transportation Authority (MDOT MDTA) maintains coverage under a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Phase II permit for State and Federal Agencies. MDTA property consists of roadways and campuses which are located in watersheds that range from rural to highly-urbanized environments. The Phase II permit was issued by the Maryland Department of Environment (MDE) and it includes requirements to comply with six minimum control measures (MCMs): Personal Education and Outreach; Public or Personnel Involvement and Participation; Illicit Discharge Detection and Elimination (IDDE); Construction Site Stormwater Runoff Control; Post Construction Stormwater Management; and Pollution Prevention and Good Housekeeping. The IDDE program is one of the six MCMs that MDOT MDTA must adhere to. As such, MDOT MDTA is required to conduct field screening of their outfalls to identify any potential sources of an illicit discharge and eliminate any illegal connections or illicit discharges that enter the storm drain system. Per the permit requirements, large properties (such as MDTA properties that exceed 2,000 acres in size) are required to screen 20% of their outfalls per year or up to 100 outfalls.



MDTA outfalls with NWS base map

For fiscal year 2020, the CEM team was contracted to perform IDDE field investigations at one hundred and fifteen (115) outfalls along six (6) MDTA properties: Fort McHenry Tunnel, Harbor Tunnel, Key Bridge, John. F. Kennedy Memorial Highway (I-95), Bay Bridge, and Nice Bridge. The inspections were performed between April 2020 and June 2020. As part of the inspections, the identified outfalls were inspected for structural integrity and any structural deficiencies were recorded and photographed. Additionally, if a dry weather flow was detected at any of the structures identified, field screening was performed for the following analytical parameters: temperature, pH, chlorine, phenol, copper and detergents.

Using the Geographic Information System (GIS) data provided by MDOT MDTA, CEM generated field maps to be used during the inspection process. Throughout the performance of the investigations, CEM used an available base map from the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) web site to track

precipitation events and schedule field inspections. According to the IDDE Manual (Center for Watershed Protection, 2004), IDDE inspections cannot be performed within 72 hours of any precipitation events that exceed 0.1 inch to "avoid sampling lagged storm water flows". The NOAA NWS base map provided daily rain totals that were incorporated into the GIS platform so that CEM staff could accurately estimate whether the total precipitation at each of the outfalls was above the minimum of 0.1 inch of rain threshold. This allowed CEM to efficiently assess whether the 72-hour dry weather requirement for IDDE could be met prior to mobilizing the field team.

Of the one hundred and fifteen (115) outfalls investigated, field test kits were used to screen dry weather flow at a total of twelve (12) structures for the parameters specified in the IDDE screening manual (temperature, pH, chlorine, phenol, copper, and detergents). Of the 12 structures that were tested, four (4) of them were found to have concentrations of phenols and/or detergents that exceeded their respective screening criteria. Additional details regarding the reported concentrations are provided in the attached individual fact sheets for each structure. A summary of the collected field data is provided below.

1. **Fort McHenry Tunnel**. Twenty six (26) structures were scheduled to be inspected. Four (4) structures had moderate structural issues. Five (5) structures were identified as requiring maintenance to restore the original operating conditions. Two (2) structures had dry weather flow with concentrations that exceeded their respective screening thresholds for phenols and/or detergents (FTEH00033 and FTEH00075). Twelve (12) structures were unable to be inspected due to access issues or the structure was unable to be located in the field. Three (3) of the structures had duplicate structure ID numbers, but were also unable to be inspected due to access issues.
2. **Harbor Tunnel**. Sixty (60) structures were scheduled to be inspected. Eleven (11) structures had moderate structural issues. Thirteen (13) structures were identified as requiring maintenance. Two (2) structures had dry weather flow with concentrations that exceeded their respective screening thresholds for phenols and/or detergents (HTEH00069 and HTEH00102). Seven (7) structures had dry weather flow with concentrations that did not exceed any of their respective screening thresholds. Twenty one (21) structures were unable to be inspected due to access issues or the structure was unable to be located in the field. One of the structures had a duplicate structure ID number, but did not have any concerns located with the outfall.
3. **Inter County Connector**. Two (2) structures were attempted to be inspected, but were unable to be found due to being submerged in a stormwater management pond.

4. **Key Bridge**. Twenty (20) structures were scheduled to be inspected. Six (6) structures had moderate structural issues. Ten (10) structures were identified as requiring maintenance to restore the original operating conditions. One (1) structure had dry weather flow with concentrations that did not exceed any of their respective screening thresholds. Two (2) structures were unable to be inspected due to access issues or the structure was unable to be located in the field.
5. **John F. Kennedy Memorial Highway**. Two (2) structures were scheduled to be inspected. One (1) structure had moderate structural issues. One (1) structure was attempted to be inspected, but was unable to be found due to being obscured by excessive vegetation.
6. **Bay Bridge**. Three (3) structures were scheduled to be inspected. Two (2) structures had moderate structural issues. One (1) structure was identified as requiring maintenance to restore the original operating conditions. None of the structures had any dry weather flow that required screening.
7. **Nice Bridge**. Two (2) structures were scheduled to be inspected. One (1) structure had moderate structural issues. None of the structures had any dry weather flow that required screening.

CEM performed follow up inspections at the four structures where concentrations exceeded their respective screening thresholds during the initial inspection, in order to confirm or deny the previous detections and attempt to trace the source of the illicit discharges. Of the four (4) structures where illicit discharges had previously been detected, two (2) of the structures had dry weather flow during the re-inspections (FTEH00033 and HTEH00102) and two (2) of the structures had no flow (FTEH00075 and HTEH00069). As part of the re-inspection, samples were collected from the structures that contained flow and all accessible drainage connections and/or adjacent drainage structures were checked for evidence of flow that may have contributed to the illicit discharges that were previously detected. According to the results of the field testing performed at the two (2) structures where dry-weather flow was observed, there were no testing parameters that were reported above their respective threshold and the previous results were unable to be duplicated. Therefore, the previously detected illicit discharges appear to be related to seasonal fluctuations and/or activities performed by members of those communities on an infrequent basis. Additional details regarding the potential sources of these previous detections are provided in the attached individual fact sheets for each structure.

Outfall Number	Flow	Comments			
Key:	Flow	Maintenance Required	Structural or Other Concerns	Flowing with Issues	No Access
	12	29	24	8	37
Fort McHenry Tunnel					
FTEH00004	NO	Requires repairs to damaged upstream channel. Removal of debris and vegetation.			
FTEH00007	NO	Requires repairs to damaged downstream channel and monitor structure for cracking in concrete.			
FTEH00016	n/a	Located on Locust Point Marine Terminal property.			
FTEH00026	n/a	Located on Locust Point Marine Terminal property.			
FTEH00033	YES	Illict discharges detected for phenols/detergents. Monitor areas of cracking concrete. Minor areas of erosion on downstream banks.			
FTEH00045	n/a	Obscured by excessive vegetation.			
FTEH00049	n/a	Obscured by excessive debris/vegetation.			
FTEH00068	NO	Requires removal of sediment.			
FTEH00069	n/a	Inaccessible due to homeless camp.			
FTEH00071	NO	Requires removal of sediment and debris. Monitor cracking concrete around outfall pipe.			
FTEH00072	NO	Monitor cracking of concrete in end structure.			
FTEH00073	NO	Requires removal of debris and sediment.			
FTEH00075	YES	Illicit discharge detected for phenols. Minor areas of erosion in downstream channel.			
FTEH00077	NO	Requires repairs to erosion in channel and removal of debris.			
FTEH00078	NO	Requires removal of vegetation, sediment, and debris. Monitor minor cracking in sidewall. Repair/replace fence.			
FTEH00096	n/a	Obscured by excessive vegetation.			
FTEH00121	n/a	Located on Rukert Terminal property.			
FTEH00122	n/a	Located on Cruise Maryland Terminal property.			
FTEH00123	n/a	Located on Cruise Maryland Terminal property.			
FTEH00124	n/a	Located on Cruise Maryland Terminal property.			
FTEH00133.1	NO	Requires removal of debris and sediment at end of channel.			
FTEH00138	n/a	Located on BGE Gould Street Power Substation property.			
FTEH00138	n/a	Duplicate structure ID; Located on BGE Gould Street Power Substation property.			
FTEH00138	n/a	Duplicate structure ID; Located on BGE Gould Street Power Substation property.			
FTEH00139	n/a	Located on Cruise Maryland Terminal property.			
FTEH00139	n/a	Duplicate structure ID; Located on Cruise Maryland Terminal property.			
Harbor Tunnel					
HT00082.010	n/a	Not visible in drainage channel.			
HT00117.010	n/a	Located on Norfolk Southern Baltimore property.			
HT00117.017	NO	None			
HT00122.010	NO	Requires removal of sediment from around inlet.			
HT00123.011	n/a	Obscured by excessive vegetation.			
HT00137.010	n/a	Not visible along I-895 embankment.			
HT00140.010	n/a	Not visible in grass area.			
HTEH00006	YES	None			
HTEH00012	n/a	Located behind fence. Appears to require vegetation removal.			
HTEH00016	n/a	Located behind fence. Appears to require vegetation removal.			
HTEH00018	NO	None			
HTEH00020	NO	Requires removal of sediment from drainage channel.			
HTEH00021	NO	Requires repairs to headwall and removal of vegetation. Monitor corrosion on pipe.			
HTEH00027	NO	Requires repairs to headwall and areas of erosion. Replace fence at top of headwall.			
HTEH00029	NO	Repair seal in pipe and remove vegetation.			
HTEH00033	NO	Requires removal of sediment from pooled area.			
HTEH00042	NO	Requires removal of sediment from mouth of outfall.			
HTEH00046	n/a	Structure buried/submerged. Sediment/vegetation removal needed.			
HTEH00050	NO	Requires repairs to cracking concrete on lower headwall.			

Outfall Number	Flow	Comments			
Key:	Flow	Maintenance Required	Structural or Other Concerns	Flowing with Issues	No Access
	12	29	24	8	37
Harbor Tunnel (continued)					
HTEH00051	NO	Requires removal of sediment and vegetation. Monitor cracking concrete and downstream erosion.			
HTEH00054	NO	Requires removal of vegetation and sediment.			
HTEH00056	YES	Requires repairs to damaged outfall and drainage channel.			
HTEH00064	NO	Monitor cracking of concrete in drainage channel.			
HTEH00069	YES	Illicit discharge detected for detergents. Requires removal of vegetation.			
HTEH00070	YES	None			
HTEH00072	n/a	Not visible in wooded area along drainage channel.			
HTEH00073	NO	Requires repair to steel grate and replace fence at top of slope.			
HTEH00078	NO	Replace fence at top of slope.			
HTEH00080	YES	Requires repair to outfall pipe and sediment removal. Monitor areas of downstream erosion.			
HTEH00081	NO	Monitor leaking bolts for potential corrosion issues.			
HTEH00085	n/a	Located behind fence.			
HTEH00090	NO	Requires inspection of SWM pond and repair as needed to prevent water from backing up into pipes.			
HTEH00092	YES	Monitor downstream areas of erosion.			
HTEH00095	NO	Obscured by large stockpile of woodchips and vegetation.			
HTEH00101	n/a	Located behind fence.			
HTEH00102	YES	Illicit discharge detected for phenols and detergents. Repair fence at top of slope.			
HTEH00103	NO	Requires removal of debris and sediment. Repair fence at top of slope.			
HTEH00104	n/a	Located behind fence.			
HTEH00106	NO	Requires removal of sediment and vegetation.			
HTEH00107	NO	Requires removal of sediment and vegetation.			
HTEH00113	YES	Requires removal of sediment and debris. Monitor downstream stability issues in channel.			
HTEH00119	NO	None			
HTEH00124	n/a	Located behind fence at Port Car Lot.			
HTEH00128	NO	None			
HTEH00128	n/a	Duplicate Structure ID.			
HTEH00141	n/a	Not visible in wooded area- appeared to be behind fence on CSX property.			
HTEH00173	YES	None			
HTEH00221	n/a	Structure is buried and only top of headwall is visible.			
HTEH00223N	NO	Requires removal of excess vegetation from mouth of pipe.			
HTEH00223S	NO	None			
HTEH00229	NO	Repairs are needed to entire structure. Requires removal of sediment, vegetation, and debris.			
HTEH00233	NO	Monitor areas of erosion and metal corrosion.			
HTEH00235	n/a	Obscured by vegetation and partially submerged.			
HTEH00245	n/a	Obscured by vegetation.			
HTEH00246	NO	Requires removal of sediment. Associated pond should be inspected for functionality.			
HTEH00247	n/a	Located behind fence on Penn Central Railroad property.			
HTEH00250	n/a	Not visible due to residential redevelopment activities. Not visible along railroad tracks.			
HTEH00283	NO	Requires removal of debris and vegetation.			
HTEH00294	NO	Requires removal of sediment and debris.			
HTEH00310	n/a	Located behind fence on Port Authority property.			
Inter County Connector					
ICEH00223	n/a	Potentially obscured by vegetation and partially submerged in SWM pond.			
ICEH00228	n/a	Potentially obscured by vegetation and partially submerged in SWM pond.			
Key Bridge					
KB00066.010	n/a	Potentially obscured by vegetation. Not visible on slope.			
KBEH00011	NO	None			
KBEH00012	YES	None			
KBEH00015	NO	Requires removal of sediment and debris. Monitor erosion along channel.			

Outfall Number	Flow	Comments			
Key:	Flow	Maintenance Required	Structural or Other Concerns	Flowing with Issues	No Access
	12	29	24	8	37
Key Bridge (continued)					
KBEH00022	NO	Requires maintenance to re-stabilize downstream channel.			
KBEH00023	NO	Requires replacement of end section of pipe.			
KBEH00027	NO	Requires removal of sediment and debris.			
KBEH00038	NO	Requires removal of sediment and debris from two right channels.			
KBEH00042	NO	Requires removal of sediment.			
KBEH00045	NO	Requires removal of sediment and debris from drainage channel. Monitor condition of pipe seams and joints.			
KBEH00046	NO	Requires removal of sediment and vegetation.			
KBEH00048	NO	Requires removal of sediment and vegetation.			
KBEH00052	NO	Repairs are needed to pipe. Requires removal of sediment and vegetation.			
KBEH00053	NO	Repairs are needed to channel. Requires removal of sediment and excessive vegetation.			
KBEH00056	n/a	Potentially obscured by vegetation. Not visible in median.			
KBEH00068	NO	Requires removal of sediment.			
KBEH00082	NO	Repairs to corroded section of pipe are needed.			
KBEH00083	NO	Repairs to pipe are needed. Requires removal of vegetation.			
KBEH00097	NO	Requires removal of sediment from channel and outfall pipe.			
KBEH00101	n/a	Requires removal of sediment. Associated SWM pond should be inspected.			
I-95 JFK					
KHEH00861	n/a	Potentially obscured by vegetation. Not visible on slope.			
KHEH00872	NO	Repairs to pipe are needed due to concrete spalling.			
Bay Bridge					
LBEH00017	NO	Monitor areas of moderate erosion along banks.			
LBEH00019	NO	Requires removal of sediment from mouth of pipe.			
LBEH00037	NO	Repairs to pipe are needed to prevent metal corrosion. Requires removal of sediment.			
Nice Bridge					
NBEH00009	NO	Repairs to channel are needed. Requires removal of vegetation.			
NBEH00012	NO	None			

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00004

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure FTEH00004 was visited on Thursday May 14, 2020 and was observed to have no flow present.

Observations:

CEM observed structure FTEH00004 to be located in a drainage basin immediately adjacent to I-95 northbound, prior to the Joh Ave overpass. No flow was observed to be present within the 28-inch reinforced concrete pipe (RCP) inlet structure. The structure is in good condition with some moderate erosion observed impacting the adjacent banks of the drainage channel, which resulted in geotextile fabric becoming dislodged and collapsing into the channel. Stagnant water was observed to be ponding in the mouth of the pipe, but otherwise the structure appears to be functioning properly.

Next Steps:

Maintenance is required to re-establish the upstream drainage channel and remove the debris (roadside trash and the previously installed geotextile fabric) that has accumulated in the channel and may potentially block flow from entering the structure.



FTEH00004– Inlet view facing north



FTEH00004– Incised channel



FTEH00004– Failing riprap looking upstream



FTEH00004– Riprap stabilization

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00007

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
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General Project Information:

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Observations:

CEM observed that structure FTEH00007 is located just west of the on-ramp to I-95 southbound from Caton Avenue, and is designed to convey flow beneath I-95, south of the Caton Avenue overpass. No flow was observed to be present within the 128-inch x 60-inch concrete box culvert, but stagnant water was observed in several portions of the structure and the downstream concrete drainage channel. The structure was observed to be in fair condition with areas of moderate cracking and spalling concrete around the culvert. Additionally, there were large portions of the downstream concrete drainage channel that appeared to be damaged and missing sections of concrete.

Next Steps:

Repairs to the downstream channel should be performed to replace the missing concrete sections. Monitoring of the culvert should also be performed to determine if the cracking and spalling continues and begins to compromise the structure.



FTEH00007– Outfall view facing southeast



FTEH00007– Channel damage looking downstream.



FTEH00007– Spalling/cracking concrete along channel walls.



FTEH00007– Cracked concrete channel looking downstream.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00016

MDTA Contract No. 3009

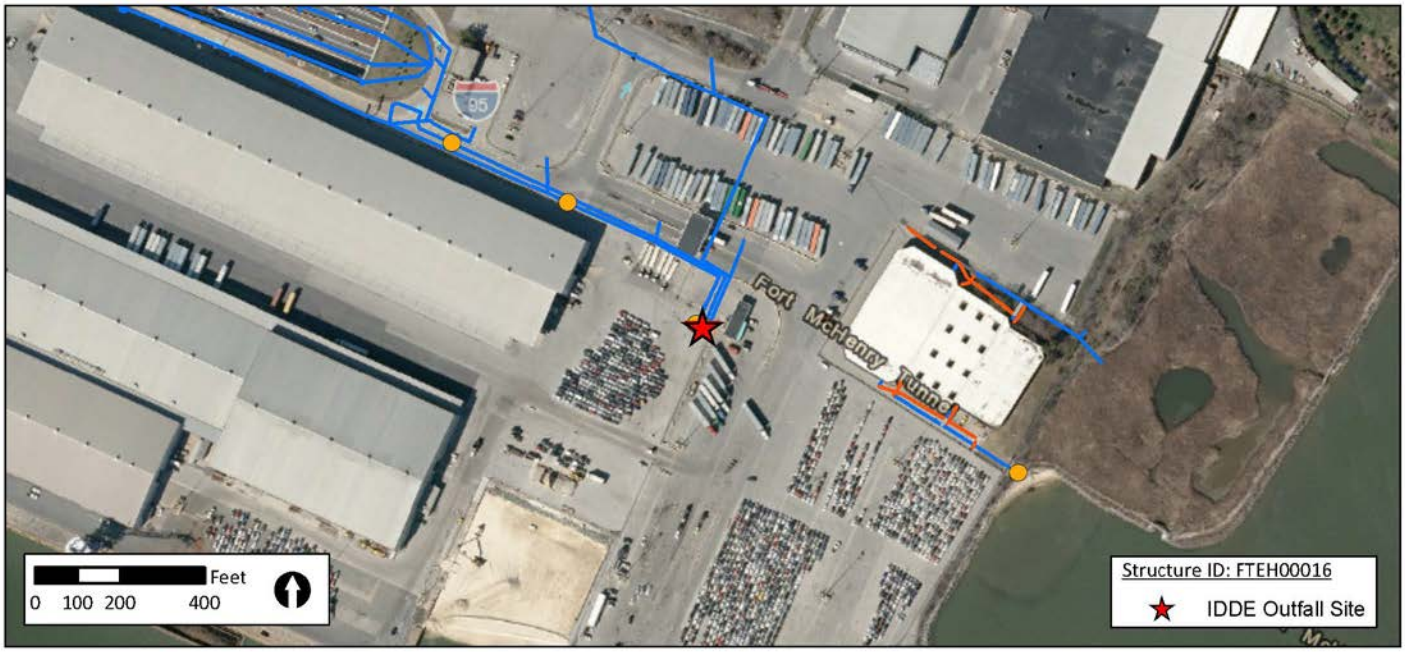
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- Inspection date: Thursday May 14, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00016 was visited on Thursday May 14, 2020.

Observations:

The mapped location of structure FTEH00016 indicated that the outfall was located on the Locust Point Marine Terminal property. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00026

MDTA Contract No. 3009

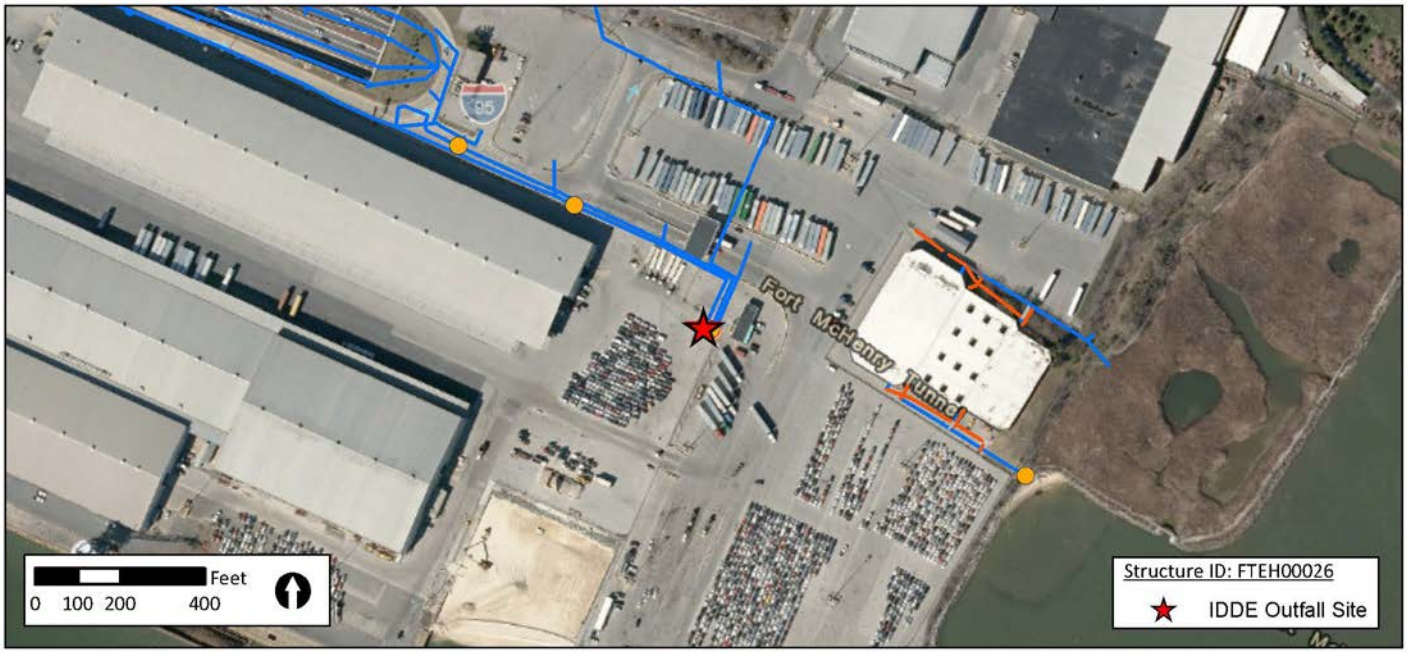
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General Project Information:

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Observations:

The mapped location of structure FTEH00026 indicated that the outfall was on the Locust Point Marine Terminal property; however, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00033

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00033 was visited on Thursday May 14, 2020 and was observed to be conveying flow.

Observations:

CEM observed structure FTEH00033 to be located at the bottom of a slope along Caton Avenue, north of the I-95 interchange and adjacent to Seton Keough High School. Flow appeared to be conveyed though the 120-inch by 66-inch concrete box culvert. The structure appeared to be in good condition with small areas of concrete showing signs of deterioration along the interior and edges of the culvert. Minor sediment deposits were observed within the structure and channel, but they do not appear to be impacting flow. Minor erosion was observed along the banks of the downstream drainage channel. A representative sample of the flow was collected and the field screening data is summarized below. Due to the elevated detection of phenol and detergents in the sample, the location was re-visited later that day to collect a follow-up sample.

Location: FTEH00033					
Date Sampled:		**5/14/20**	**Date Re-Sampled:**		**5/14/20**
Time Sampled:		**11:15**	**Time Re-Sampled:**		**15:40**
Parameter	Criteria	Measured Value	Parameter	Criteria	Measured Value
Temp	n/a	70.7	Temp	n/a	70.1
pH	6.5 - 8.5	7.5	pH	6.5 - 8.5	7.3
Phenol	<0.17 mg/L	0.5	Phenol	<0.17 mg/L	0.5
Chlorine	<0.40 mg/L	0.2	Chlorine	<0.40 mg/L	0.1
Detergents	<0.50 mg/L	0.6	Detergents	<0.50 mg/L	0.5
Copper	<0.21 mg/L	0	Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.					

Based on the inspection and testing conducted in May 2020, a re-inspection was recommended to verify the phenol and detergent exceedances. The outfall structure was re-visited on August 11, 2020. Similar to the initial inspection, the outfall structure appeared to be in good condition with small sections of concrete beginning to deteriorate along the interior and edges of the drainage culvert. Sediment deposits were observed within the structure and channel. The flow observed at the structure is conveyed beneath Caton Avenue and originates in a channel that runs parallel to the I-95 on-ramp. At the time of both inspections, on-going construction was observed along the western side of Caton Avenue (adjacent to the drainage channel that leads to the outfall structure). Large sections of trees have been removed and a convenience store/gas station is under construction. Surface water at the construction site drains into the existing concrete channel that extends beneath Caton Avenue. Therefore, it is anticipated that the storage and cleaning of construction equipment, as well as site clearing and maintenance activities performed during construction may be responsible for the elevated concentrations of phenols and detergents detected during the initial inspection.

During the re-inspection, a representative sample of the dry weather flow was collected and analyzed for the same parameters as the previous sampling event. However, the results of the field testing indicated that there were no parameters detected at concentrations

exceeding the threshold and no illicit discharge was detected. Although the test results from the initial sampling event could not be duplicated, the suspected source of the illicit discharge is most likely associated with the new construction occurring along the western side of Caton Avenue.

Next Steps:

The culvert should continue to be monitored to determine if the areas of deteriorating concrete expand and begin to impact the structural integrity of the culvert. Maintenance may be required within the plunge pool associated with the culvert to restore some missing riprap material and re-establish outlet protection. Additionally, periodic inspections of the construction activities being performed along the western side of Caton Avenue should be performed to confirm or deny the source of the illicit discharges.



FTEH00033– Outfall view facing south



FTEH00033– Concrete damage at mouth of outfall.



FTEH00033– Downstream channel



FTEH00033– Inside culvert looking upstream.



FTEH00033– Drainage swale originating on active construction site.



FTEH00033– Connection of drainage swale and drainage channel, upstream of outfall.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00045

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
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General Project Information:

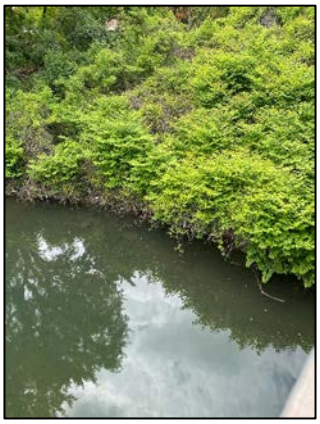
CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00045 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00045, the outfall is located along the edge of water adjacent to the off-ramp from I-295 northbound to westbound Monroe Street. The physical location of the structure was inaccessible due to excessive vegetation and debris on the slope leading to the edge of water. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



FTEH00045– Supposed outfall location, facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00049

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00049 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00049, the outfall is located along the south side of I-95 northbound, east of the on-ramp to I-95 north from Caton Avenue, and north of Gwynns Falls. The mapped location of the structure was visible but the actual structure was unable to be located due to excessive vegetation and debris. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Maintenance is required to remove the excessive vegetation and debris from around the structure. Once vegetation removal occurs, the location of the structure should be verified with MDTA and a follow-up inspection should be performed.



FTEH00049– Supposed outfall location, facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00068

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure FTEH00068 was visited on Wednesday May 27, 2020 and was observed to have no flow present.

Observations:

CEM observed structure FTEH00068 to be located in the median of the turnaround/access road beneath Monroe Street. No flow was observed to be present at the 84-inch by 84-inch square concrete inlet. The concrete inlet structure is in good physical condition; however, excessive runoff and drainage from the surrounding area has deposited excessive sediment and debris around all sides of the inlet structure. Small channels have developed through the sediment deposits, allowing concentrated flow to enter the inlet, but the majority of the structure has been impacted.

Next Steps:

The debris and sediment that have accumulated along all sides of the structure should be removed to restore the inlet to proper functioning condition. Any additional sediment and debris that may have accumulated within the inlet structure may also need to be removed, if encountered.



FTEH00068– Inlet view facing south



FTEH00068– Inlet view facing south



FTEH00068– Debris accumulation around inlet



FTEH00068– Upstream drainage to inlet

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00069

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00069 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00069, the outfall was located beneath the southbound I-95 overpass, next to Annapolis Road. The physical location of the structure was inaccessible due to the presence of an active homeless camp. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and discuss the best way to proceed with the occupants in close proximity to the structure in order to complete the inspection.



FTEH00069– Homeless camp adjacent to outfall location, facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00071

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00071 was visited on Tuesday May 19, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure FTEH00071 to be located along the southern edge of Herring Run, southwest of Pulaski Highway and adjacent to fenced areas of Maryland Truck and Tire Service. No active flow was observed to be present in the 64-inch reinforced concrete pipe (RCP) that was discharging into Herring Run. The outfall structure appears to be in good condition with minor accumulations of debris and sediment at the mouth of the outfall. Minor cracking was also observed around the end section of the outfall pipe.

Next Steps:

Maintenance is required to remove the debris and sediment that has accumulated at the mouth of the outfall and re-establish the drainage channel to the original designed conditions. Additionally, the minor cracking of concrete around the outfall pipe should continue to be monitored and repaired as needed before it impacts the overall structure.



FTEH00071– Outfall view facing west



FTEH00071– Gravel and sediment at mouth of outfall



FTEH00071– Pooled water at mouth of outfall



FTEH00071– Outfall view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00072

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00072 was visited on Wednesday May 20, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure FTEH00072 to be located in the area between the aerial sections of I-895 and I-95, along the western edge of an unnamed tributary to Gorsuch Creek, south of Interstate Avenue (which connects to Boston Street). Although the interior of the pipe was wet, there was no active flow observed to be present within the 24-inch by 20-inch reinforced concrete pipe (RCP). The outfall is in fair condition with a small cracks observed in the concrete end section of the structure; however, it does not appear to have impacted flow. Additionally, minor areas of erosion were observed in the drainage channel that may be contributing to stability issues downstream.

Next Steps:

Continue to monitor the cracks in the end structure and repair as needed.



FTEH00072– Outfall view facing west



FTEH00072– Downstream channel that receives flow from the outfall



FTEH00072– Representative view of banks

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00073

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00073 was visited on Wednesday May 20, 2020 and was observed to be conveying stream flow.

Observations:

CEM observed structure FTEH00073 to be located in the area between the aerial sections of I-895 and I-95, in line with an unnamed tributary to Gorsuch Creek, south of Interstate Avenue (which connects to Boston Street). The dual 120-inch by 58-inch channel concrete box culvert was observed to be conveying stream flow in the eastern channel, but excessive sediment and debris prevents the conveyance of baseline stream flow in the western channel. The culvert is in fair condition with accumulation of sediment in both culvert channels which appears to have altered flow and may be contributing to stability issues in the downstream channel. Additionally, excessive vegetation was observed along both banks of the channel inhibiting access to some areas.

Next Steps:

Maintenance should be performed to remove the sediment and debris that has accumulated within the culvert in order to restore flow to the original design conditions.



FTEH00073– Outfall view facing north



FTEH00073– Trash and debris accumulating downstream of outfall



FTEH00073– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00075

MDTA Contract No. 3009

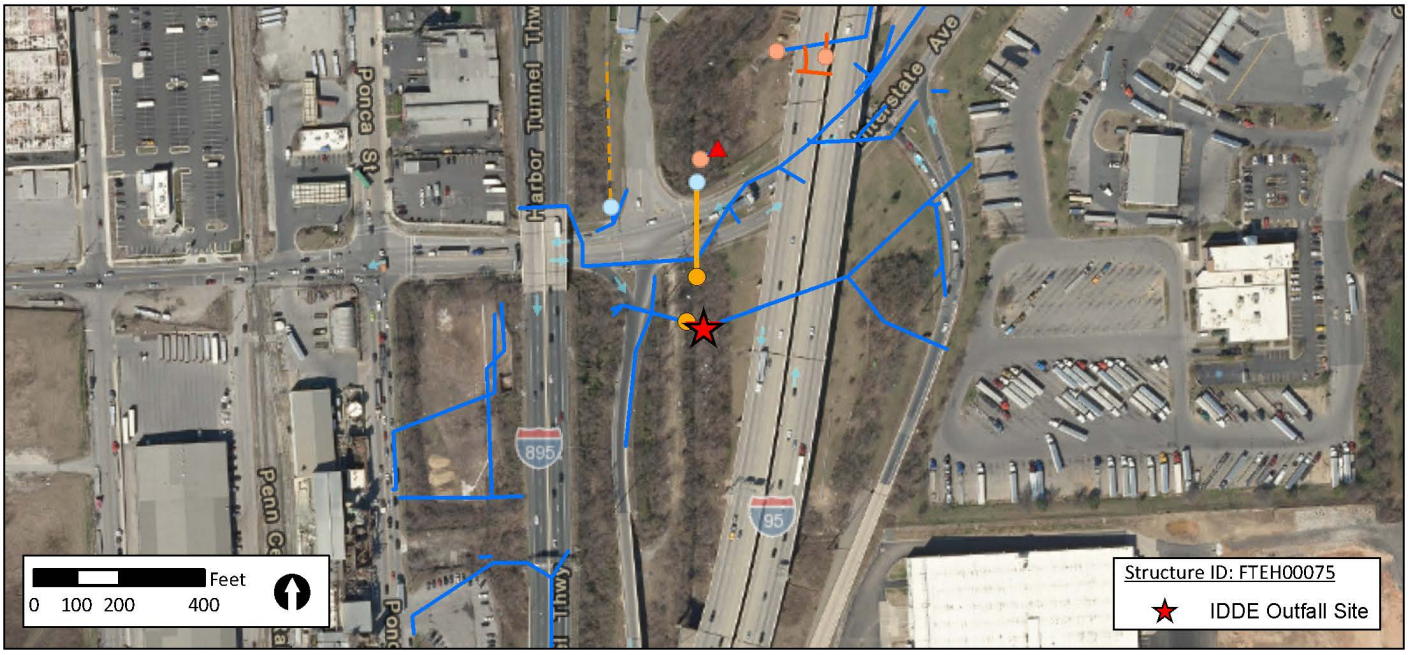
Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00075 was visited on Wednesday May 20, 2020 and was observed to have very low flow present.

Observations:

CEM observed structure FTEH00075 to be located in the area between the aerial sections of I-895 and I-95, along the eastern edge of an unnamed tributary to Gorsuch Creek, south of Interstate Avenue (which connects to Boston Street). Flow was observed to be present within the 42-inch reinforced concrete pipe (RCP). The structure appeared to be in good condition but there were minor areas of erosion observed in the downstream drainage channel. A representative sample of the flow was collected and the field screening data is summarized below.

Location: FTEH00075					
Date Sampled:		**5/20/20**	**Date Re-Sampled:**		**5/20/20**
Time Sampled:		**9:50**	**Time Re-Sampled:**		**15:25**
Parameter	Criteria	Measured Value	Parameter	Criteria	Measured Value
Temp	n/a	64.2	Temp	n/a	64.6
pH	6.5 - 8.5	6.9	pH	6.5 - 8.5	7.1
Phenol	<0.17 mg/L	0.5	Phenol	<0.17 mg/L	0.5
Chlorine	<0.40 mg/L	0	Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0	Detergents	<0.50 mg/L	0
Copper	<0.21 mg/L	0	Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.					

Based on the inspection and testing conducted in May 2020, a re-inspection was recommended to verify the phenol exceedance. The outfall structure was re-visited on August 11, 2020. Similar to the initial inspection, the outfall structure was observed to be in good condition with minor areas of erosion observed in the downstream channel. There was no dry-weather flow observed during the re-inspection, therefore no sampling was performed. However, the immediate area was inspected to determine potential sources of the original detection. The piping leading to this outfall originates from the parking lot associated with the Travel Centers of America (TCA) facility located off of Interstate Avenue, east of the I-95 off-ramp. Numerous surface drains were observed in the parking lots in close proximity to the tractor trailer parking areas. The majority of the area is used for overnight parking, however there was evidence of minor vehicle cleaning and maintenance activities being performed in those parking lots by the drivers. Significant petroleum staining was observed on the parking lot surface in close proximity to the drains associated with the underground piping. Therefore, it is anticipated that the cleaning and maintenance activities performed in the parking lot have allowed leaking petroleum and various automotive fluids to enter the surface drains and migrate to the outfall where the initial illicit discharge was discovered.

Next Steps:

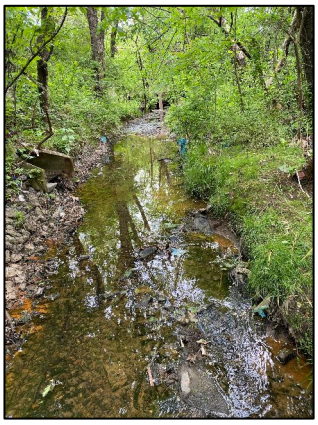
The culvert should continue to be monitored to determine the extent and severity of the erosion occurring in the downstream areas of the channel. Additionally, periodic inspections of the activities being performed in the adjacent vehicle lot should be performed to confirm or deny the source of the illicit discharges.



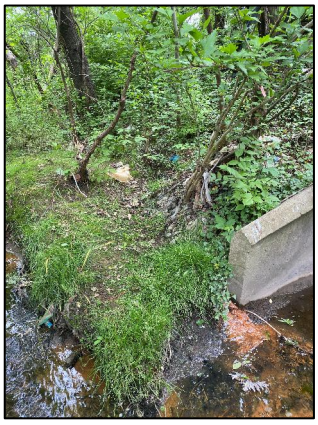
FTEH00075– Outfall view facing east



FTEH00075– Drainage channel downstream of structure



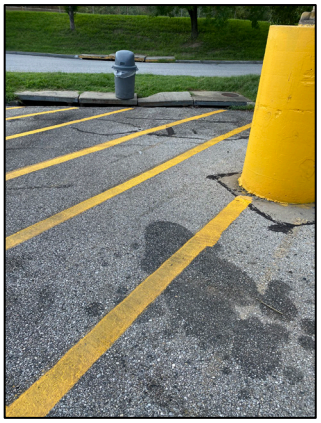
FTEH00075– Drainage channel upstream of outfall structure



FTEH00075– Vegetation surrounding outfall



TCA Facility – Vehicle parking in close proximity to surface drains



TCA Facility – Representative view of staining on the surface of the parking lot



TCA Facility– Dumpster and trash accumulation area in close proximity to surface drains

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00077

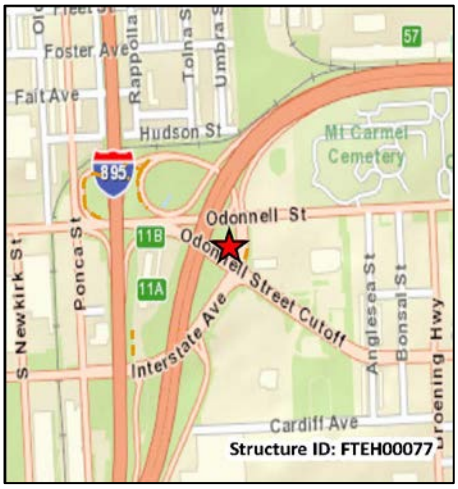
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00077 was visited on Wednesday May 20, 2020 and was observed to have no flow present.

Observations:

CEM observed structure FTEH00077 to be located east of the I-95 overpass, along the eastern edge of an unnamed tributary to Gorsuch Creek, just west of Interstate Avenue between O'Donnell Street and the O'Donnell Street Cutoff. No flow was observed within the 48-inch reinforced concrete pipe (RCP). The outfall structure appears to be in good condition; however, there are areas of significant erosion along the embankment and both downstream banks of the channel. Additionally, excessive debris covers the majority of the surrounding area and has disrupted the original flow channels upstream and downstream of the structure.

Next Steps:

Maintenance is required to remove the excessive debris that has accumulated in the channel and restore flow to its original conditions. Upon removal of the debris, repairs may be required to address the areas of significant erosion observed along the embankment and banks of the channel.



FTEH00077– Outfall view facing east



FTEH00077– Upstream of channel that receives flow from outfall/debris in channel



FTEH00077– Downstream of channel that receives flow from outfall



FTEH00077– Debris surrounding outfall mouth

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00078

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00078 was visited on Wednesday May 20, 2020 and was observed to be conveying stream flow.

Observations:

CEM observed structure FTEH00078 to be located east of the I-95 overpass, in line with an unnamed tributary to Gorsuch Creek, south of the O'Donnell Street Cutoff. Stream base flow was observed as being conveyed through the western section of the 110-inch by 56-inch concrete box culvert. The eastern section of the culvert has become completely blocked by significant accumulation of sediment and debris. The sediment appears to have been present long enough for trees and other vegetation to grow within the footprint of the original channel. The structure is in fair condition with some minor cracking in the sidewall. Additionally, a fence appears to have been previously installed to prevent pedestrian traffic; however, the fence is no longer in place.

Next Steps:

Maintenance is required to remove the sediment, debris, and vegetation that is obstructing flow within the channel and restore the channel to its originally designed condition. The structure should continue to be monitored to ensure the minor cracking does not continue, and repair as needed. Additionally, the fence should be repaired/replaced to limit public access.



FTEH00078– Outfall view facing north



FTEH00078– Downstream of channel that receives flow from outfall



FTEH00078– Vegetation surrounding outfall



FTEH00078– Vegetation and debris blocking the accompanying culvert opening

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00096

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00096 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00096, the outfall was located along the northwestern edge of the B&O Railroad tracks that cross the Gwynns Falls immediately south of the I-95 overpass. The structure was not observed in the vicinity of the mapped location and may have been obscured by excessive vegetation in the area. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection. If the structure is located closer to the active railroad tracks, coordination with the owner/operators of the tracks should be performed to ensure all appropriate safety measures are implemented before approaching any tracks.



FTEH00096– Supposed outfall location, facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00121

MDTA Contract No. 3009

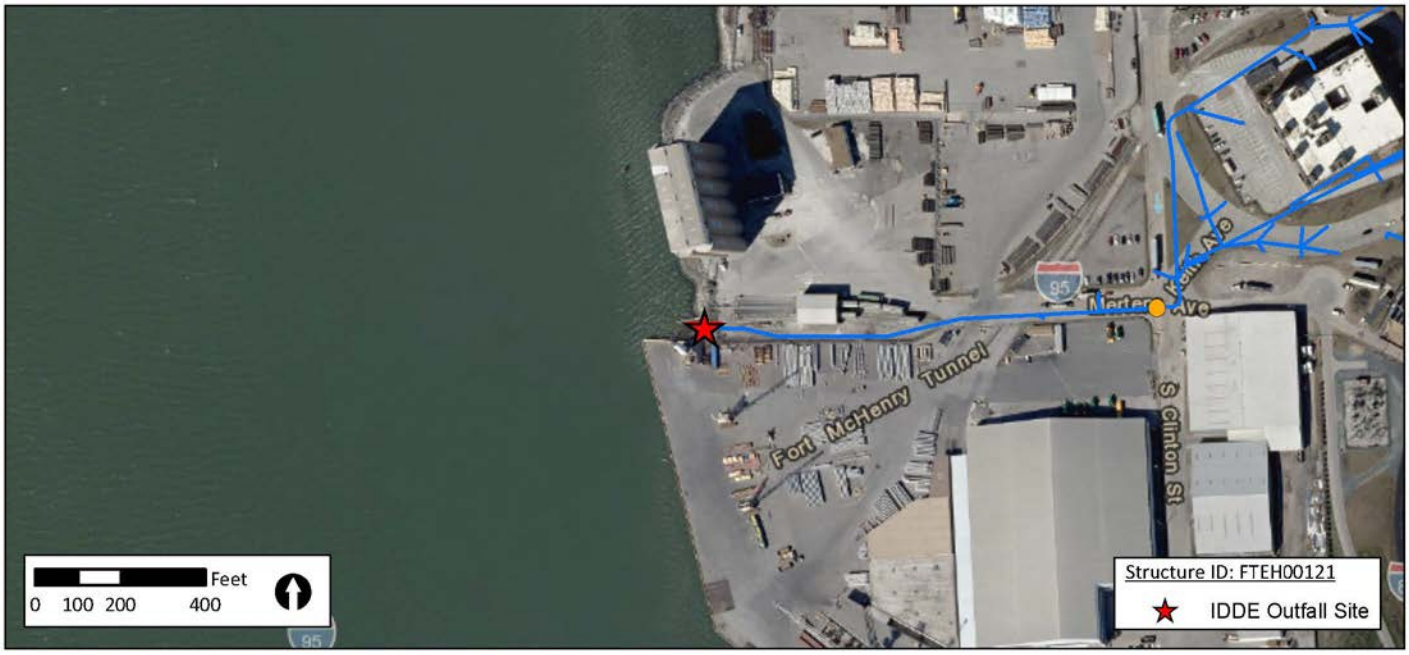
Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure FTEH00121, the outfall was located on the Rukert Terminal property on Lazaretto Point. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00122

MDTA Contract No. 3009

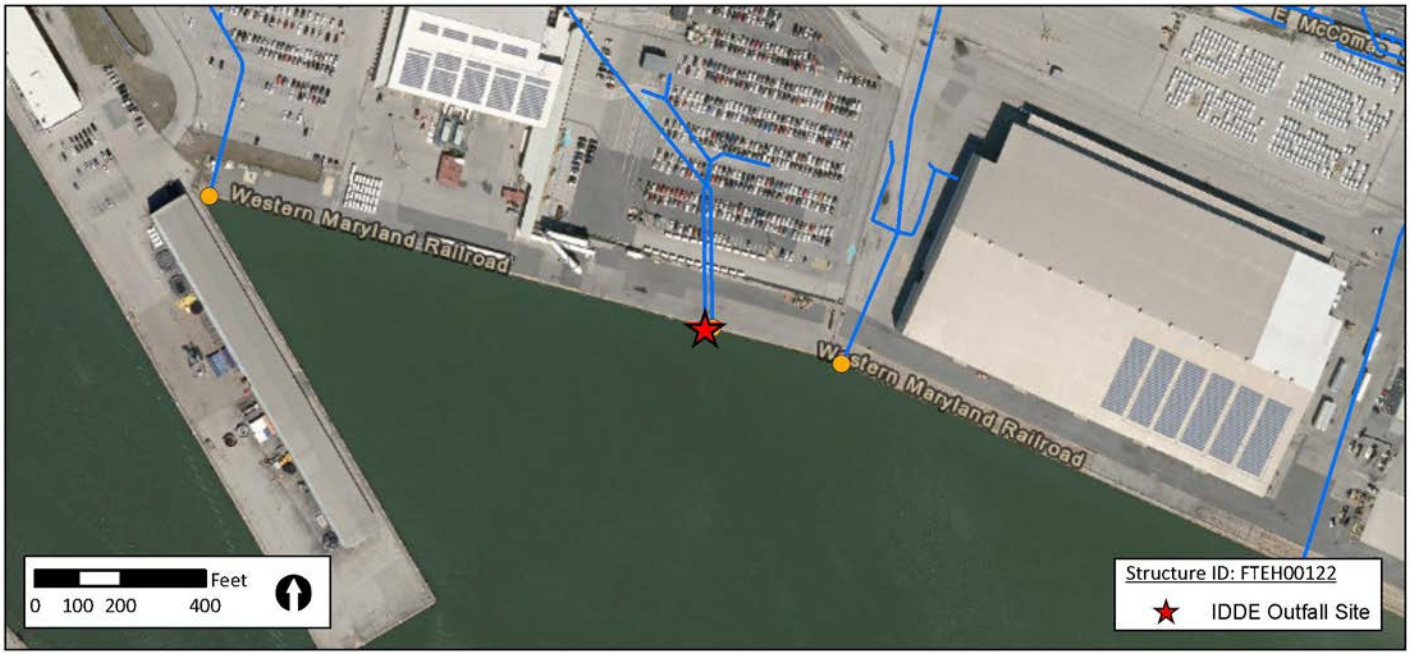
Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure FTEH00122, the outfall was located on the Cruise Maryland Terminal property south of I-95 northbound and east of Key Highway. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00123

MDTA Contract No. 3009

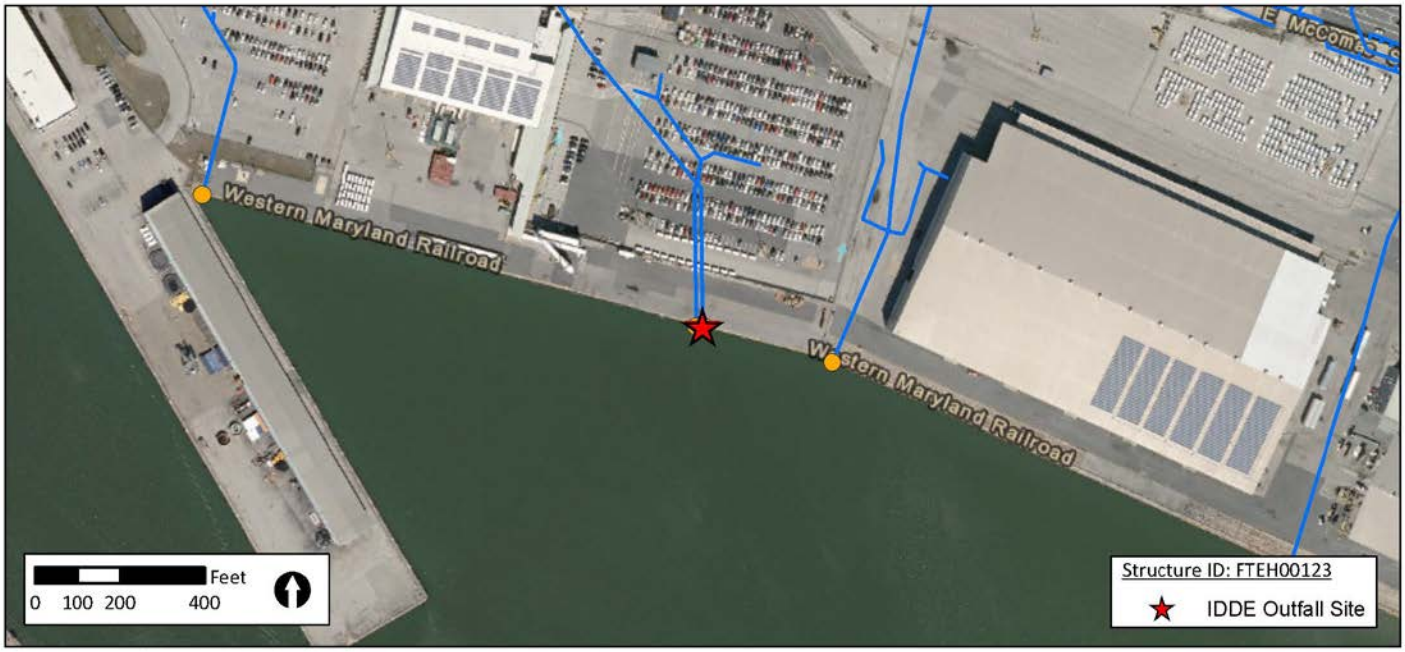
Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00123 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00123, the outfall was located on the Cruise Maryland Terminal property, south of I-95 northbound and east of Key Highway. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00124

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00124 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00124, the outfall was located on the eastern edges of the South Locust Point Marine Terminal property above the beginning of the Fort McHenry Tunnel. The structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00133.1

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00133.1 was visited on Thursday May 14, 2020 and was observed to have no flow present.

Observations:

CEM observed structure FTEH00133.1 to be located in a forested area beneath the aerial section of I-95 northbound and the Gwynns Falls, prior to the B&O Railroad tracks that cross the Gwynns Falls. No flow was observed in the 28-inch wide concrete channel. No other structures were observed in the area, but the concrete channel appeared to be in good condition with minor accumulations of debris and sediment where the channel drains into Gwynns Falls.

Next Steps:

Maintenance may be required to remove sediment and debris at the end of the channel to improve flow into the Gwynns Falls.



FTEH00133.1– Mapped location, looking south



FTEH00133.1– Debris at end of open channel



FTEH00133.1– Outfall concrete channel and encroaching vegetation



FTEH00133.1– Representative view of surrounding area

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00138

MDTA Contract No. 3009

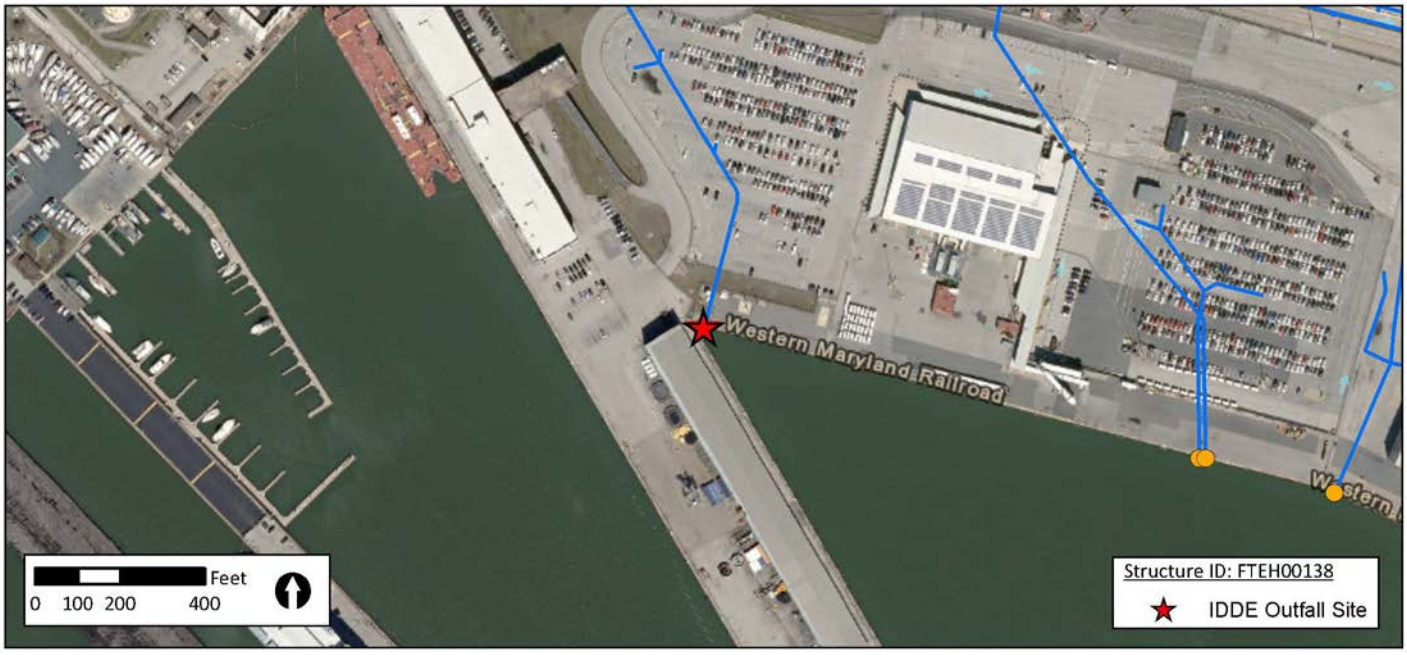
Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00138 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00138, the outfall was located between the former BGE Gould Street Power Substation and the Cruise Maryland Terminal properties along the southern edge of I-95 northbound and south of Key Highway. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct (due to the database consisting of three different entries for this structure) and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Fort McHenry Tunnel Outfall Site FTEH00139

MDTA Contract No. 3009

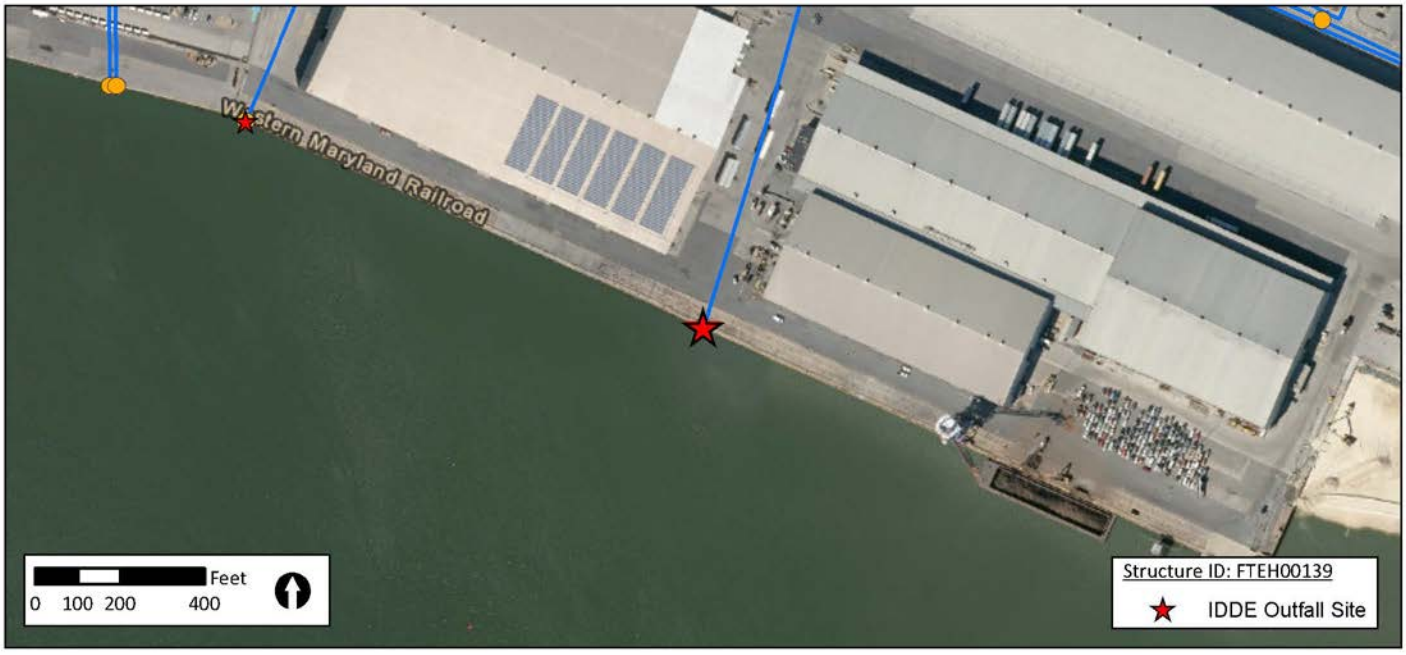
Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure FTEH00139 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure FTEH00139, the outfall was located along the southern edge of the Cruise Maryland Terminal property. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct (due to the database consisting of two different entries for this structure) and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00082.010

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

Kevin DiMartino, CEM
Senior Environmental Scientist
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HT00082.010 was visited on Wednesday May 13, 2020.

Observations:

According to the mapped location of structure HT00082.010, the outfall was located in a drainage ditch along the western edge of the Southbound I-895 Spur, adjacent to the E. Cooper Contracting property. The physical location of the structure was not found and may have been obscured by vegetation. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



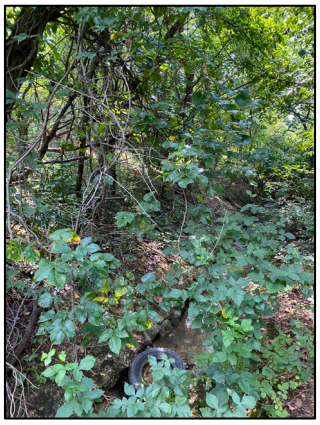
HT00082.010– Supposed outfall location, facing north



HT00082.010– Supposed outfall location, facing south



HT00082.010– Supposed outfall location, facing east



HT00082.010– Supposed outfall location, facing east

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00117.010

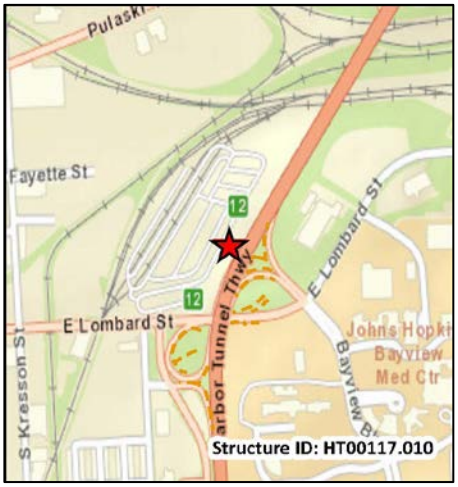
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HT00117.010 was visited on Thursday May 14, 2020.

Observations:

According to the mapped location of structure HT00117.010, the outfall was located along the northwestern edge of I-895, north of E. Lombard Street on the Norfolk Southern Baltimore storage yard property. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00117.017

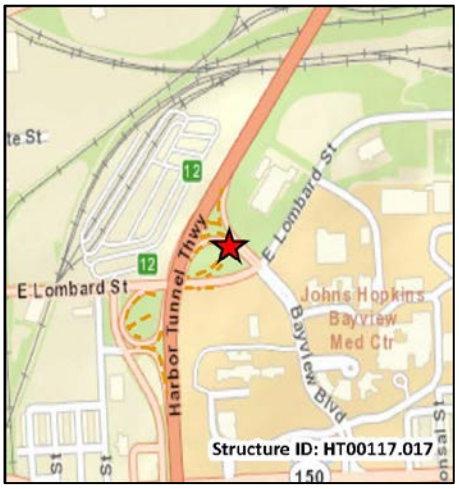
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure HT00117.017 was visited on Wednesday May 20, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HT00117.017 to be located along the southern edge of the I-895 northbound off-ramp leading to E. Lombard Street. No flow was observed in the 24-inch reinforced concrete pipe (RCP) located in a vault beneath the 32-inch by 66-inch inlet grate. The inlet appears to be in good condition with no issues observed.

Next Steps:

None at this time.



HT00117.017– Inlet view facing northwest



HT00117.017– Representative view of vegetation around inlet



HT00117.017– Grass swale drainage channel



HT00117.017– Inlet detail

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00122.010

MDTA Contract No. 3009

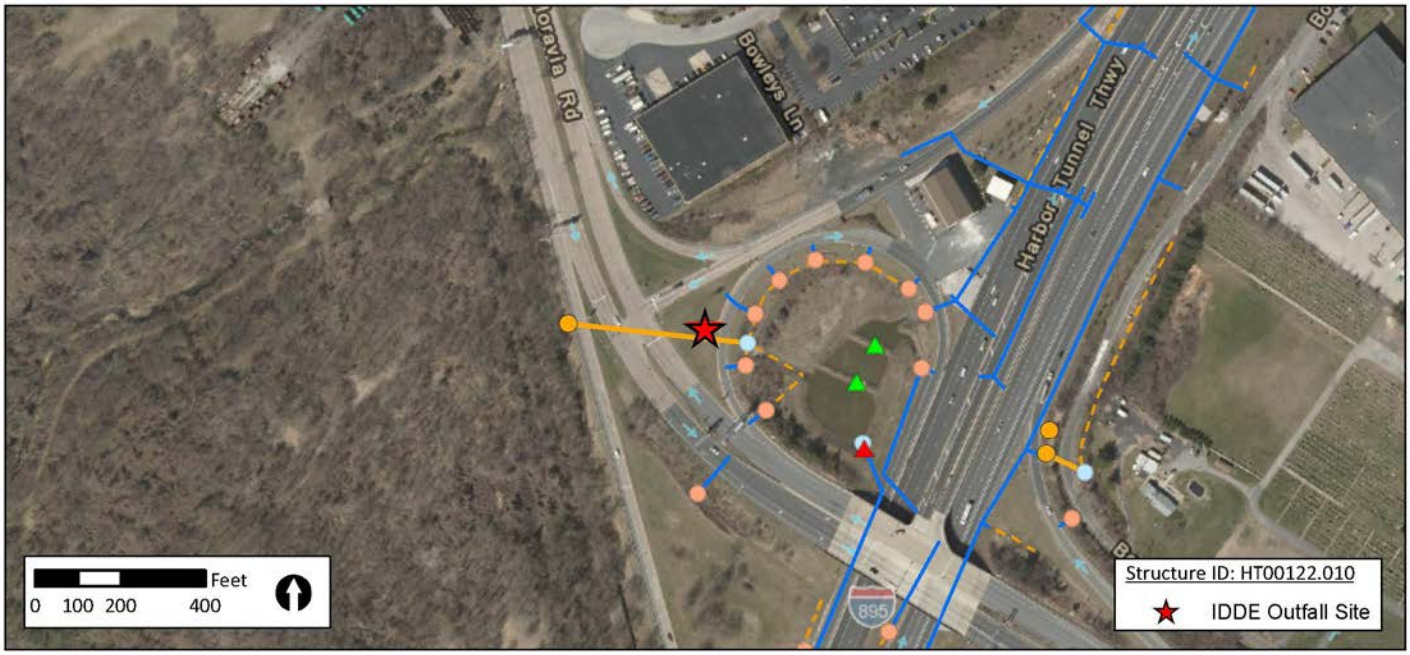
Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure HT00122.010 was visited on Wednesday May 20, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HT00122.010 to be located in the grassy area northwest of the I-895 and Moravia Road interchange. No flow was observed to be present in the 30-inch by 6-inch concrete inlet. The inlet structure appears to be in good condition. However, significant sediment has accumulated around the inlet and may obstruct flow from entering the inlet. According to a local resident who introduced themselves to field staff during the inspection, the entire area frequently floods and water remains ponded after most rainfall events.

Next Steps:

Maintenance is required to remove sediment accumulation from around the inlet and restore the flow channel to the originally designed condition.



HT00122.010– Inlet view facing north



HT00122.010– Inlet view facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00123.011

MDTA Contract No. 3009

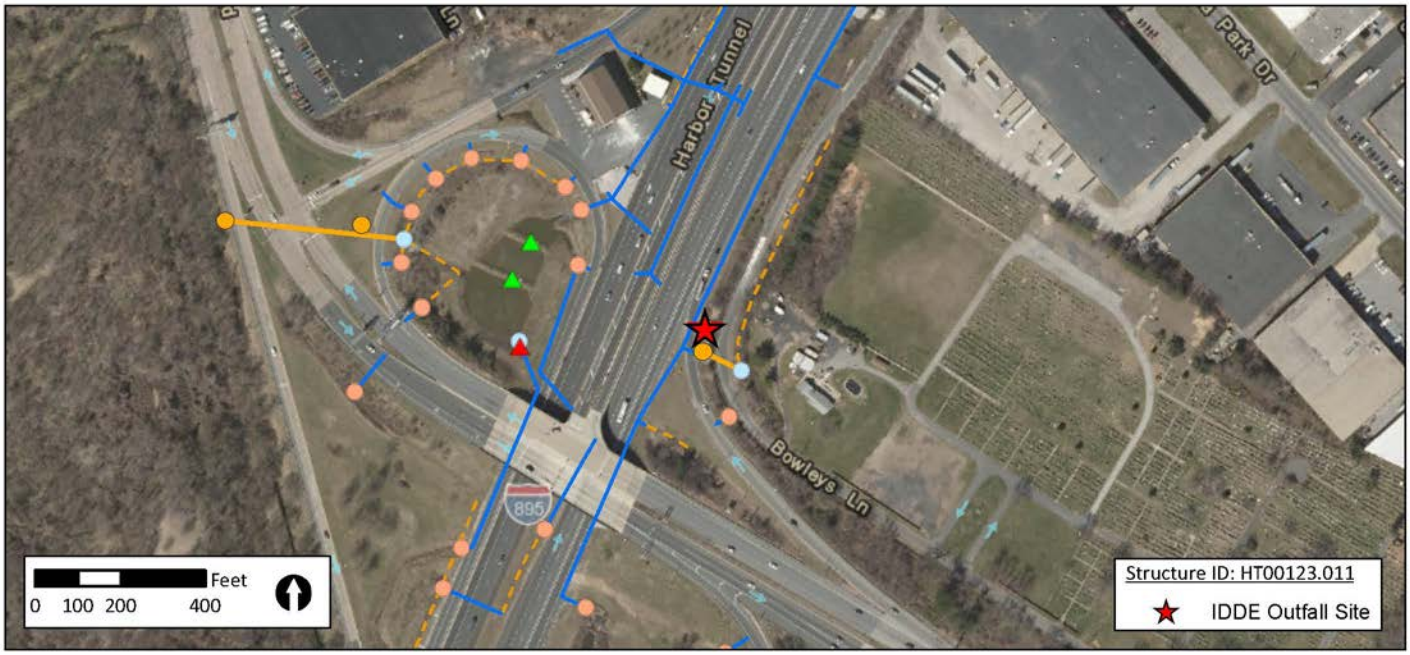
Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HT00123.011 was visited on Tuesday May 19, 2020.

Observations:

According to the mapped location of structure HT00123.011, the outfall was located in a drainage ditch along the southern edge of the Moravia Road on-ramp to northbound I-895. The physical location of the structure was not found and may have been obscured by vegetation. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HT00123.011– Supposed outfall location, facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00137.010

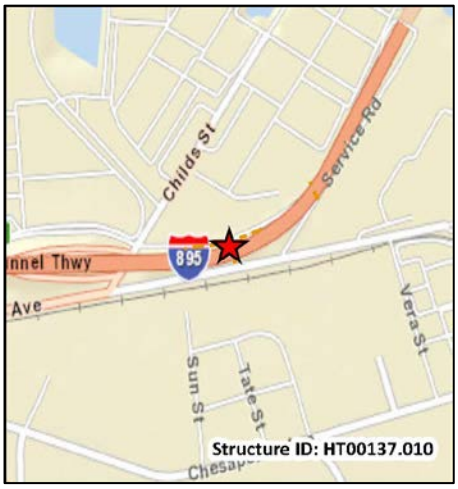
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HT00137.010 was visited on Wednesday May 27, 2020.

Observations:

According to the mapped location of structure HT00137.010, the outfall was located on the sloped embankment along the northern edge of I-895, east of Childs Street. The physical location of the structure was not found. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HT00137.010– Supposed outfall location, facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HT00140.010

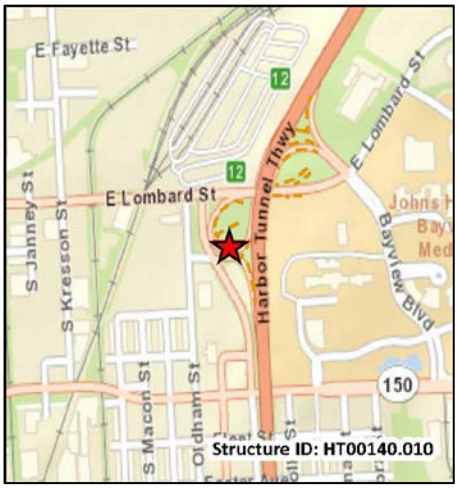
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HT00140.010 was visited on Wednesday May 20, 2020.

Observations:

According to the mapped location of structure HT00140.010, the outfall was located in the grassy area along the southern portion of the exit ramp from I-895 southbound to E. Lombard Street. A grass drainage swale/channel was observed in the vicinity of the mapped location, but no actual structure was found. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HT00140.010– Supposed outfall location, facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00006

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00006 was visited on Tuesday May 19, 2020 and was observed to be conveying stream flow.

Observations:

CEM observed structure HTEH00006 to be located in a drainage ditch along the southern edge of I-895, west of the I-195 overpass. The 192-inch by 80-inch concrete box culvert was observed to be conveying flow beneath the roadway. The culvert structure appears to be in good condition. Excessive vegetation was observed along the embankment and banks of the drainage channel, but it did not prevent access to the structure. A representative sample of the flow was collected from the defined channel that runs through the middle of the culvert, and the field screening data is summarized below.

Location:		**HTEH00006**
Date Sampled:		**5/19/20**
Time Sampled:		**9:45**
Parameter	Criteria	Measured Value
Temp	n/a	66.5
pH	6.5 - 8.5	8.3
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0.2
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

None at this time.



HTEH00006– Outfall view facing northwest



HTEH00006– Riprap stabilization



HTEH00006– Channel inside culvert



HTEH00006– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00012

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that were located on MDTA-regulated property. Outfall structure HTEH00012 was visited on Tuesday May 19, 2020.

Observations:

CEM observed structure HTEH00012 to be located adjacent to I-895 northbound, northeast of the I-195 overpass. The physical location of the outfall was observed; however, access to the structure was prevented by a chain-link fence. Minimal observations were made from the fence line. There was no flow visible, vegetation in the channel appeared to be overgrown, and erosion was observed along both banks of the downstream channel.

Next Steps:

Verify with MDTA that the mapped location is correct and discuss the best way to proceed with accessing the structure in order to complete the inspection.



HTEH00012– Outfall view facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00016

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00016 was visited on Tuesday May 19, 2020.

Observations:

CEM observed structure HTEH00016 to be located adjacent to I-895 northbound, south of where Halethorpe Farms Road extends beneath I-895. The physical location of the outfall was observed; however, access to the structure was prevented by a chain-link fence. Minimal observations were made from the fence line. The apron appeared to be slightly damp, but no active flow was observed. Vegetation is becoming overgrown and taking over portions of the downstream channel.

Next Steps:

Verify with MDTA that the mapped location is correct and discuss the best way to proceed with accessing the structure in order to complete the inspection.



HTEH00016– Outfall view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00018

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that were located on MDTA-regulated property. Outfall structure HTEH00018 was visited on Wednesday May 13, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00018 to be located along the eastern edge of I-895 northbound, northeast of where Halethorpe Farms Road passed beneath I-895. No flow was observed within the 30-inch corrugated metal pipe (CMP). The structure appears to be in good condition and does not show any signs of structural issues.

Next Steps:

None at this time.



HTEH00018– Outfall view facing northwest



HTEH00018– Riprap stabilization



HTEH00018– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00020

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00020 was visited on Wednesday May 13, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00020 as being located adjacent to I-895 southbound and northeast of Halethorpe Farms Road, adjacent to the MDOT salt barn. No flow was observed within the 24-inch reinforced concrete pipe (RCP). The outfall structure appears to be in good condition. Sediment has accumulated at the mouth of the outfall and within the drainage channel that may be impacting flow and creating minor stability issues downstream.

Next Steps:

Maintenance should be performed to remove sediment from the drainage channel to restore flow to the originally designed conditions.



HTEH00020– Outfall view facing southwest



HTEH00020– Representative view of vegetation around the outfall



HTEH00020– Downstream drainage channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00021

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00021 was visited on Wednesday May 13, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00021 to be located adjacent to I-895 northbound, northeast of Halethorpe Farms Road. No flow was observed within the 36-inch corrugated metal pipe (CMP). The outfall appears to be in fair condition with some areas of metal corrosion on the interior sections of the metal pipe and minor cracks in the concrete headwall.

Next Steps:

Repairs should be made to cracks in the concrete headwall to prevent them from spreading and becoming a larger issue. Maintenance should be performed to remove the vegetation that is beginning to grow into the pipe. The metal corrosion should be monitored to ensure this condition does not continue and impact the function of the outfall pipe.



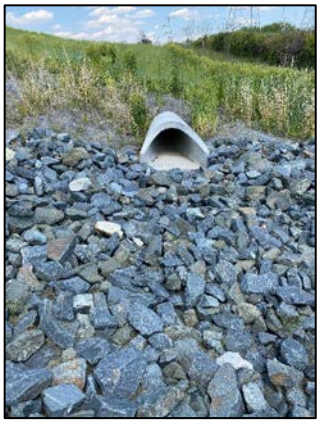
HTEH00021– Outfall view facing northwest



HTEH00021– Downstream riprap channel



HTEH00021– Detail inside of outfall



HTEH00021– Adjacent unmapped outfall discharging to riprap channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00027

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00027 was visited on Wednesday May 13, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00027 to be located adjacent to I-895 northbound, east of Hammonds Ferry Road, and adjacent to a temporary MDOT laydown yard. There was moisture observed on the interior of the 36-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall appears to be in good condition; but, there were minor areas of deteriorating concrete along the underside of the outfall apron and minor areas of erosion along the edges of the headwall. Additionally, the fence that was installed along the headwall should be repaired to restrict pedestrian access.

Next Steps:

Repairs to address the deteriorating concrete at the base of the headwall and the erosion along the embankment should be performed to maintain the structural integrity of the outfall. Although the outfall is located along the edge of I-895 with minimal pedestrian traffic, the fence at the top of the headwall should be repaired/replaced to prevent public access.



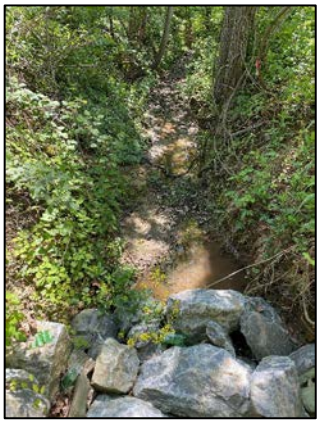
HTEH00027– Outfall view facing north



HTEH00027– Cracking concrete at mouth of outfall



HTEH00027– Damaged fence next to outfall



HTEH00027– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00029

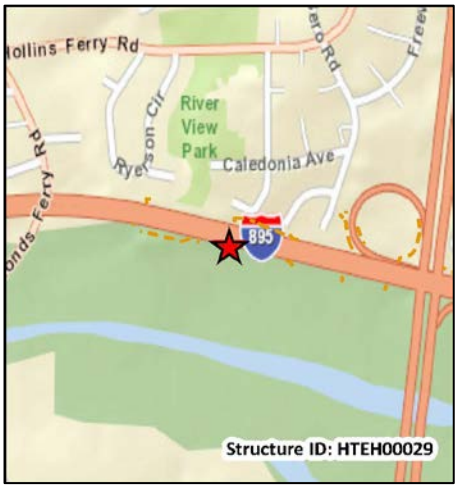
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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General Project Information:

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Observations:

CEM observed structure HTEH00029 to be located adjacent to I-895 northbound, east of I-695 and Hammonds Ferry Road, and west of the Baltimore Washington Parkway (MD-295). Moisture was observed inside of the 36-inch reinforced concrete pipe (RCP), but no active flow was present. Minor cracks and deterioration was observed along the seal connecting the end section to the remaining sections of outfall pipe. Vegetation is also beginning to encroach on the drainage channel.

Next Steps:

Repairs to the seal inside the pipe should be performed in order to prevent additional damage from occurring that may restrict flow. Maintenance should also be performed to prevent the vegetation from obstructing any flow in the channel.



HTEH00029– Outfall view facing north



HTEH00029– Vegetation along edges of channel



HTEH00029– Cracking along seam of outfall pipe



HTEH00029– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00033

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00033 was visited on Thursday May 14, 2020 and was observed to have no active flow.

Observations:

CEM observed structure HTEH00033 to be located adjacent to I-895 northbound, just southwest of the Baltimore Washington Parkway overpass. Stagnant water had accumulated inside of the 48-inch reinforced concrete pipe (RCP), but no active flow was observed at the time of the inspection. The stagnant water was approximately 12” in depth and extended into the ponded area downstream of the outfall.

Next Steps:

Maintenance should be performed to remove sediment from the pooling area in front of the structure to re-establish outlet protection and encourage flow to drain away from the outfall.



HTEH00033– Outfall view facing northwest



HTEH00033– Swale flowing into outfall drainage area



HTEH00033– Riparian buffer



HTEH00033– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00042

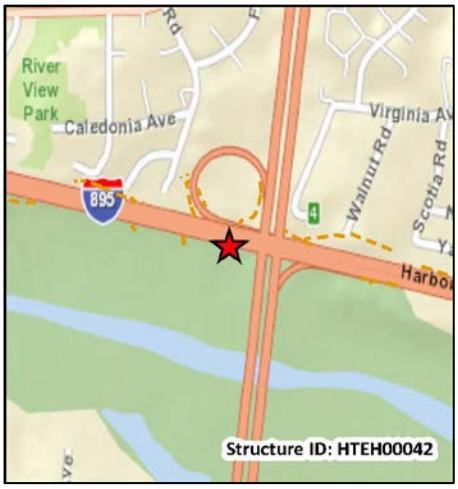
MDTA Contract No. 3009

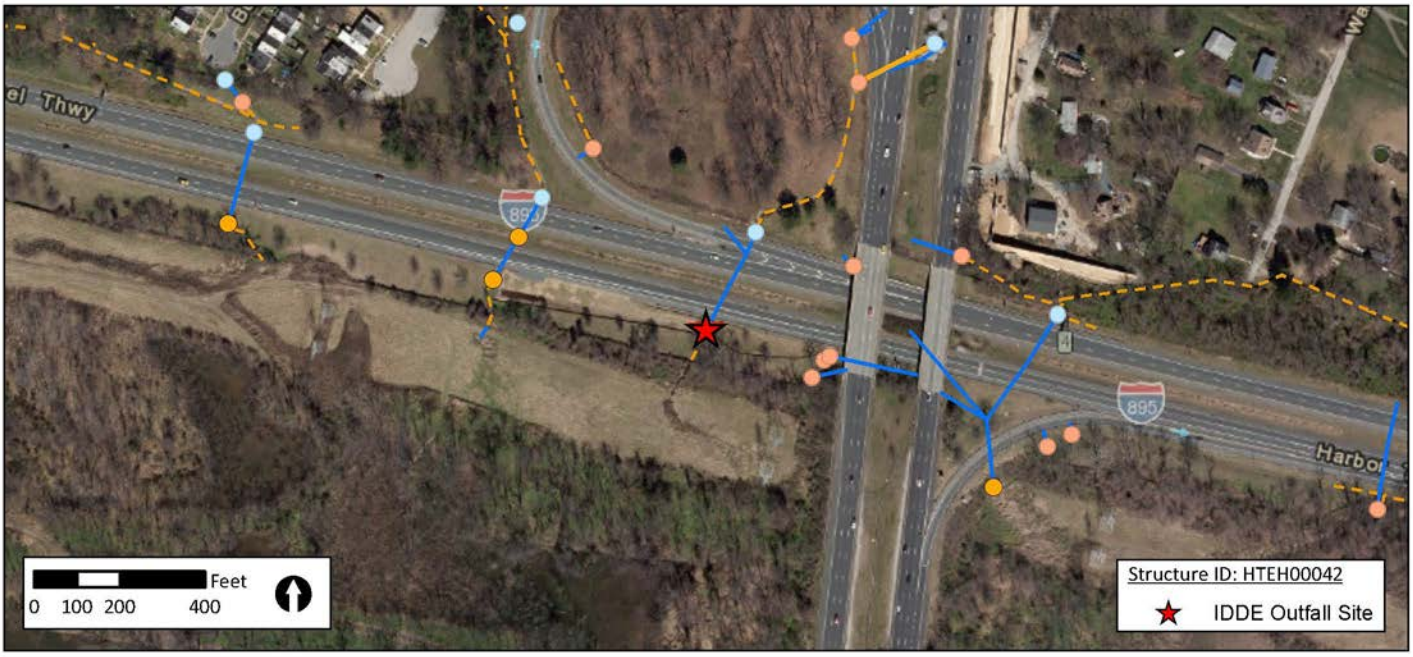
Field Crew Information:

- Inspection date: Thursday May 14, 2020
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Observations:

CEM observed structure HTEH00042 to be located adjacent to I-895 northbound, immediately southwest of the Baltimore Washington Parkway (MD-295) overpass. Stagnant water appeared to be ponded in front of the 36-inch reinforced concrete pipe (RCP) and had accumulated inside the outfall structure, but no active flow was observed. Surface water from the surrounding area contributes to the ponded water observed at the outfall. The outfall structure appears to be in good condition with minimal sediment accumulation in the mouth of the outfall pipe.

Next Steps:

Maintenance should be performed to remove the sediment from the mouth of the outfall and restore the drainage channel to originally designed conditions.



HTEH00042– Outfall view facing north



HTEH00042– Downstream channel of outfall



HTEH00042– Representative view of banks along drainage channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00046

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00046 to be located adjacent to the exit ramp from MD-295 northbound to I-895 northbound, along the northwestern edge of a large stormwater management pond. However, the full structure was not visible since the majority of the structure was buried in sediment. The outfall is unable to function properly due to the amount of sediment surrounding the structure. Additionally, the structure location is obscured due to the presence of excessive *Phragmites australis* growth in the ponded area.

Next Steps:

Maintenance to remove the accumulated sediment and areas of the *Phragmites australis* should be performed so that the structure can be properly inspected and repaired if needed. Once the sediment is removed from the location, the surrounding area should be re-evaluated to ensure the structure and the stormwater management pond are functioning as designed.



HTEH00046– Outfall view facing south



HTEH00046– *Phragmites australis* growth around outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00050

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00050 was visited on Thursday May 14, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00050 to be located in a drainage ditch along the west side of Annapolis Road, immediately north of the I-895 overpass. No flow was observed to be present within the 36-inch reinforced concrete pipe (RCP). The outfall appears to be in fair condition with some moderate cracking of the concrete on the lower portion of the headwall (beneath the pipe) as well as cracking across the majority of the concrete drainage channel. Some moderate erosion was observed along the embankment and adjacent banks of the channel.

Next Steps:

Repairs should be performed to restore the concrete to the original design conditions and prevent the cranks from spreading further. Maintenance may be required to replace missing fill behind the headwall, which may be resulting in the water draining from the cracks in the base of the headwall.



HTEH00050– Outfall view facing south



HTEH00050– Deteriorating concrete at base of headwall releasing water



HTEH00050 – Cracking in concrete channel



HTEH00050– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00051

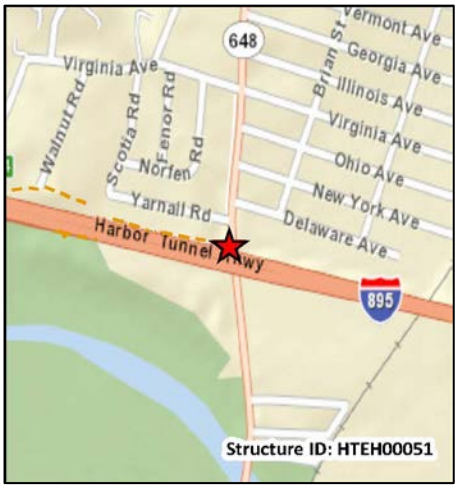
MDTA Contract No. 3009

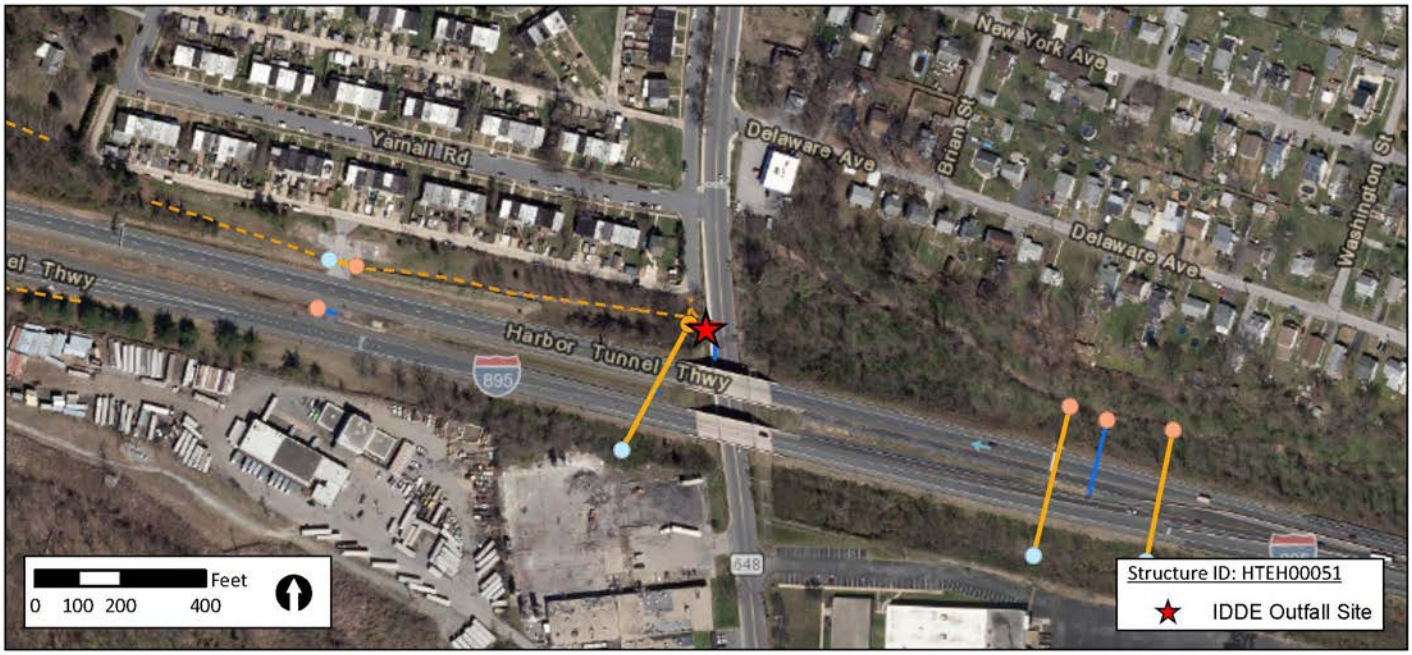
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- Crew Contact Information:

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Observations:

CEM observed structure HTEH00051 to be located in a drainage ditch along the western side of Annapolis Road, immediately north of the I-895 overpass. No flow was observed to be present in the 24-inch reinforced concrete pipe (RCP). The outfall appears to be in fair condition with minor areas of concrete deterioration and excessive vegetative growth. Sediment has begun to accumulate within the pipe and mouth of outfall. Additionally, minor areas of erosion were observed within the downstream channel.

Next Steps:

Maintenance should be performed to remove the sediment and excessive vegetation from the mouth of the structure to restore the original design flow conditions. The cracking in the structure and the erosion in the downstream channel are not impacting flow, but should continue to be monitored to prevent these issues from spreading and impacting the functionality of the structure.



HTEH00051– Outfall view facing southwest



HTEH00051– Vegetation encroaching into outfall channel



HTEH00051– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00054

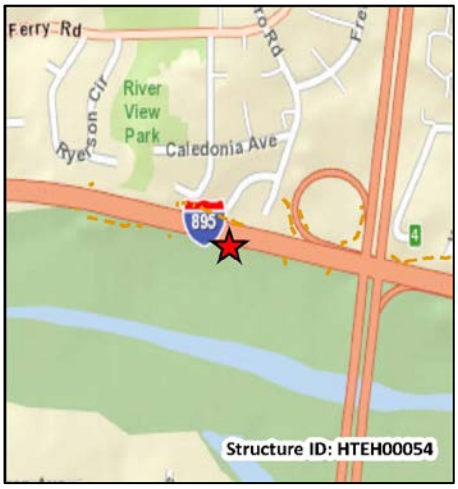
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00054 to be located adjacent to I-895 northbound, southwest of the Baltimore Washington Parkway overpass. Stagnant water was observed in the mouth of the outlet, but no active flow was present within the 36-inch reinforced concrete pipe (RCP). The outfall is in fair condition with moderate accumulation of sediment within the pipe and mouth of the outfall. Additionally, vegetation was encroaching on the drainage channel and beginning to impact flow.

Next Steps:

Maintenance should be performed in order to remove accumulated sediment and excessive vegetation from the channel in order to restore flow to original design conditions.



HTEH00054– Outfall view facing north



HTEH00054– Vegetation encroaching on drainage channel



HTEH00054– Vegetation encroaching on drainage channel



HTEH00054– Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00056

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00056 was visited on Tuesday May 12, 2020 and was observed to have very low flow present.

Observations:

CEM observed structure HTEH00056 to be located along the southern edge of the I-97 northbound/I-895A northbound spur, immediately west of the I-895 southbound spur, and adjacent to Cabin Branch. There was very low flow observed within the 60-inch reinforced concrete pipe (RCP). The outfall structure and drainage channel are in poor condition with severe erosion issues creating significant stability issues downstream. A representative sample of the flow was collected and the field screening data is summarized below.

Location:		**HTEH00056**
Date Sampled:		**5/12/20**
Time Sampled:		**10:50**
Parameter	Criteria	Measured Value
Temp	n/a	59.1
pH	6.5 - 8.5	7.2
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

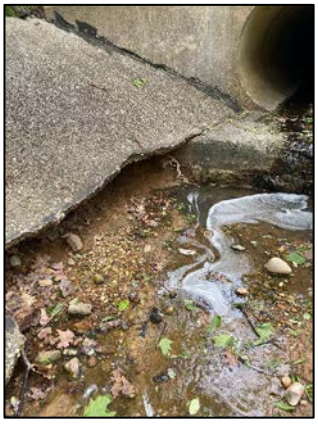
Repairs to the structure and downstream channel should be scheduled to prevent further deterioration of the structure and restore the drainage channel to its original design conditions. No illicit discharges were detected in the sample collected in the field.



HTEH00054– Outfall view facing northwest



HTEH00056– Downstream concrete channel of outfall



HTEH00056– Right bank erosion under concrete bank



HTEH00056– Outfall and headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00064

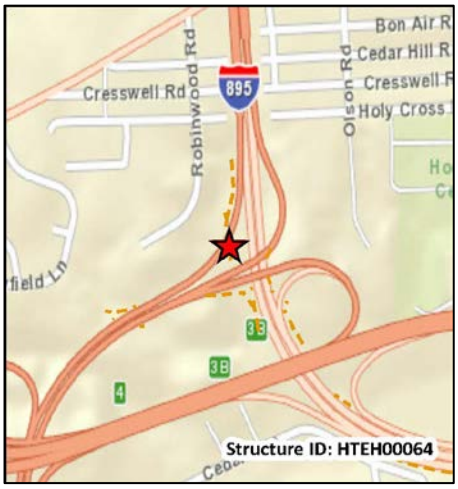
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00064 to be located adjacent to Cabin Branch between the off-ramp from the I-895A southbound spur to I-97 and the I-895A southbound spur to MD-2. No flow was observed in the 48-inch reinforced concrete pipe (RCP). The structure appeared to be in good condition with minor cracking in the concrete drainage channel.

Next Steps:

Continue to monitor drainage channel and repair cracks in concrete as needed.



HTEH00064– Outfall view facing north



HTEH00064– Headwall and banks along channel



HTEH00064– Downstream concrete channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00069

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure HTEH00069 was visited on Tuesday May 12, 2020 and was observed to have very low flow present.

Observations:

CEM observed structure HTEH00069 to be located along the eastern edge of the I-895B northbound Spur, north of the Hammonds Lane overpass, and adjacent to an unnamed tributary to the Patapsco River. There was very low flow observed within the 48-inch reinforced concrete pipe (RCP). The inlet appears to be in good condition with minor vegetation encroaching on the drainage channel. A representative sample of the flow was collected and the field screening data is summarized below. Due to the elevated detection of detergents in the sample, the location was re-visited the following day to collect a follow-up sample.

Location: HTEH00069					
Date Sampled:		**5/12/20**	**Date Re-Sampled:**		**5/13/20**
Time Sampled:		**13:10**	**Time Re-Sampled:**		**09:00**
Parameter	Criteria	Measured Value	Parameter	Criteria	Measured Value
Temp	n/a	60.2	Temp	n/a	70.1
pH	6.5 - 8.5	7.1	pH	6.5 - 8.5	7.2
Phenol	<0.17 mg/L	0.0	Phenol	<0.17 mg/L	0.0
Chlorine	<0.40 mg/L	0.2	Chlorine	<0.40 mg/L	0.3
Detergents	<0.50 mg/L	0.5	Detergents	<0.50 mg/L	0.5
Copper	<0.21 mg/L	0	Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.					

Based on the inspection and testing conducted in May 2020, a re-inspection was recommended to verify the detergent exceedance. The outfall structure was re-visited on August 11, 2020. Similar to the initial inspection, the outfall structure appeared to be in good condition. There was no dry-weather flow observed during the re-inspection, therefore no sampling was performed. However, the immediate area was inspected to determine the potential sources of the original detection. The water that enters this inlet structure originates from the drainage areas associated with this drainage channel. There was evidence of surface water draining from the upslope areas, including I-895 spur and the landscaped areas north of the structure. However, there were no obvious sources that were observed in that area that would be considered a potential source for the detergent exceedances. Therefore, the exceedances may be related to seasonal fluctuations, but do not appear to be a result of on-going illicit discharges to the system.

Next Steps:

Maintenance may be required eventually to remove the vegetation that is encroaching on the channel.



HTEH00069– View of inlet facing northwest



HTEH00069– Vegetation encroaching on structure and channel



HTEH00069– Concrete drainage channel



HTEH00069– Vegetated slope within drainage area

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00070

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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General Project Information:

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Observations:

CEM observed structure HTEH00070 to be located along the western edge of the Southbound I-895 Spur, adjacent to the E. Cooper Contracting property. Flow was observed coming from the 48-inch reinforced concrete pipe (RCP) outfall, which could potentially be associated with stream flow from an unnamed tributary of the Patapsco River. The outfall structure was observed to be in good condition with evidence of minor erosion issues that appear to have been previously addressed by installing additional rip-rap sections along the banks of the drainage channel. A representative sample of the flow was collected and the field screening data is summarized below.

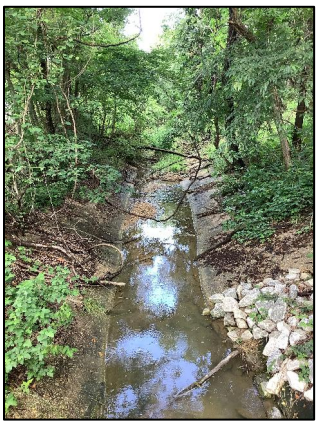
Location:		**HTEH00070**
Date Sampled:		**5/13/20**
Time Sampled:		**10:05**
Parameter	Criteria	Measured Value
Temp	n/a	63.2
pH	6.5 - 8.5	8.2
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0.1
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

None at this time.



HTEH00070– Outfall view facing southeast



HTEH00070–Downstream concrete channel



HTEH00070– Left bank and riprap



HTEH00070– Right bank and riprap

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00072

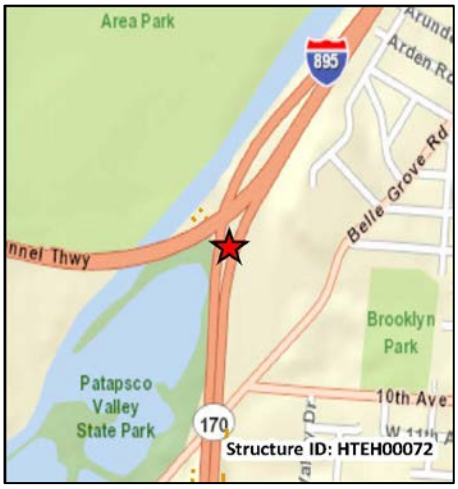
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00072 was visited on Thursday June 18, 2020.

Observations:

According to the mapped location of structure HTEH00072, the outfall was located between the north and southbound sections of the I-895 spur and south of the I-895 interchange, but the actual structure was not located. Therefore, the inspection of this outfall was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HTEH00072– Supposed outfall location, facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00073

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00073 to be located along the eastern edge of the northbound section of the I-895 spur, south of the I-895 interchange. Baseline stream flow was observed flowing back into the 96-inch by 96-inch concrete box culvert from the large body of water on the opposite side of I-895. The inlet structure appears to be in good condition but the large steel grate attached to the structure has been altered to allow public access. Additionally, the adjacent fence at the top of the slope has become damaged.

Next Steps:

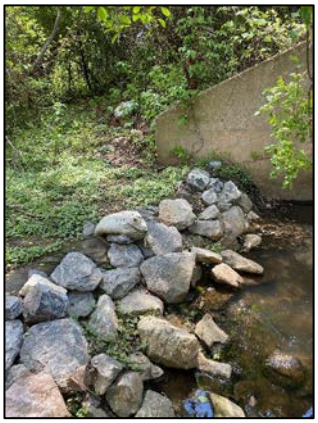
Repairs should be made to the steel grate attached to the structure to restrict public access. The inlet structure appears to be performing as designed but the steel grate should be repaired so that it functions as originally intended. Additionally, the fence at the top of the slope should be repaired or replaced to further prevent public access.



HTEH00073– Inlet view facing west



HTEH00073– Pool at mouth of inlet and stream channel



HTEH00073– Riprap stabilization of right bank



HTEH00073– Drainage channel south of structure

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00078

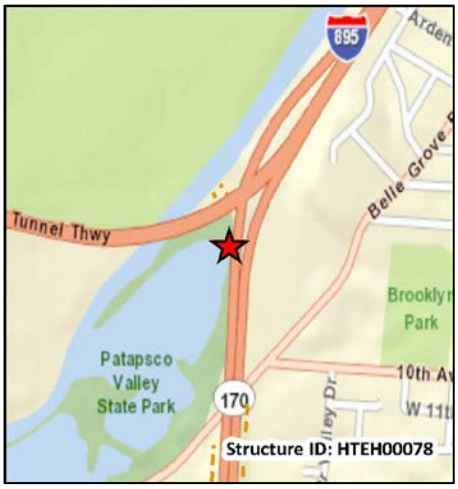
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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General Project Information:

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Observations:

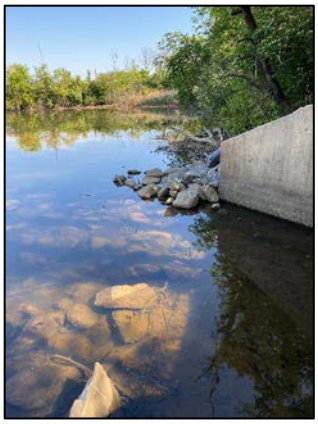
CEM observed structure HTEH00078 to be located along the western edge of the southbound I-895 spur, south of the I-895 interchange. Baseline stream flow was observed within the 96-inch by 96-inch concrete box culvert. The outfall structure appears to be in good condition with large cobble material fortifying the apron and minimal sediment accumulation inside the culvert. However, the chain-link fence at the top of the embankment has been damaged.

Next Steps:

Repair or replace fence at top of the embankment to restrict public access.



HTEH00078– Outfall view facing north and damaged fence hanging over channel



HTEH00078– Connection to Patapsco



HTEH00078– Riprap stabilization of left side of structure and damaged fence above culvert



HTEH00078– Downstream of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00080

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00080 was visited on Wednesday May 13, 2020 and was observed to have very low flow present.

Observations:

CEM observed structure HTEH00080 is located at the base of a large slope in a wooded area north of the Exit 46 off-ramp from I-95 northbound to I-895 northbound. There was very low flow observed to be present within the 42-inch corrugated metal pipe (CMP). The outfall appears to be in poor condition with metal corrosion around the outfall pipe, significant sediment accumulation that has caused ponding at the mouth of the outfall, and areas of moderate erosion downstream of the structure. Additionally, the metal end section has become detached from the outfall pipe and is currently deposited in the downstream channel. A representative sample of the flow was collected and the field screening data is summarized below.

Location:		**HTEH00080**
Date Sampled:		**5/13/20**
Time Sampled:		**12:46**
Parameter	Criteria	Measured Value
Temp	n/a	63.5
pH	6.5 - 8.5	7.4
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

Repairs should be performed to reconnect the end section of pipe to the outfall pipe and restore the corroded sections of metal. Upon removal of the pipe from the channel, sediment and debris that has been blocked by the disconnected pipe should be removed to restore the flow to the original design conditions. The areas of erosion in the downstream channel should be monitored and repaired as needed. According to the field screening, there were no illicit discharges detected.



HTEH00080– Outfall view facing southwest



HTEH00080– Outfall and iron deposits



HTEH00080– Downstream drainage of outfall



HTEH00080– Erosion on right side of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00081

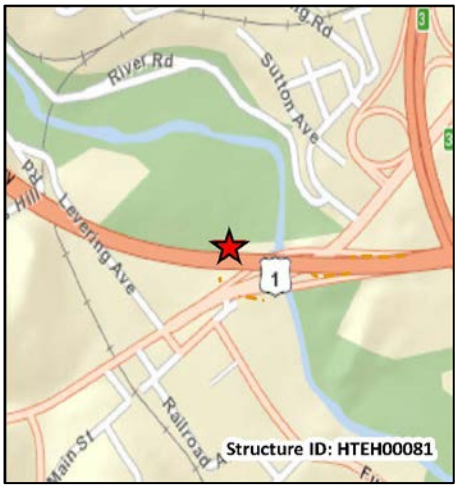
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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Observations:

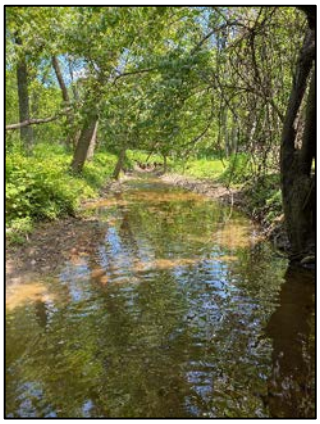
CEM observed structure HTEH00081 as being located along the northern edge of I-895 southbound, west of Washington Boulevard and the Patapsco River. Baseline stream flow was observed being conveyed through the 144-inch by 106-inch corrugated metal pipe (CMP). The outfall appears to be in good condition with some minor leaking around bolts installed in the side walls of the CMP.

Next Steps:

The leaking bolts should continue to be monitored for potential corrosion issues and repaired as needed.



HTEH00081– Outfall view facing south



HTEH00081– Downstream of outfall



HTEH00081– Right bank at mouth of outfall



HTEH00081– Inside detail of culvert

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00085

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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General Project Information:

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Observations:

According to the mapped location of structure HTEH00085, the outfall was located adjacent to I-895 northbound, south of where Transway Road passes beneath I-895. The physical location of the structure was visible, but was inaccessible due to the presence of a chain-link fence.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete inspection of this structure.



HTEH00085– Outfall view facing southeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00090

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed the structure HTEH00090 to be located along the northern edge of a stormwater management pond west of I-695, adjacent to the exit ramp leading from the outer loop of I-695 to I-895 northbound. Stagnant water had accumulated into the 24-inch and 18-inch reinforced concrete pipes (RCPs) that were observed in the headwall. The outfall structure appears to be in good condition, but issues with the stormwater management pond are causing water to back up into the pipes and submerge the structure.

Next Steps:

The stormwater management pond should be investigated and appropriate measures taken to restore the functionality that was originally designed and prevent water from accumulating within the outfall pipes.



HTEH00090– Outfall view facing north



HTEH00090– Overview of SWM pond that receives discharges from the outfall



HTEH00090– Vegetation in pond at mouth of outfall



HTEH00090– Representative view of surrounding vegetation and banks

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00092

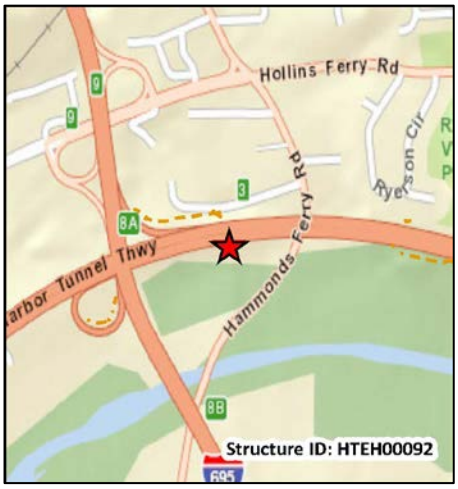
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00092 to be located adjacent to I-895 northbound, east of I-695 and west of Hammonds Ferry Road. Flow was observed within the 168-inch by 120-inch box culvert which appeared to be more than standard baseline stream flow. The outfall structure appears to be in good condition with some areas of excessive vegetation encroaching along the edges of the banks. Minor areas of downstream stability were observed. A representative sample of the flow was collected and the field screening data is summarized below.

Location:		**HTEH00092**
Date Sampled:		**5/13/20**
Time Sampled:		**14:08**
Parameter	Criteria	Measured Value
Temp	n/a	63.3
pH	6.5 - 8.5	8.1
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

Continue to monitor downstream channel for continuing erosion issues and repair as needed. According to the field screening, no illicit discharges were detected.



HTEH00092– Outfall view facing north



HTEH00092– Downstream of outfall



HTEH00092– Eroding banks downstream of outfall



HTEH00092– Left bank stabilization

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00095

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure HTEH00095, the outfall was located adjacent to I-895 northbound, east of Hammonds Ferry Road and adjacent to a temporary MDOT laydown yard. However, the physical location of the structure was unable to be found. The structure may be obscured by heavy vegetation along the slope, or it may be buried under a large stockpile of wood chips or mulch that has been dumped along the edge of the laydown yard.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HTEH00095– Supposed outfall location, facing south

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00101

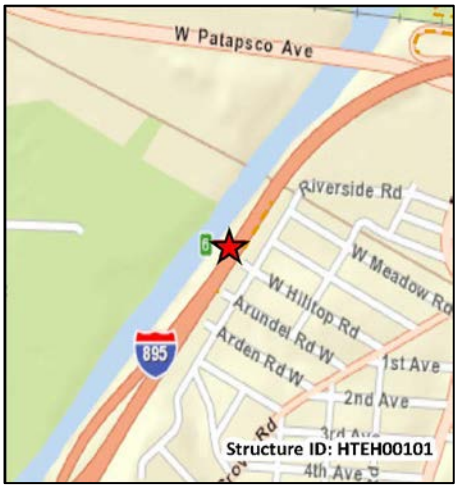
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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General Project Information:

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Observations:

According to the mapped location of structure HTEH00101, the outfall was located along the western edge of I-895 southbound, south of West Patapsco Avenue. The physical structure was partially visible, but was inaccessible due to the presence of a chain-link fence. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to perform a follow-up inspection.



HTEH00101– Outfall view facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00102

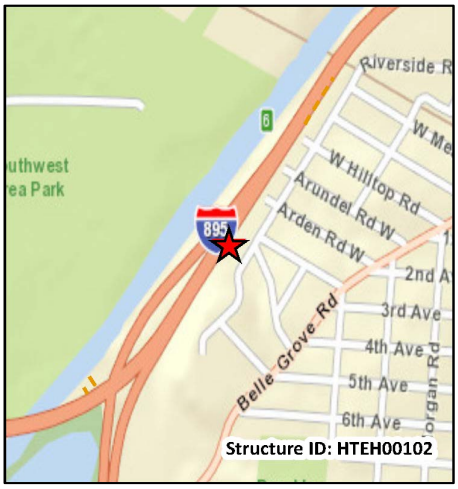
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00102 to be located along the western edge of the Riverside Playground on Old Riverside Road, immediately east of the I-895 northbound sound wall. Flow was observed within the 54-inch reinforced concrete pipe (RCP). The outfall structure appeared to be in good condition, but there were small areas of minor erosion observed on the embankment (on both sides of the headwall). Additionally, the fence located along the edge of the park was damaged. A representative sample of the flow was collected and the field screening data is summarized below. Due to the elevated detection of phenol and detergents in the sample, the location was re-visited later that day to collect a follow-up sample.

Location: HTEH00102					
Date Sampled:		**5/19/20**	**Date Re-Sampled:**		**5/19/20**
Time Sampled:		**11:25**	**Time Re-Sampled:**		**15:16**
Parameter	Criteria	Measured Value	Parameter	Criteria	Measured Value
Temp	n/a	67.3	Temp	n/a	67.6
pH	6.5 - 8.5	7.4	pH	6.5 - 8.5	7.2
Phenol	<0.17 mg/L	0.5	Phenol	<0.17 mg/L	0.5
Chlorine	<0.40 mg/L	0.2	Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0.5	Detergents	<0.50 mg/L	0.5
Copper	<0.21 mg/L	0	Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.					

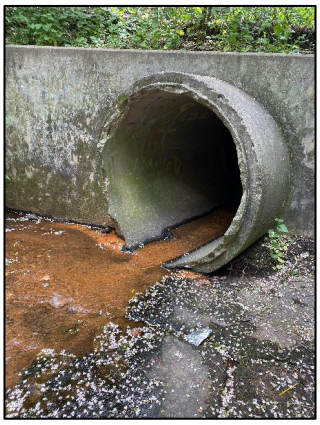
Based on the inspection and testing conducted in May 2020, a re-inspection was recommended to verify the phenol and detergent exceedances. The outfall structure was re-visited on August 11, 2020. Similar to the initial inspection, the outfall structure appeared to be in good condition with areas of minor erosion observed on the embankment. The flow observed at the structure is conveyed by a subsurface pipe that runs beneath the adjacent playground and originates along Old Riverside Road. There are several surface drains located along Old Riverside Road that collect runoff from the surrounding alleys and roadways located upgradient in this neighborhood. At the time of the re-inspection, water was observed flowing in the manholes and surface drains nearest to the outfall structure. The local residents appear to wash vehicles and various household items (lawn mowers, bicycles, etc.) in the road or alley located at their residence. Therefore, it is anticipated that the wash water flowing down gradient to the series of surface drains, and eventually discharges from the outfall structure, may be responsible for the elevated concentrations of phenols and detergents detected during the initial inspection.

During the re-inspection, a representative sample of the dry weather flow was collected and analyzed for the same parameters as the previous sampling event. However, the results of the field testing indicated that there were no parameters detected at concentrations exceeding their respective threshold and no illicit discharge was detected. Although the test results from the initial sampling event

could not be duplicated, the suspected source of the illicit discharge is most likely associated with the vehicle washing activities performed by the surrounding residents.

Next Steps:

Repairs should be performed to the fence to restrict public access to the structure. Additionally, periodic inspections of surface drains along Old Riverside Road should be performed to confirm or deny the source of the illicit discharges.



HTEH00102– Outfall view facing east



HTEH00102– Right side of headwall



HTEH00102– Damaged fence and debris above headwall



HTEH00102– Downstream drainage channel of outfall



HTEH00102– Surface drain at edge of park on Old Riverside Road



HTEH00102– Surface drain at base of alley on Old Riverside Road



HTEH00102– Upgradient surface drain along Old Riverside Road



HTEH00102– Surface drain in alley, upgradient of Old Riverside Road

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00103

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
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Observations:

CEM observed structure HTEH00103 to be located adjacent to I-895 northbound, south of W. Patapsco Avenue. Water was observed to have accumulated within the 120-inch by 92-inch concrete box culvert, but it appeared to be tidally influenced by the Patapsco River. The inlet structure appears to be in good condition with accumulation of debris and sediment in the upstream channel. Damage to the fence at the top of the slope was observed.

Next Steps:

Maintenance should be performed to remove excess sediment and debris from the channel to improve flow. The fence should be repaired or replaced to restrict public access to the structure.



HTEH00103– Inlet view facing northwest



HTEH00103– upstream of inlet



HTEH00103– Top view of inlet



HTEH00103– Looking upstream at inlet

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00104

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00104 was visited on Wednesday May 13, 2020.

Observations:

According to the mapped location of structure HTEH00104, the outfall was located adjacent to I-895 southbound, southwest of West Patapsco Avenue and east of the Patapsco River. The physical location of the structure was visible, but the actual structure was inaccessible due to a chain-link fence along the slope.

Next Steps:

Verify with MDTA that the mapped location is accurate and determine if access can be granted to complete the inspection of this structure.



HTEH00104 – Outfall view facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Bridge Outfall Site HTEH00106

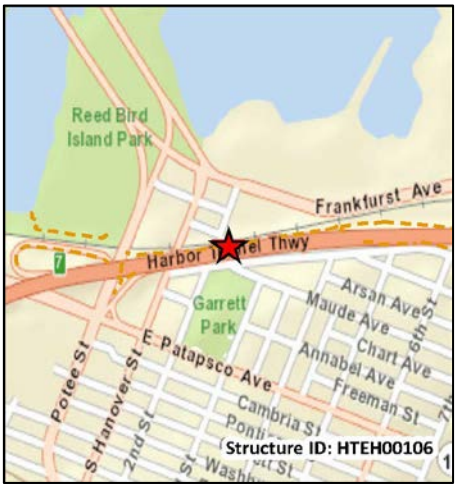
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00106 to be located in a drainage ditch along existing B&O Railroad tracks, north of I-895 southbound and east of South Hanover Street. No flow was observed within the 24-inch reinforced concrete pipe (RCP). The outfall structure appears to be in fair condition but is partially submerged and inundated by excessive vegetation.

Next Steps:

The drainage ditch should be inspected and repaired as necessary to restore the flow path to the original design conditions. Maintenance should be repaired to remove excessive sediment that has accumulated within the mouth of the structure and remove excessive vegetation.



HTEH00106– Outfall view facing south



HTEH00106– Overview of drainage area



HTEH00106– Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00107

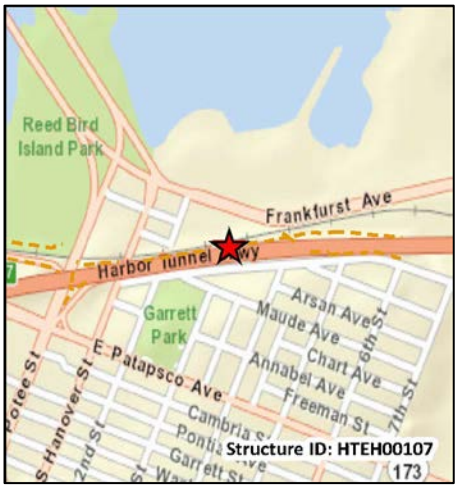
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
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Observations:

CEM observed structure HTEH00107 to be located in a drainage ditch along existing B&O Railroad tracks, north of I-895 southbound and east of South Hanover Street. No flow was observed within the 18-inch reinforced concrete pipe (RCP). The structure appears to be partially buried by sediment and excessive vegetation is restricting flow in the drainage channel.

Next Steps:

Maintenance should be performed to remove excess sediment and vegetation from the mouth of the outfall structure.



HTEH00107– Outfall view facing east



HTEH00107– Vegetation on headwall and embankment



HTEH00107– Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00113

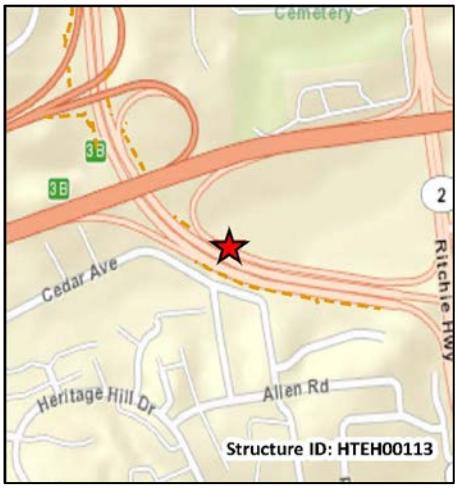
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
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General Project Information:

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Observations:

CEM observed structure HTEH00113 to be located adjacent to the I-695 eastbound on-ramp from Ritchie Highway (MD-2). Very low flow was observed within the left 200-inch by 100-inch concrete box culvert. The outfall structure appears to be in good condition with additional cobbles and boulders added to bolster the apron of the outfall. Areas of significant debris and sediment accumulation were observed in the downstream channel that may be altering flow and creating minor downstream stability issues. A representative sample of the flow was collected and the field screening data is summarized below.

Location:		**HTEH00113**
Date Sampled:		**5/12/20**
Time Sampled:		**9:57**
Parameter	Criteria	Measured Value
Temp	n/a	58.8
pH	6.5 - 8.5	6.7
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

Maintenance should be performed to remove the debris and sediment that has accumulated in the channel. Stability issues in the downstream channel should continue to be monitored and repaired as needed. According to the field screening, there were no illicit discharges detected.



HTEH00113– Outfall view facing south



HTEH00113– Additional drain pipe in right wing wall of culvert



HTEH00113– Downstream of culverts



HTEH00113– Vegetation at mouth of left culvert

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00119

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00119 to be located at the base of the slope immediately north of I-895 southbound, just west of the toll plaza, and southwest of the fenced car lot along Childs Street. Stagnant water was present within the 56-inch reinforced concrete pipe (RCP) outfall and the associated drainage channel, but no active flow was present. The outfall appears to be in good condition with some minor ponding at the mouth of the inlet and vegetation encroaching on the mouth of the outfall pipe.

Next Steps:

None at this time.



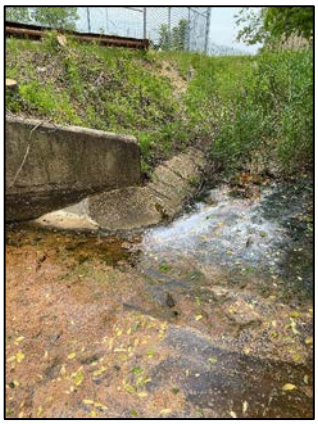
HTEH00119– Channel leading to inlet from the south



HTEH00119– Inlet facing north



HTEH00119– West drainage channel



HTEH00119– East drainage channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00124

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00124 was visited on Tuesday May 19, 2020.

Observations:

According to the mapped location of structure HTEH00124, the outfall was located along the fence line of a stormwater management pond within the car storage lot on Childs Street. The physical location of the structure was not accessible due to the security fence. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.



HTEH00124– No Trespassing sign on security fence

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00128

MDTA Contract No. 3009

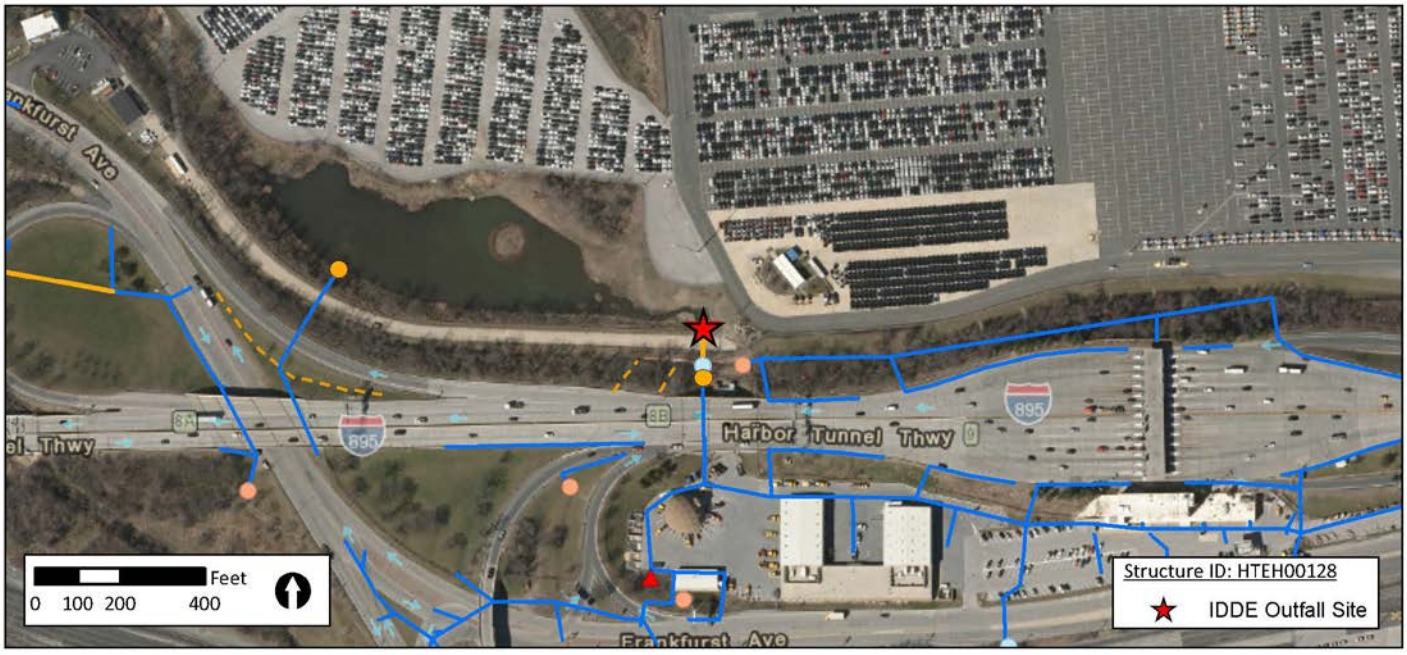
Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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Observations:

CEM observed structure HTEH00128 to be located immediately north of I-895 southbound, just beyond the toll plaza and adjacent to the fenced car storage lot along Childs Street. Moisture was present within the 56-inch reinforced concrete pipe (RCP) inlet and the associated drainage channel, but no active flow was present. The outfall appears to be in good condition with some minor ponding at the mouth of the inlet.

Next Steps:

None at this time.



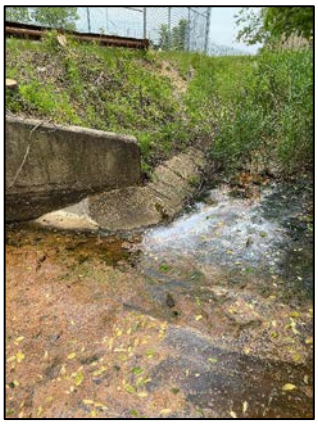
HTEH00128– Channel leading to inlet from the south



HTEH00128– Inlet facing north



HTEH00128– West drainage channel



HTEH00128– East drainage channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00141

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 13, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure HTEH00141, the outfall was located along the northern edge of I-895 and east of the existing CSX Transportation railroad tracks. The physical location of the structure appeared to be behind a chain-link fence on CSX property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.



HTEH00141– Outfall view facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00173

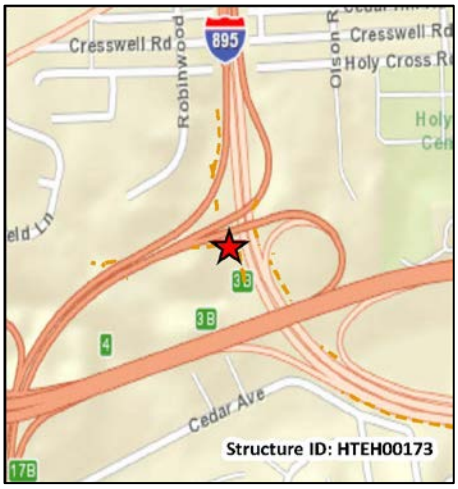
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
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General Project Information:

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Observations:

CEM observed structure HTEH00173 to be located west of the I-895 southbound spur and south of the ramp from I-895A/I-97 to I-695. Very low flow was observed to be present within the 60-inch reinforced concrete pipe (RCP). The outfall structure appears to be in good condition. Water observed in the associated plunge pool was cloudy and turbid. A representative sample of the flow was collected and the field screening data is summarized below.

Location:		**HTEH00173**
Date Sampled:		**5/12/20**
Time Sampled:		**10:27**
Parameter	Criteria	Measured Value
Temp	n/a	59.2
pH	6.5 - 8.5	7.6
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0.2
Detergents	<0.50 mg/L	0
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

None at this time. No illicit discharges were detected in the sample collected in the field.



HTEH00173– Outfall view facing northeast



HTEH00173– Downstream channel



HTEH00173– Plunge pool at mouth of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00221

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure HTEH00221, the outfall was located along the southern edge of Herring Run, near the on-ramp from Moravia Road to westbound US-40. The physical location of the structure was found, but the structure was almost completely buried and only the top of the headwall was visible. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Maintenance should be performed to excavate around the structure so that it can be fully inspected and repaired as needed. Additional work may be required in order to restore the original drainage channel, once the structure has been restored.



HTEH00221– Representative view of area and top of headwall



HTEH00221– Top of headwall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00223N

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00223N to be located in a drainage ditch along the eastern edge of I-895 northbound, south of Moravia Road and north of Herring Run. No flow was observed within the 28-inch reinforced concrete pipe (RCP). The outfall appears to be in good condition, but vegetation along the banks is beginning to encroach on the drainage channel.

Next Steps:

Maintenance should be performed to remove excess vegetation from the mouth of the pipe.



HTEH00223N– Outfall view facing north



HTEH00223N– Representative view of embankment and slope



HTEH00223N– View of downstream channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00223S

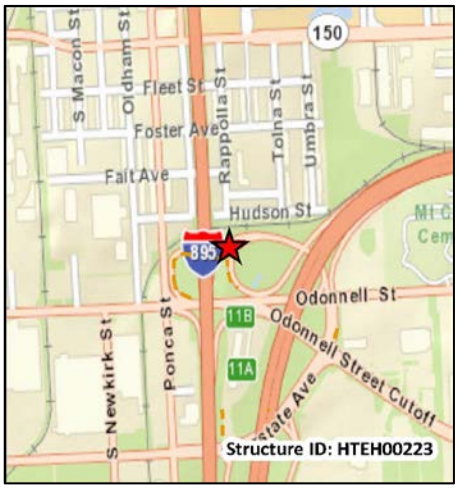
MDTA Contract No. 3009

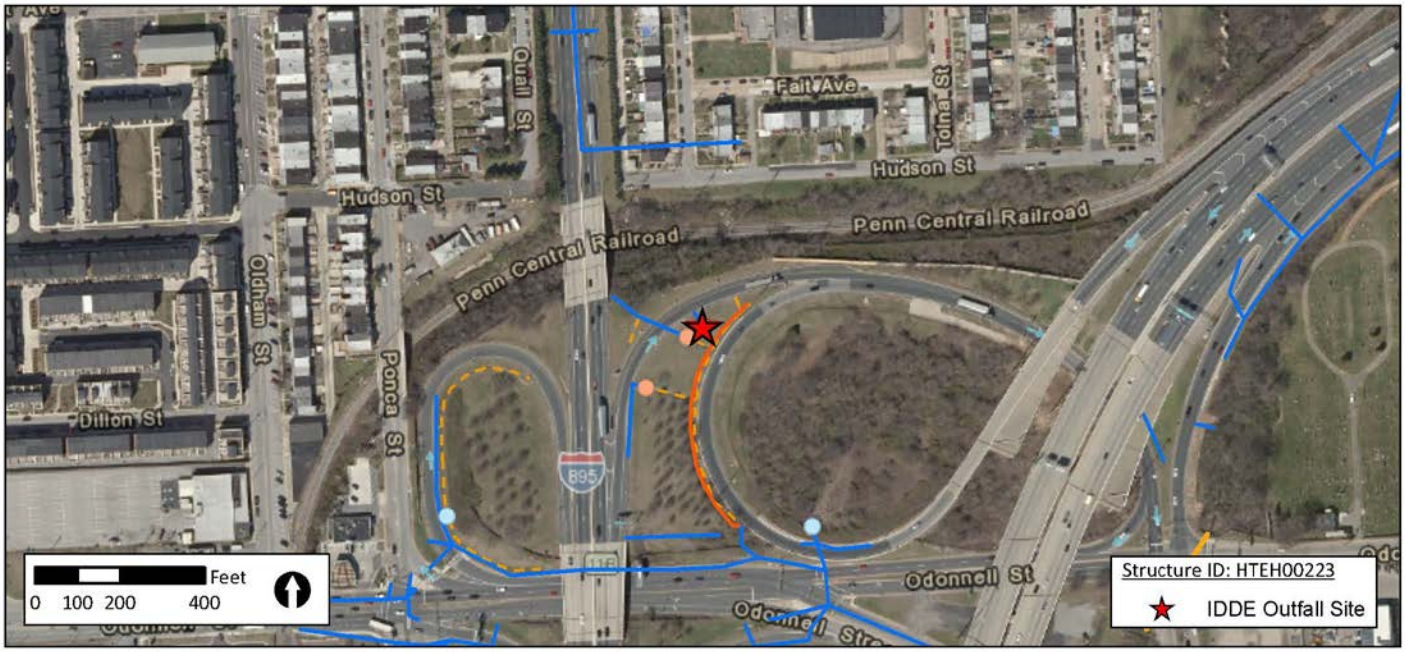
Field Crew Information:

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General Project Information:

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discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00223S was visited on Wednesday May 20, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00223S to be located in a grassy median north of O'Donnell Street and west of the off-ramp from I-895 northbound to O'Donnell Street. No flow was observed within the 24-inch by 20-inch reinforced concrete pipe (RCP). The outfall appears to be in good condition. The riprap and downstream channel appear to have been recently upgraded and/or retrofitted.

Next Steps:

None at this time.



HTEH00223S– Outfall view facing northwest



HTEH00223S– Recently retrofitted swale that receives outfall drainage



HTEH00223S– Top of outfall looking downstream



HTEH00223S– Outfall channel looking upstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00229

MDTA Contract No. 3009

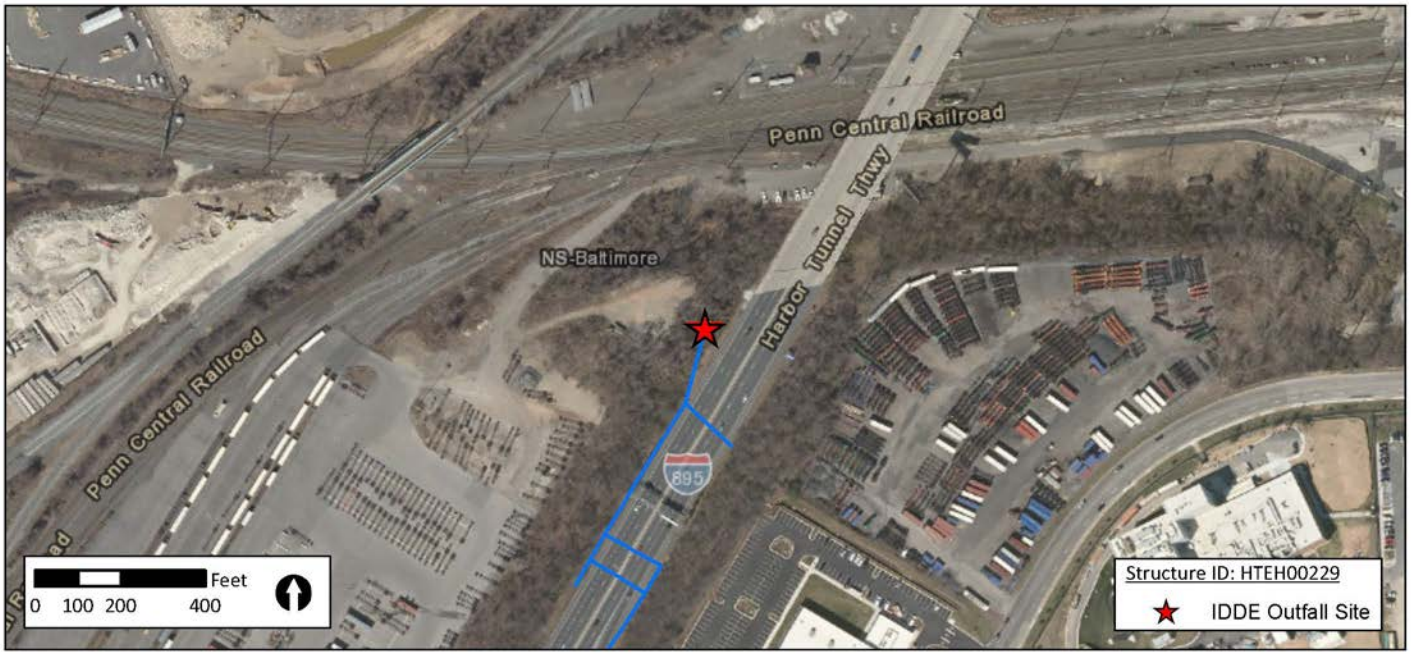
Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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Observations:

CEM observed structure HTEH00229 to be located west of I-895southbound and south of the existing Penn Central Railroad tracks. No flow was observed to be present within the 24-inch reinforced concrete pipe (RCP). However, the structure was observed to be in poor condition with the end section disconnected from the outfall pipe and deposited in the middle of the channel. Additionally, areas of severe erosion along the embankment and channels, excessive vegetation growth disrupting the drainage channel, and accumulation of excessive debris and sedimentation accumulation were observed.

Next Steps:

Repairs are required to reconstruct the outfall structure. Significant erosion and stability issues were observed and they will continue to worsen until addressed. Prior to performing repairs, maintenance should be performed to remove excessive sediment, vegetation, and debris that has accumulated in the channel and around the structure.



HTEH00229 – Remainder of outfall view facing southeast



HTEH00229 – End section broken off of outfall



HTEH00229 – Downstream channel



HTEH00229 – damaged outfall pipe

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00233

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00233 was visited on Wednesday May 20, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00233 to be located along the western edge of I-895 southbound, south of Moravia Road, and discharges directly into Herring Run. No flow was observed within the 42-inch corrugated metal pipe (CMP). The outfall pipe is in fair condition with small areas of metal corrosion and minor deterioration of the bituminous coating on the interior of the pipe. Areas of minor erosion were observed along the banks beneath the pipe.

Next Steps:

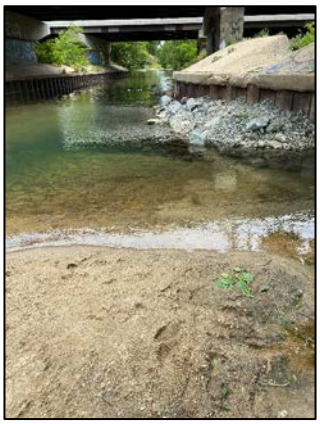
Continue to monitor the condition of the pipe and the stability of the bank beneath the pipe.



HTEH00233 – Outfall view facing south



HTEH00233 – Representative view of bank



HTEH00233 – Downstream view of Herring Run



HTEH00233 – Upstream view of Herring Run

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00235

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH00235 was visited on Wednesday May 27, 2020.

Observations:

According to the mapped location of structure HTEH00235, the outfall was located along the western edge of Gorsuch Creek, east of the I-95 on-ramp from Keith Avenue. The physical location of the structure was visible and appeared to be partially submerged by water in Gorsuch Creek. However, the structure was not accessible due to excessive vegetation and the placement of the structure on the bank. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Maintenance should be performed to remove the excessive vegetation from around the structure to improve access so that it can be fully inspected and repaired as needed.



HTEH00235– Location of structure along edge of Gorsuch Creek

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00245

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure HTEH0245 was visited on Tuesday May 12, 2020.

Observations:

According to the mapped location of structure HTEH00245, the outfall was located along the southern edge of the fenced portion of the MDTA Fort McHenry Tunnel maintenance shop yard just north of Leland Avenue. The physical location of the structure was inaccessible due to the excessive *Phragmites australis* growing along the edges of the existing stormwater management pond. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HTEH00245 – Supposed outfall location, facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00246

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00246 to be located along the southern edge of the fenced portion of the MDTA Fort McHenry Tunnel maintenance shop yard just north of Leland Avenue. No active flow was observed within the 16 to 18-inch reinforced concrete pipe (RCP), but there was a small area of pooled water at the mouth of the outfall. The structure appears to be on the edge of a stormwater management pond, but the sediment in the area has accumulated around the structure and restricts flow. Excessive *Phragmites australis* growth in the area also appears to be impacting the functionality of the structure and the pond.

Next Steps:

Maintenance should be performed to remove the excessive sediment accumulation from the mouth of the structure and re-establish a proper drainage channel. The pond should also be inspected to ensure that it is functioning as originally designed.



HTEH00246 – Outfall view facing west



HTEH00246 – Representative view of vegetation



HTEH00246 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00247

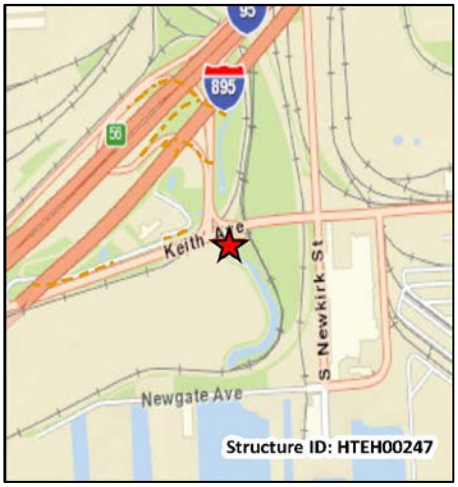
MDTA Contract No. 3009

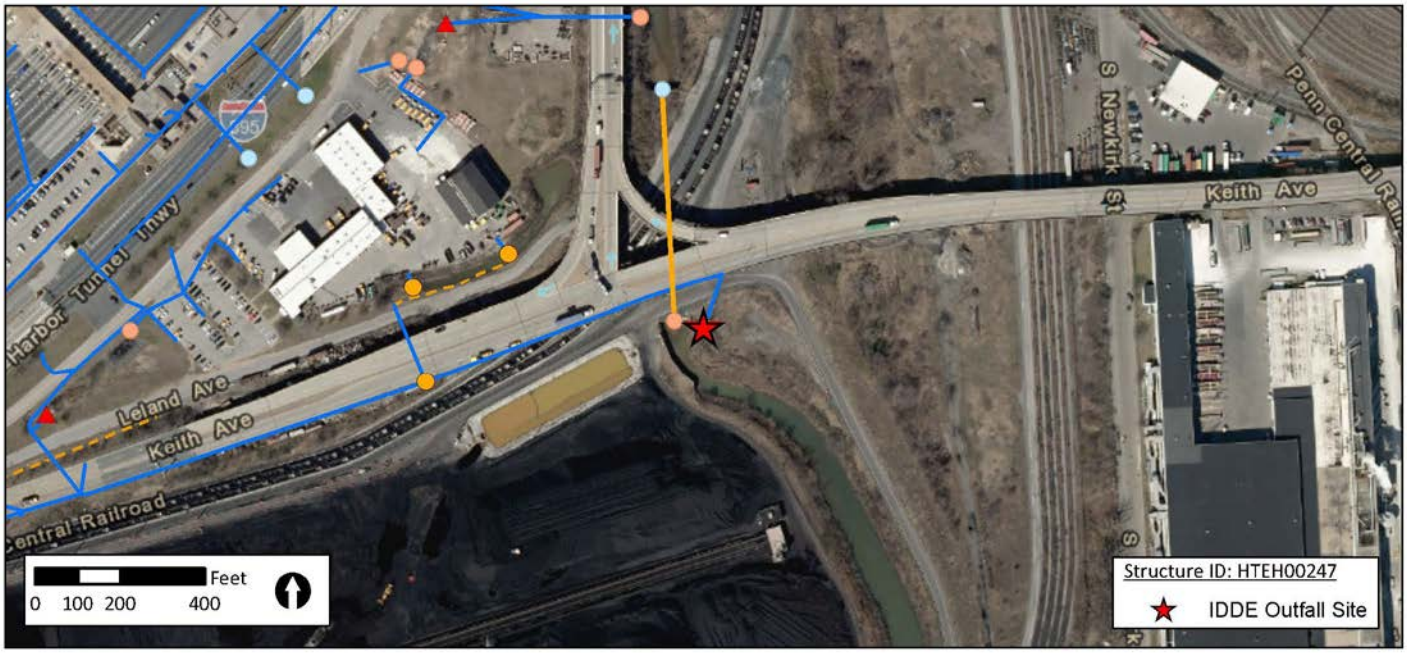
Field Crew Information:

- Inspection date: Thursday May 14, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure HTEH00247, the outfall was located along the southern edge of Keith Avenue, west of the Penn Central Railroad tracks and east of Gorsuch Creek. However, the structure was not visible or accessible due to it being located behind security fencing that contains the entire property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete the inspection of this structure.

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00250

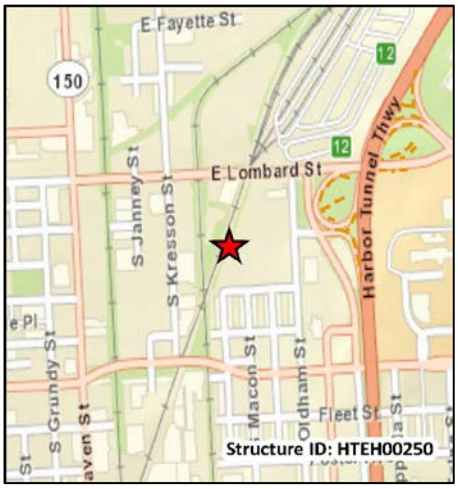
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure HTEH00250, the outfall was located west of Oldham Street and south of East Lombard Street. The surrounding area has undergone significant re-development in recent years and a new residential development has been constructed in the area of the supposed structure location. The physical location of the structure was unable to be found due to the redevelopment activities. CEM also looked on the opposite side of the fence that separates the residential property from the adjacent Norfolk Southern Railroad tracks, but no structures were observed. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



HTEH00250 – Supposed outfall location, facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00283

MDTA Contract No. 3009

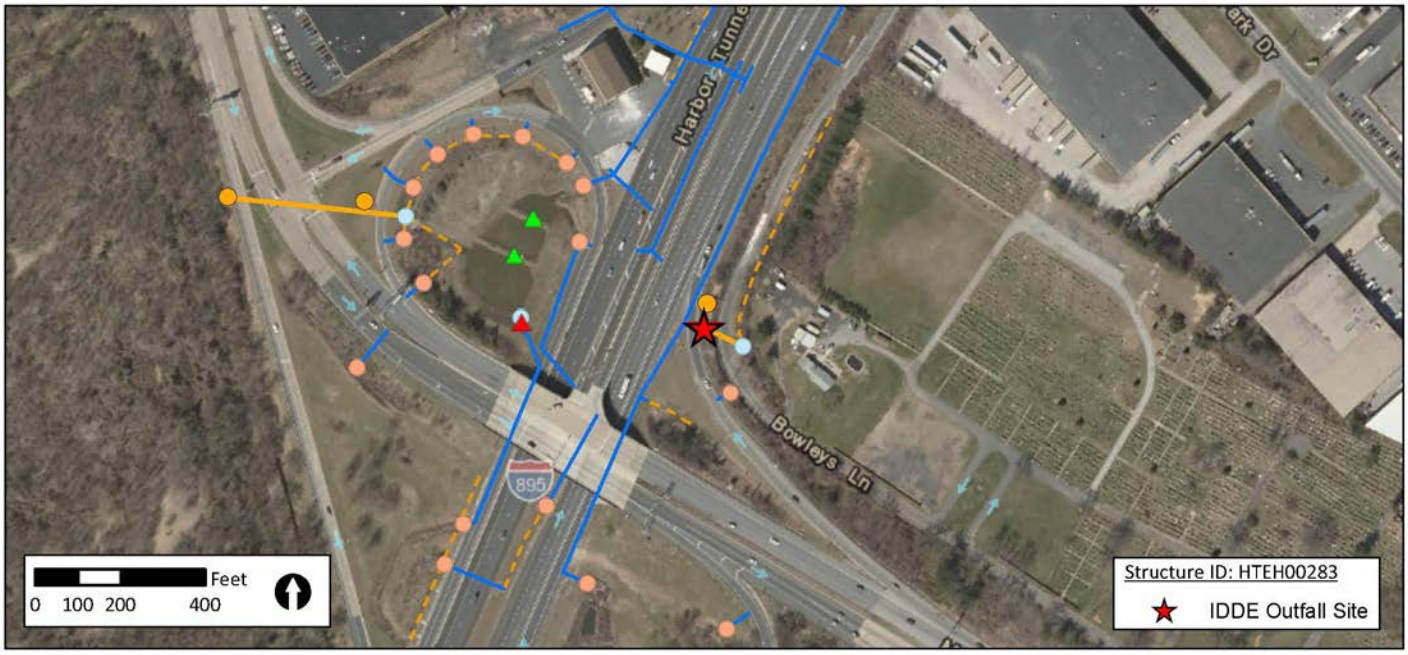
Field Crew Information:

- Inspection date: Tuesday May 19, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure HTEH00283 was visited on Tuesday May 19, 2020 and was observed to have no flow present.

Observations:

CEM observed structure HTEH00283 as being located along the northeastern edge of the Moravia Road on-ramp to I-895 northbound. No flow was observed within the 24-inch reinforced concrete pipe (RCP). The inlet appears to be in fair condition but excessive vegetation and debris partially blocks flow in the channel.

Next Steps:

Maintenance should be performed to remove the debris and vegetation and restore the original drainage channel.



HTEH00283 – Inlet view facing west



HTEH00283 – Upstream channel along I-895



HTEH00283 – Top of inlet looking upstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00294

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 20, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure HTEH00294 to be located west of the off-ramp from southbound Moravia Road onto I-895 southbound, across from the existing traffic signal on Moravia Road. No flow was observed within the 36-inch reinforced concrete pipe (RCP). The outfall appears to be in fair condition with sediment and debris accumulating in the pipe and the drainage channel.

Next Steps:

Maintenance should be performed to remove the sediment and debris from the pipe and channel in order to restore the flow pattern to the original design conditions.



HTEH00294 – Outfall view facing north



HTEH00294 – Top of outfall looking at point of discharge



HTEH00294 – Debris in channel



HTEH00294 – Downstream channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harbor Tunnel Outfall Site HTEH00310

MDTA Contract No. 3009

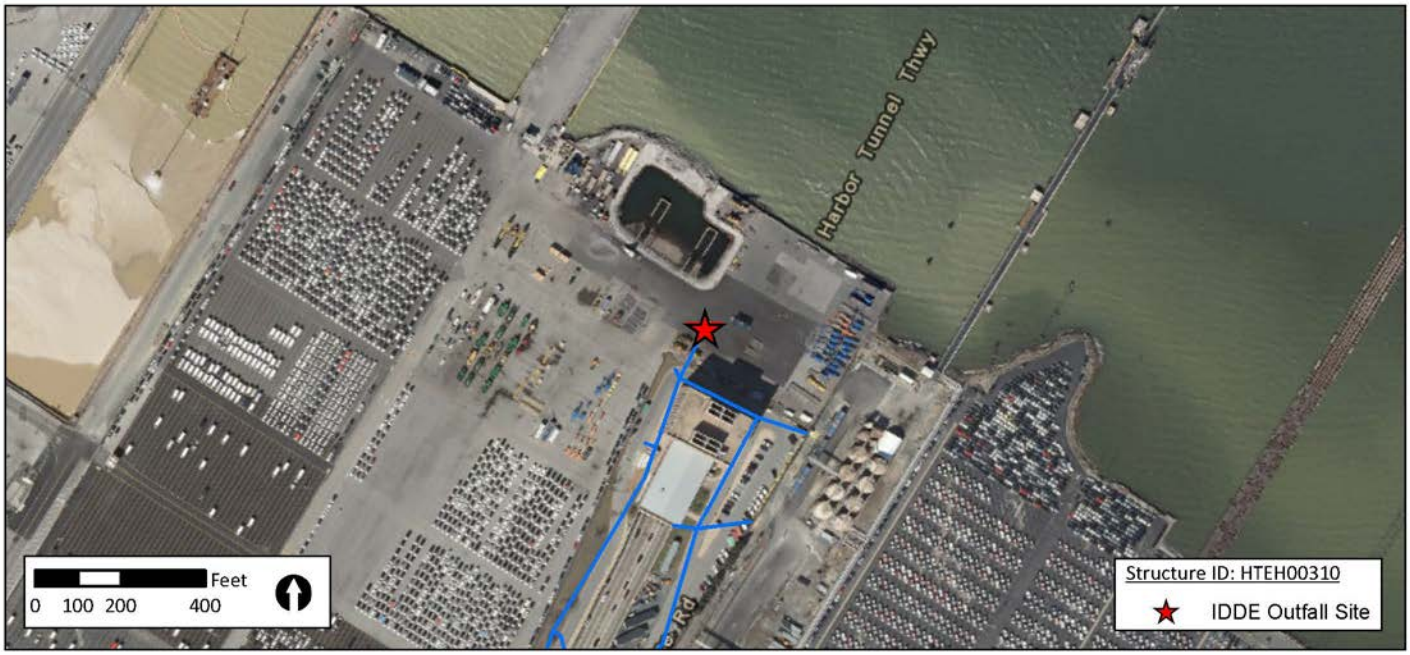
Field Crew Information:

- Inspection date: Thursday June 18, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure HTEH00310, the outfall was located along the northeastern edge of the Port Authority property, southeast of Childs Street. The physical location of the structure was inaccessible due to the structure being located behind chain-link fences on Port Authority property. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and determine if access can be granted to complete inspection of this structure.



HTEH00310– Outfall location, facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Inter County Connector Outfall Site ICEH00223

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure ICEH00223, the outfall was located in the retention pond in the southeastern cloverleaf of the MD-200 and Columbia Pike interchange. The structure was unable to be located. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



ICEH00223– Supposed outfall location, facing northeast

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Inter County Connector Outfall Site ICEH00228

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

According to the mapped location of structure ICEH00228, the outfall was located in the retention pond in the southeastern cloverleaf of the MD-200 and Columbia Pike interchange. The structure was unable to be located. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



ICEH00228– Supposed outfall location, facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KB00066.010

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KB00066.010 was visited on Wednesday May 27, 2020.

Observations:

According to the mapped location of structure KB00066.010, the outfall was located north of the terminus of North Point Road and east of the North Point Blvd on-ramp leading to I-695 eastbound. The physical location of the structure was unable to be identified and may have been obscured by excessive vegetation along the slope. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



KB00066.010 – Supposed outfall location facing northwest

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00011

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday April 23, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure KBEH00011 to be located along the northern edge of I-695 westbound, west of the on-ramp to I-695 westbound from Quarantine Road, and east of the B&O Railroad/CSX Transportation Railroad tracks. No flow was observed within the 48-inch reinforced concrete pipe (RCP). The outfall appears to be in good condition.

Next Steps:

None at this time.



KBEH00011 – Outfall view facing east



KBEH00011 –Riprap channel to the left of the outfall mouth



KBEH00011 – Top of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00012

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday May 23, 2020
- Crew Contact Information:

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General Project Information:

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discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00012 was visited on Thursday May 23, 2020 and was observed to have very low flow present.

Observations:

CEM observed structure KBEH00012 to be located in a drainage ditch along the southern edge of I-695 eastbound, north of Hawkins Point Road and west of the Exit 1 off-ramp to Quarantine Road. Flow was observed within the 48-inch reinforced concrete pipe (RCP). The outfall appears to be in good condition with minor ponding of water at the mouth of the outfall. A representative sample of the flow was collected and the field screening data is summarized below.

Location:		**KBEH00012**
Date Sampled:		**4/23/20**
Time Sampled:		**12:28**
Parameter	Criteria	Measured Value
Temp	n/a	62.9
pH	6.5 - 8.5	7.8
Phenol	<0.17 mg/L	0
Chlorine	<0.40 mg/L	0
Detergents	<0.50 mg/L	0.2
Copper	<0.21 mg/L	0
Note: Values highlighted in Yellow exceed their respective IDDE sampling criteria.		

Next Steps:

No illicit discharges were detected in the sample collected in the field. No additional actions are required at this time.



KBEH00012 – Outfall view facing north



KBEH00012 –Right bank of outfall mouth



KBEH00012 – Downstream channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00015

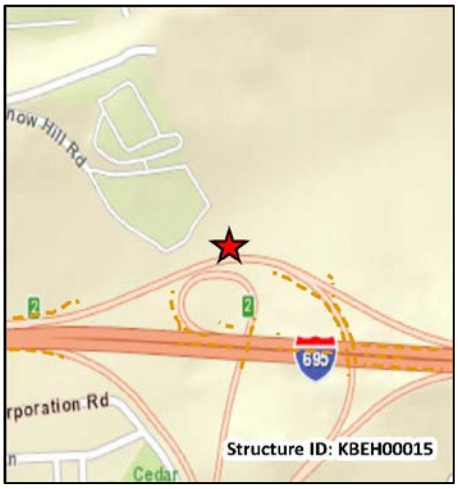
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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Observations:

CEM observed structure KBEH00015 to be located along the northern edge of I-695 westbound, north of the interchange with MD-10 southbound. Stagnant water was observed within the 48-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall appears to be in good condition with minor accumulation of sediment and woody debris in the mouth of the outfall and scattered along the drainage channel. Minor areas of erosion observed above concrete channel walls.

Next Steps:

Maintenance should be performed to remove accumulated sediment and debris from the mouth of the outfall and the drainage channel. Areas of erosion should continue to be monitored and repaired as needed.



KBEH00015 –Top of outfall



KBEH00015 – Top of outfall



KBEH00015 – Outfall view facing south



KBEH00015 – Downstream channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00022

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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Observations:

CEM observed structure KBEH00022 to be located along the northern edge of the Exit 3 off-ramp from I-695 westbound to MD-2, north of the interchange with MD-10. No flow was observed within the 40-inch reinforced concrete pipe (RCP). The outfall structure appears to be in good condition, but there were several areas of significant erosion along the downstream channel (beginning at the end of the riprap channel leading away from the outfall).

Next Steps:

Maintenance should be performed to re-stabilize the downstream drainage channel.



KBEH00022 – Outfall view facing south



KBEH00022 – Vegetation growing within riprap channel at mouth of outfall



KBEH00022 – Top of outfall looking downstream



KBEH00022 –Erosion at end of riprap channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00023

MDTA Contract No. 3009

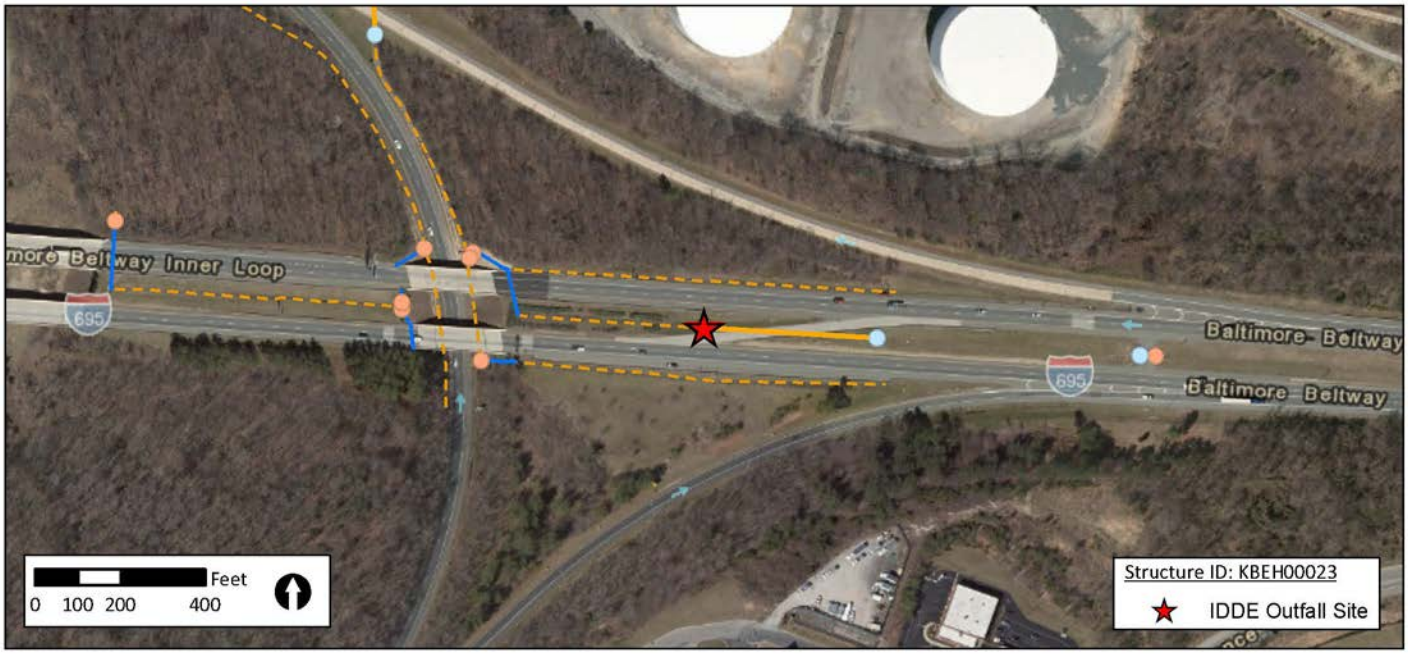
Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure KBEH00023 to be located in the median of I-695, east of the I-695 and MD-10 interchange. No flow was observed within the 18-inch corrugated metal pipe (CMP). The outfall appears to be functioning properly but is in poor condition. Several areas of corrosion/deterioration were observed and the end section of pipe has been damaged/bent (potentially by landscaping activities).

Next Steps:

Repairs should be performed to replace the end section of pipe and prevent additional corrosion.



KBEH00023 –Maintained vegetation surrounding outfall.



KBEH00023 – Outfall view facing west



KBEH00023 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00027

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday April 23, 2020
- Crew Contact Information:

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General Project Information:

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Observations:

CEM observed structure KBEH00027 to be located in a fenced area, beneath I-695 eastbound and adjacent to Pennington Avenue. No flow was observed within the 12-inch reinforced concrete pipe (RCP). Significant debris and sediment have accumulated around the mouth of the outfall and the surrounding drainage area.

Next Steps:

Maintenance should be performed to remove the sediment and debris accumulated around the structure.



KBEH00027 – Outfall view facing northeast



KBEH00027 –Debris clogging outfall.



KBEH00027 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00038

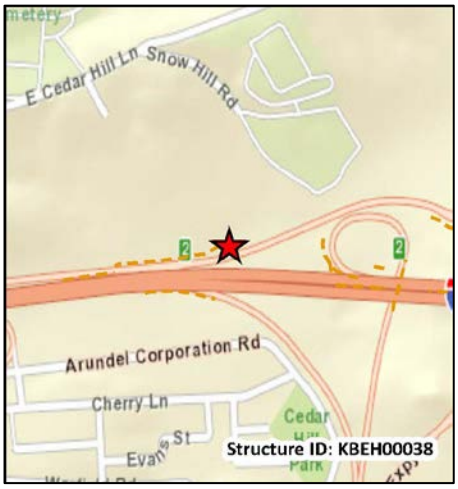
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00038 was visited on Tuesday May 12, 2020 and was observed to convey stream flow.

Observations:

CEM observed structure KBEH00038 to be located along the northern edge of the Exit 3 off-ramp from I-695 westbound to MD-2, west of the interchange with MD-10. Water was observed within the triple 168-inch by 84-inch concrete box culverts, but appeared to be associated with the standard stream base flow. The outfall structure appears to be in good condition, but the two right channels have been filled in with sediment and rocks and no longer convey stream flow from Cabin Branch.

Next Steps:

Maintenance needs to be performed to remove sediment and debris from the two right channels in order to restore the flow channel to the originally designed conditions.



KBEH00038 – Outfall view facing south



KBEH00038 – Primary flowing culvert



KBEH00038 –Debris and vegetation blocking culvert



KBEH00038 – Downstream channel of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00042

MDTA Contract No. 3009

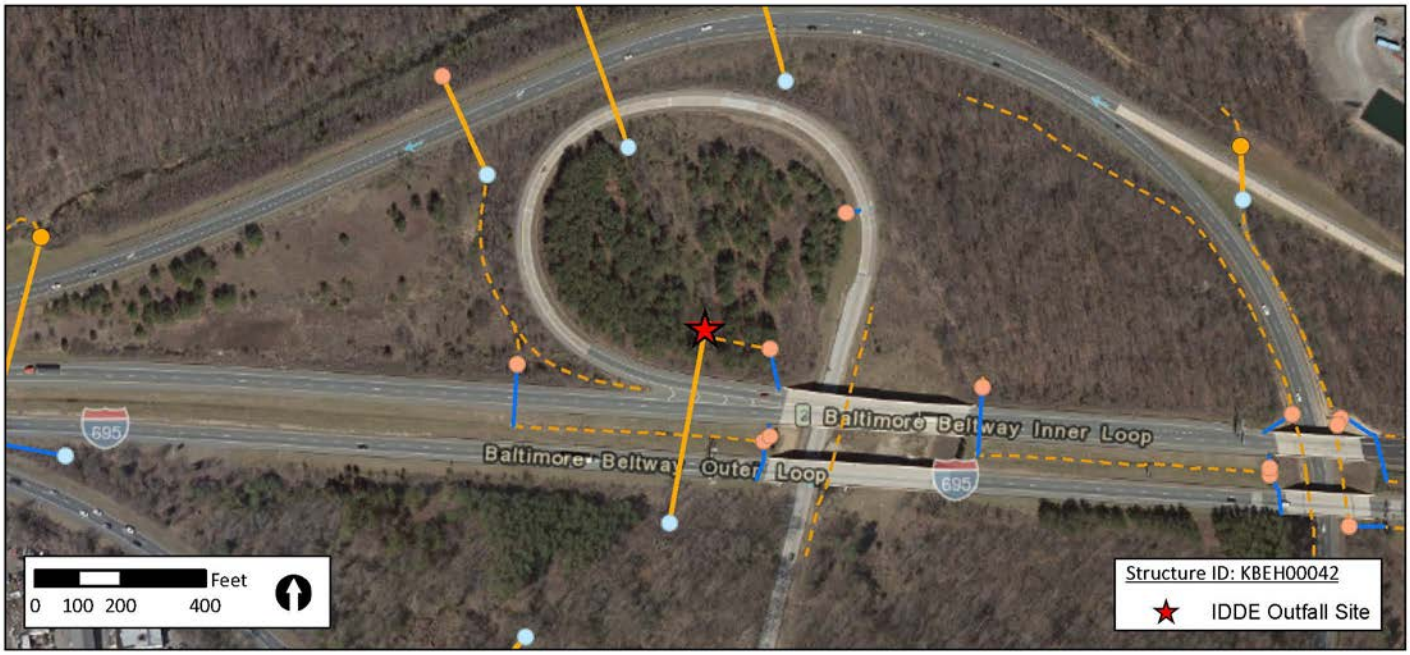
Field Crew Information:

- Inspection date: Tuesday May 12, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00042 was visited on Tuesday May 12, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00042 to be located within the middle of the cloverleaf associated with the I-695 westbound off-ramp leading to MD-10. Stagnant water was observed in the mouth of the 36-inch reinforced concrete pipe (RCP), but no active flow was present. The structure is in good condition but there is significant sediment accumulation at the mouth of the structure that restricts water from properly flowing.

Next Steps:

Maintenance needs to be performed to remove the sediment that has accumulated at the mouth of the structure and restore the original flow conditions.



KBEH00042 –Sediment accumulated at the mouth of the outfall



KBEH00042 – Outfall view facing south



KBEH00042 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00045

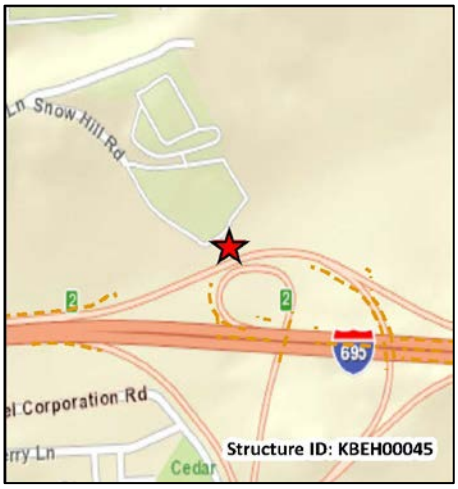
MDTA Contract No. 3009

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General Project Information:

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Observations:

CEM observed structure KBEH00045 to be located along the northern edge of the I-695 westbound off-ramp to MD-2, north of the interchange with MD-10. Stagnant water was observed within the 48-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall appears to be in good condition with some minor areas of deterioration observed along the interior pipe seams and joints. Areas of significant erosion was observed along the downstream channel due to flooding that has occurred within the area.

Next Steps:

Maintenance should be performed to remove sediment and woody debris from the drainage channel and restore flow to original conditions. Continue to monitor the condition of the pipe seams and joints and repair as needed.



KBEH00045 – Outfall view facing south



KBEH00045– Log jam in upstream channel



KBEH00045 – Top of outfall looking downstream



KBEH00045 –Top of outfall looking upstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00046

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday April 23, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00046 was visited on Thursday April 23, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00046 to be located along the northern edge of I-695 westbound, prior to the Exit 1 off-ramp to Quarantine Road. Stagnant water was observed to be backed up into the 36-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall appears to be in poor condition due to being almost entirely submerged and obscured by excessive vegetation.

Next Steps:

Maintenance should be performed to remove excessive vegetation and sediment accumulation from the mouth of the outfall in order to restore the flow path to its original design conditions.



KBEH00046 – Outfall view facing south



KBEH00046 – Vegetation at mouth of outfall



KBEH00046 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00048

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday April 23, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00048 was visited on Thursday April 23, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00048 to be located along the southern edge of I-695 eastbound, northwest of the on-ramp from Fort Armistead Road. A small amount of stagnant water was observed backed up into the 30-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall appears to be in good condition, but sediment has accumulated at the mouth of the structure and vegetation is encroaching on the drainage channel.

Next Steps:

Maintenance should be performed to remove accumulated sediment and excessive vegetation.



KBEH00048 – Sediment accumulated at mouth of structure



KBEH00048 – Outfall view facing north



KBEH00048 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00052

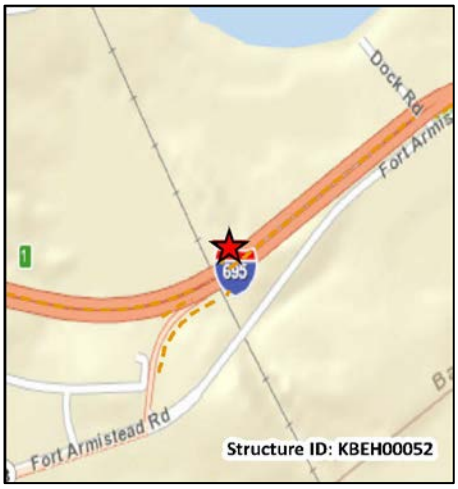
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday April 23, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00052 was visited on Thursday April 23, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00052 to be located just north of I-695 westbound, east of the B&O Railroad tracks. Stagnant water was observed within the 36-inch corrugated metal pipe (CMP), but no active flow was noted. The outfall structure is in poor condition with significant metal corrosion of the pipe, excessive vegetation along the banks, and sediment accumulation in the channel that is restricting flow. The outfall pipe appears to have originally been a circular shape, but has since been damaged.

Next Steps:

Maintenance should be performed to remove the sediment that has accumulated in front of the pipe, as well as to remove excessive vegetation as needed. Repairs should also be made to restore the metal pipe to its original shape/size to ensure that the flow is not restricted.



KBEH00052 – Outfall view facing north

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00053

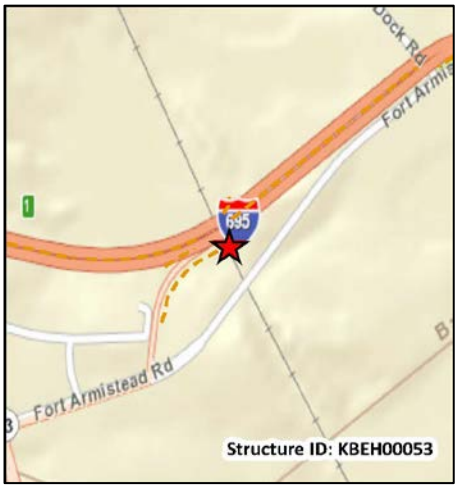
MDTA Contract No. 3009

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Inlet structure KBEH00053 was visited on Thursday April 23, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00053 to be located in a drainage ditch between I-695 eastbound and Fort Armistead Road, adjacent to the active B&O Railroad tracks. Stagnant water was observed to be ponded at the mouth of the 24-inch by 12-inch concrete channel. The inlet structure was barely visible due to the excessive sediment accumulation around the structure. The associated embankment and drainage channel appear to have been impacted by surface drainage in the area and have funneled all water and sediment into the pool in front of the structure. Excessive vegetation in the area also has obscured the location of the structure.

Next Steps:

Significant repairs and maintenance are required to restore the intended functionality of the structure. The accumulated sediment and excessive vegetation should be removed from around the mouth of the inlet, and the drainage channel needs to be re-configured in order to restore it to its original design conditions.



KBEH00053 – Inlet view facing east



KBEH00053 – Ponded Water at mouth of inlet



KBEH00053 – Top of inlet looking upstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00056

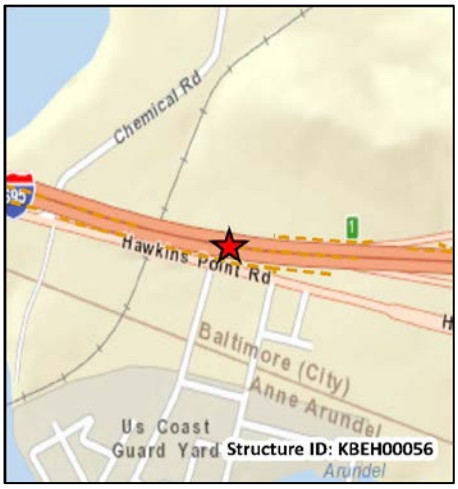
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00056 was visited on Wednesday May 27, 2020.

Observations:

The mapped location of structure KBEH00056 indicated that the outfall was situated within the median of I-695, east of the B&O Railroad tracks and west of Quarantine Road. However, this area appeared to only consist of a drainage swale with thick vegetation, and no structure was discovered by field staff.

Next Steps:

Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



KBEH00056 – Supposed outfall location, facing west

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00068

MDTA Contract No. 3009

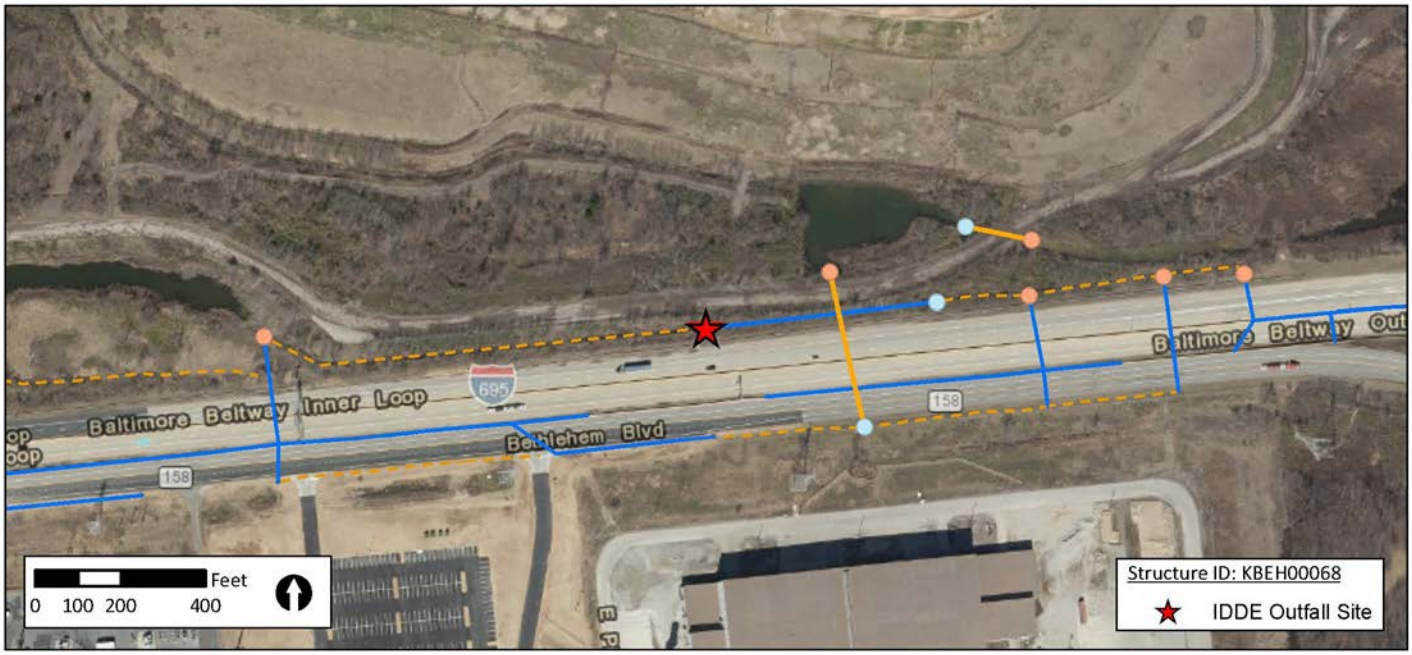
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General Project Information:

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Observations:

CEM observed structure KBEH00068 to be located along the northern edge of I-695 westbound, south of Riverside Drive, and west of the exit ramp leading to Peninsula Expressway. Stagnant water was observed within the 24-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall structure appears to be in fair condition with a moderate accumulation of sediment in the mouth of the structure, which appears to be causing the stagnant water to accumulate within the pipe.

Next Steps:

Maintenance should be performed to remove the sediment accumulated at the mouth of the structure to restore flow to its original design conditions.



KBEH00068 – Ponded Water and sediment accumulated at the mouth of pipe



KBEH00068 – Surrounding vegetation



KBEH00068 – Outfall view facing east



KBEH00068 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00082

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
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General Project Information:

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Observations:

CEM observed structure KBEH00082 to be located inside the fence line that extends along the northern edge of the MDTA Key Bridge maintenance facility. No flow was observed within the 8-inch corrugated metal pipe (CMP). The pipe is in poor condition with areas of significant metal corrosion at the end of the pipe. The pipe may have also been damaged during previous landscaping activities.

Next Steps:

Repairs to the pipe should be performed to remove the corroded section and restore the pipe to its original shape.



KBEH00082 – Outfall view facing southeast



KBEH00082 – Metal corrosion on end section of pipe



KBEH00082 – Vegetation along fence at mouth of outfall



KBEH00082 – Vegetation in downstream SWM pond

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00083

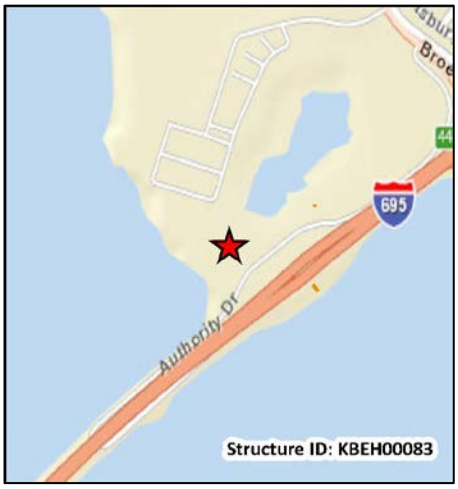
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00083 was visited on Wednesday May 27, 2020 and was observed to have no flow present.

Observations:

CEM observed structure KBEH00083 to be located outside of the fence line that extends along the northern edge of the MDTA Key Bridge maintenance facility. No flow was observed to be present within the 16-inch corrugated metal pipe (CMP). Although the structure appears to function as designed, the outfall pipe appears to be in poor condition with the metal collar partially disconnected from the end section of pipe. Additionally, excessive vegetation has begun to encroach on the drainage channel.

Next Steps:

Repairs and maintenance should be performed to re-attach the pipe collar, as well as to remove excessive vegetation from the channel as needed.



KBEH00083 – Outfall view facing southeast



KBEH00083 – Vegetation surrounding outfall



KBEH00083 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00097

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday May 27, 2020
- Crew Contact Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00097 was visited on Wednesday May 27, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00097 to be located in a drainage ditch on the southern corner of the MDTA Police Headquarters property. Stagnant water was observed to be backed up within the 32-inch reinforced concrete pipe (RCP), but there was no active flow present. It appears that the water in the channel is tidally influenced and flowing back in from Bear Creek. The outfall structure appears to be in fair condition with minor areas of sediment accumulation in the drainage channel.

Next Steps:

Maintenance should be performed to remove excess sediment from the channel and the outfall pipe.



KBEH00097 – Outfall view facing northeast



KBEH00097 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Key Bridge Outfall Site KBEH00101

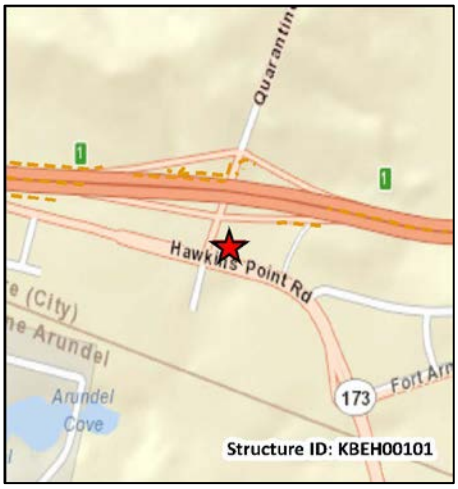
MDTA Contract No. 3009

Field Crew Information:

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KBEH00101 was visited on Thursday April 23, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure KBEH00101 to be located along the edge of a stormwater management pond, northeast of the intersection of Quarantine Road and Hawkins Point Road. Standing water was observed in the 34-inch reinforced concrete pipe (RCP), but no active flow was present. The outfall is in fair condition with a moderate amount of sediment accumulated in the mouth of the structure. The structure also appears to remain submerged much of the time due to its placement in the pond.

Next Steps:

Maintenance should be performed to remove the accumulated sediment from the mouth of the structure. The pond should also be inspected to ensure it is functioning as intended.



KBEH00101 – Outfall view facing east



KBEH00101 – Top of outfall looking downstream

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on I-95 Outfall Site KHEH00861

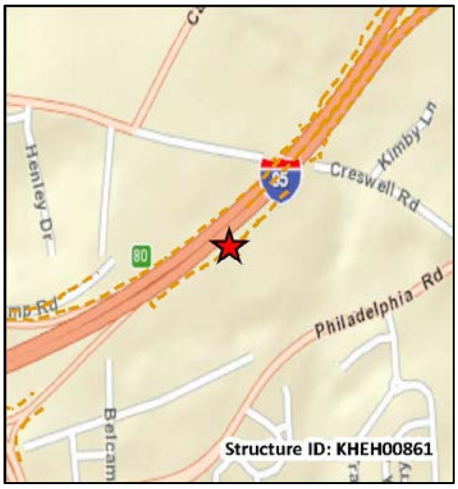
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KHEH00861 was visited on Thursday June 18, 2020.

Observations:

According to the mapped location of structure KHEH00861, the outfall was located along the southeastern edge of I-95 northbound, north of MD-543 and the MDTA maintenance facility. The physical location of the structure was not able to be identified due to excessive vegetation in the area that may have potentially obscured the structure. Therefore, the inspection of this structure was unable to be completed.

Next Steps:

Maintenance should be performed to remove excessive vegetation from the structure. Verify with MDTA that the mapped location is correct and attempt to perform a follow-up inspection.



KHEH00861– Thick vegetation obscuring the outfall location

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on I-95 Outfall Site KHEH00872

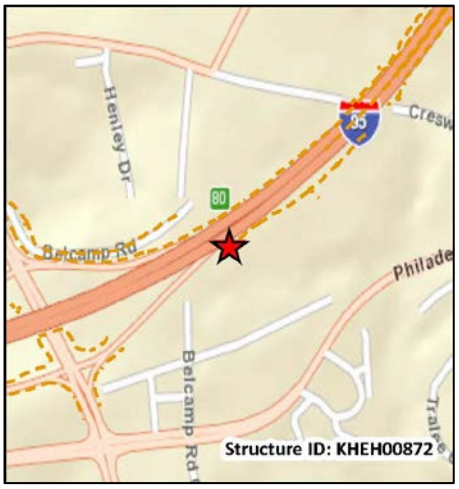
MDTA Contract No. 3009

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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure KHEH00872 was visited on Thursday June 18, 2020 and was observed to have no flow present.

Observations:

CEM observed structure KHEH00872 to be located along the southeastern edge of I-95 northbound, north of MD-543, and across from the MDTA maintenance facility. No flow was observed within the 30-inch reinforced concrete pipe (RCP). Areas of spalling were observed around the top edge of the pipe. The downstream drainage channel is heavily vegetated, but the vegetation does not appear to impact outfall performance.

Next Steps:

Repairs should be performed to prevent further concrete spalling.



KHEH00872– Outfall view facing north



KHEH00872– Downstream channel and thick *Phragmites australis*



KHEH00872– Concrete spalling on top of pipe



KHEH00872– Top view of outfall and downstream channel

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Bay Bridge Outfall Site LBEH00017

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
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General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure LBEH00017 was visited on Thursday June 18, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure LBEH00017 to be located along the edge of a stormwater management pond adjacent to the MDTA Police Headquarters on Old Ferry Slip Road prior to the eastbound span of the Bay Bridge. A small amount of stagnant water was observed within the 18-inch reinforced concrete pipe (RCP), but no active flow was present. Areas of moderate erosion were observed along the embankment that resulted in the previously installed geotextile fabric to begin to collapse into the channel.

Next Steps:

Continue to monitor the areas of erosion and repair as needed.



LBEH00017– Outfall view facing north



LBEH00017– Outfall and SWM facility, facing south



LBEH00017– Right bank of outfall



LBEH00017– Left bank of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Bay Bridge Outfall Site LBEH00019

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
- Crew Contact Information:

Kevin DiMartino, CEM
Senior Environmental Scientist
Phone: (443) 243-5036
Email: kdimartino@cemscience.com

Seth Hinder, CEM
Environmental Scientist
Phone: (410) 983-1239
Email: shinder@cemscience.com





General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure LBEH00019 was visited on Thursday June 18, 2020 and was observed to have no flow present.

Observations:

CEM observed structure LBEH00019 to be located in a drainage basin along westbound US-50, adjacent to the EZ Pass Administration building. Minimal moisture was observed within the 16-inch reinforced concrete pipe (RCP), but no flow was present. The outfall appears to be in good condition with some minor accumulation of sediment within the pipe.

Next Steps:

Maintenance should be performed to remove the sediment from the mouth of the pipe.



LBEH00019– Outfall view facing northwest



LBEH00019– Downstream channel



LBEH00019– Top view of outfall and downstream channel



LBEH00019– Representative view of area

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Bay Bridge Outfall Site LBEH00037

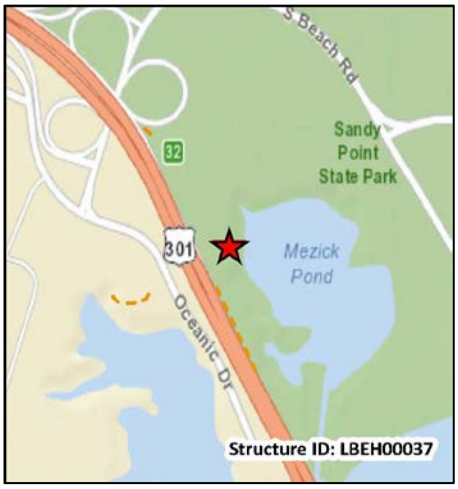
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Thursday June 18, 2020
- Crew Contact Information:

Kevin DiMartino, CEM
Senior Environmental Scientist
Phone: (443) 243-5036
Email: kdimartino@cemscience.com

Seth Hinder, CEM
Environmental Scientist
Phone: (410) 983-1239
Email: shinder@cemscience.com





General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall structure LBEH00037 was visited on Thursday June 18, 2020 and was observed to have no active flow present.

Observations:

CEM observed structure LBEH00037 to be located along the eastern edge of the MDTA Bay Bridge maintenance facility near the salt dome, in close proximity to Mezick Pond. No flow was observed within the 16-inch corrugated metal pipe (CMP). The outfall appears to be in fair condition with some areas of metal corrosion on the end section of the pipe. Sediment has begun to accumulate in the mouth of the outfall pipe.

Next Steps:

Repair the pipe to prevent further metal corrosion, which would impact the functionality of the pipe. Maintenance should be performed to remove any excess sediment from the mouth of the outfall.



LBEH00037– Outfall view facing southwest



LBEH00037– Top view of outfall and downstream discharge



LBEH00037– Area of removed vegetation, facing southwest



LBEH00037– Downstream channel and vegetation

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harry W. Nice Memorial Bridge Outfall Site NBEH00009

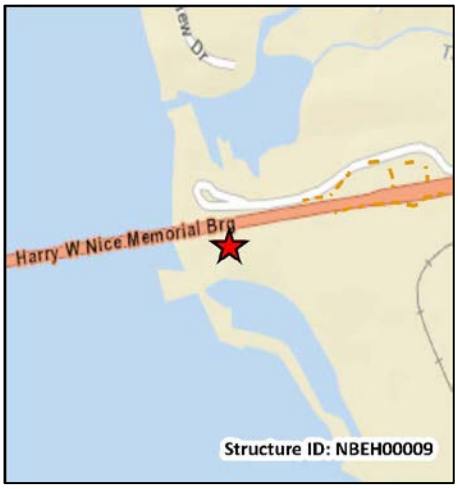
MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday June 24, 2020
- Crew Contact Information:

Kevin DiMartino, CEM
Senior Environmental Scientist
Phone: (443) 243-5036
Email: kdimartino@cemscience.com

Seth Hinder, CEM
Environmental Scientist
Phone: (410) 983-1239
Email: shinder@cemscience.com





General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall site NBEH00009 was visited on Wednesday June 24, 2020 and was observed to have no flow present.

Observations:

CEM observed outfall structure NBEH00009 to be located just south of US-301, east of the Nice Memorial Bridge, and west of the MDTA maintenance facility. The outfall, which is an 18-inch reinforced concrete pipe (RCP), was found to have no flow present. The outfall is in good condition; however, there is excessive vegetation growing around the pipe and in the downstream riprap channel. The outfall appears to be performing as designed.

Next Steps:

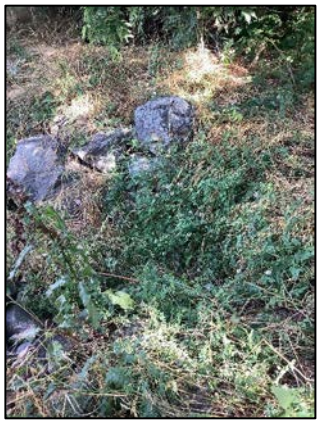
Maintenance should be performed to remove excessive vegetation from the mouth of the outfall. Repairs should be performed to the downstream riprap channel to prevent flow from being restricted.



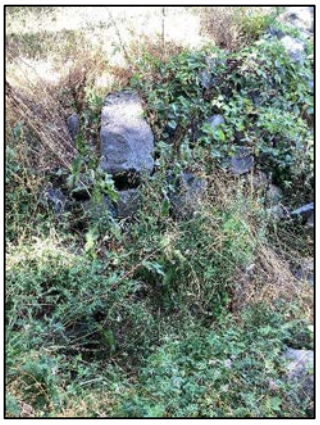
NBEH00009– Outfall view facing east



NBEH00009– Downstream riprap and vegetation



NBEH00009– Right bank of outfall



NBEH00009– Left bank of outfall

FIELD INSPECTION REPORT

Fieldwork – MDTA Major Outfall Inspection

Illicit Discharge inspection and water sampling on Harry W. Nice Memorial Bridge Outfall Site NBEH00012

MDTA Contract No. 3009

Field Crew Information:

- Inspection date: Wednesday June 24, 2020
- Crew Contact Information:

Kevin DiMartino, CEM
Senior Environmental Scientist
Phone: (443) 243-5036
Email: kdimartino@cemscience.com

Seth Hinder, CEM
Environmental Scientist
Phone: (410) 983-1239
Email: shinder@cemscience.com





General Project Information:

CEM is providing support services to the Maryland Transportation Authority (MDTA) to identify illicit non-stormwater discharges at major National Pollutant Discharge Elimination System (NPDES) outfalls. As part of this contract, CEM was asked to conduct illicit discharge inspections on major outfalls that are located on MDTA-regulated property. Outfall site NBEH00012 was visited on Wednesday June 24, 2020 and was observed to have no flow present.

Observations:

CEM observed outfall structure NBEH00012 to be located north of Orland Park Road and west of the MDOT SHA administration building, which is located north of US-301. The inlet, which is a 36-inch corrugated metal pipe (CMP), was found to have stagnant water present, but no active flow. The outfall appears to be tidally influenced by Clifton Creek, with eight inches of standing water within the pipe and downstream channel. The outfall is in good condition and appears to be functioning as designed with no adverse conditions observed. *Phragmites australis* grows densely in the downstream channel, but this appears to be a result of the tidal creek.

Next Steps:

None at this time.



NBEH00012– Outfall view facing southwest



NBEH00012– Structure overview



NBEH00012– Downstream *Phragmites australis*



NBEH00012– Top view of outfall and pooled water

Appendix D: Construction Site Stormwater Runoff Control Supporting Documentation

Responsible Personnel Certification Information

MDTA Personnel

EMPLOYEE	No.	REC'D	No.	EXP
BAHR, JAMES	RPC002958	6/15/15	07-893	7/18/21
BOYER, KELLY	RPC002149	2/16/15	13-023	2/2/19
CISNERO, EDGAR	RPC002994	6/18/15	15-272	7/3/21
EVANS, DOUG				
FOUNTAIN, TOM				
FRITZGES, JOHN	RPC014220	9/21/18	07-500	3/17/16
HADEL, KEN	RPC003041	6/23/15	12-195	6/27/21
HAYES, DANIEL	RPC003046	6/23/15	15-239	5/18/18
HILL, GARY	RPC002725	5/19/15	15-275	7/13/21
HOLTHAUS, RICHARD	RPC013494	6/21/18		
HORTON, DAVE	RPC002920	6/9/15	15-270	6/28/21
HUGHES, LARRY	RPC002942	6/12/15	12-237	8/1/2021
IADOROLA, MICHAEL	RPC002487	3/25/15	18-372	8/17/2021
KORPISZ, ALFRED	RPC002943	6/12/15	12-194	7/18/21
LYNCH, JAMES	RPC002631	5/8/15		
MAGSINO, REY	RPC002997	6/18/15	15-274	6/28/21
MATTEJAT, PETER				
McGIBNEY, JIM	RPC002952	6/13/15	10-358	5/18/2018
MEKONNEN, TIGSTU	RPC001860	1/29/15		
PHILLIPS, TONY	RPC003567	9/21/15	06-849	9/30/18
PINES, WILL				
REBAR, JOYCE	RPC002873	6/3/15		
SCHMIDT, CHARLES	RPC003036	6/23/15	15-273	6/24/18
SCHNEIDER, BILL	RPC003219	7/27/15	06-851	7/3/21
SEMAN, GREG	RPC002788	5/26/15	15-271	6/27/21
SMITH, CARROLL	RPC002944	6/12/15		
STAUBS, DONNA	RPC001090	10/15/14	15-086	6/28/21
TABASCO, TONY	RPC002975	6/16/15	06-853	5/18/18
TARIQ, EHSAN	RPC002673	5/13/15	18-310	6/27/21
URIK, REBECCA	RPC002939	6/11/15	06-854	3/2012
WINFIELD, GEORGE	RPC002948	6/12/15	15-276	6/24/18
WOLF, BRIAN	RPC003088	7/1/15	06-856	8/26/18

Appendix E: Post-Construction Stormwater Management Supporting Documentation

Maintenance Work Order Form for Ponds/ Basins

BMP ID:				
BMP Type/ Subtype:				
Location (Highway/ Facility, Mile Marker, Direction):				
MAXIMO Tracking #:				
Engineering Division Contact:	Peter Mattejat, PE – Tel: (410) 537-7874; Email: pmattejat@mdta.state.md.us			
Staff Initials				
Action	**Date Work Issued**	**Date Work Completed**	**Date of Post-Work Inspection**	**Comments**
PREVENTATIVE/ ANNUAL MAINTENANCE				
1) **MOWING** - Mow to provide access to inflow, control, and outflow structures. Mow side slopes of the forebay and basin, trim excessive turf growth in basin (>6"). ***Do not mow landscape plants.***				
2) **TRASH & DEBRIS REMOVAL** – Remove trash and debris from the forebay, impoundment area, riser, and outfall.				
3) **VEGETATION MAINTENANCE** - Remove any woody vegetation (volunteers) in the BMP, adjacent side slopes and especially embankment. Remove woody vegetation near inflow, control and outflow structures.				
AS-NEEDED REPAIR / REMEDIATION				
4) **INVASIVE/ NOXIOUS VEGETATION CONTROL** – Manage invasive vegetation, specifically Phragmites, within the BMP.				
5) **SEDIMENT REMOVAL** – If forebay or impoundment is heavily sedimented, remove sediment and debris, Stabilize disturbed areas.				
6) **INFLOW STABILIZATION** - Stabilize discharge locations (e.g. riprap) as-needed at the outfall of inflow pipes, inflow channels, weir over-flows, and outfall. Stabilization methods typically include placement or redressing of stone or riprap.				
7) **SITE STABILIZATION** - Stabilize eroded / exposed areas. Stabilize with 4-inch topsoil, seed & mulch, and cover with Type A soil stabilization matting.				
8) **IMPOUNDMENT MAINTENANCE** - Repair eroded / exposed areas. If ponding is excessive, contact OEC Environmental Engineering				
9) **CONTROL STRUCTURE MAINTENANCE** - Repair defects to control structure (e.g, cracks, clogged low-flow pipes / openings, pipe separations).				
10) **LANDSCAPING** - replace / supplement landscaping.				
Maintenance Performed by:				**Date: / / to / /**
NOTE: If major issues are encountered or guidance is required, contact MDTA Engineering Division.				

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Maintenance Work Order Form for Small Scale/ Linear BMPs

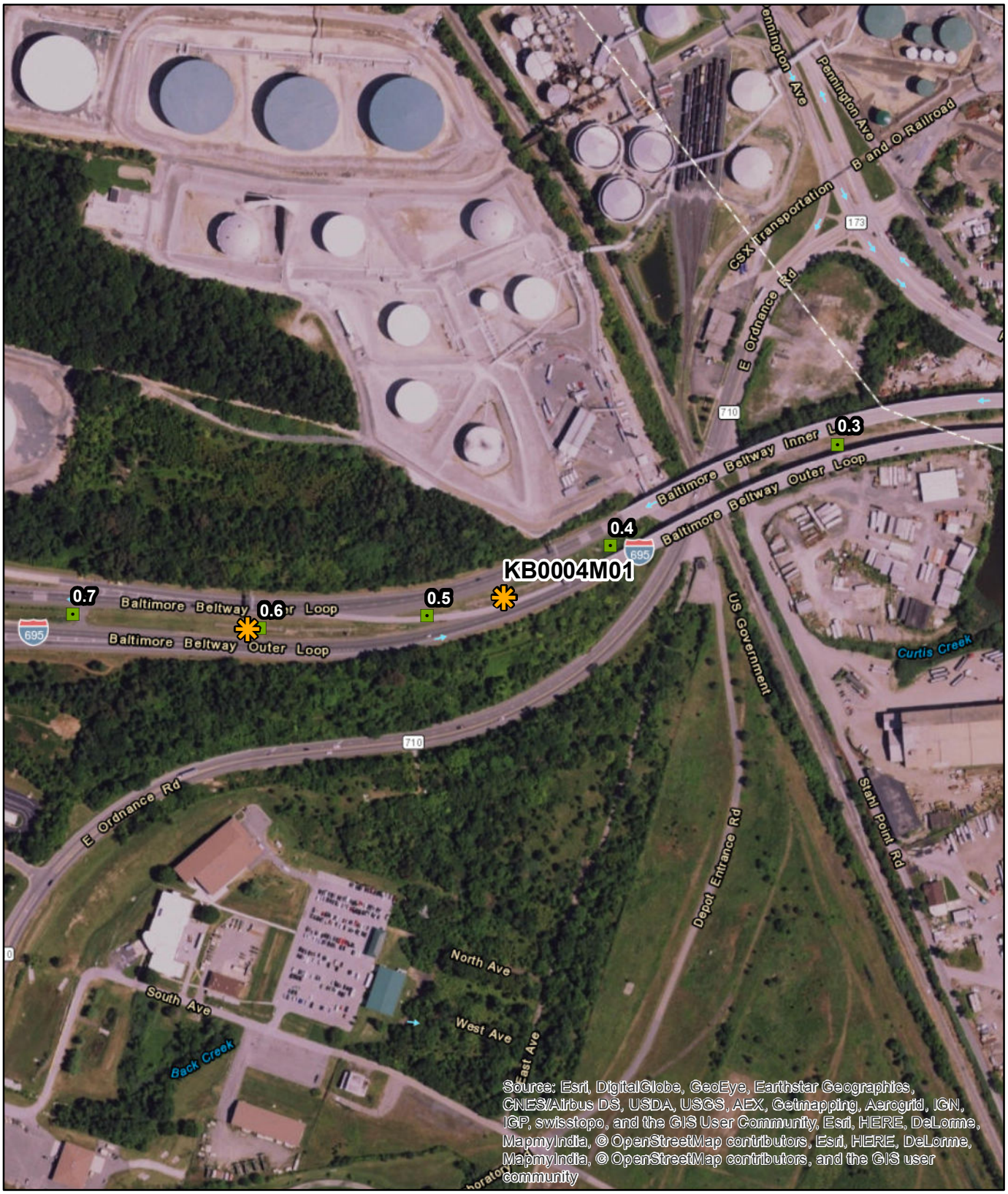
BMP ID:				
BMP Type/ Subtype:				
Location (Highway/ Facility, Mile Marker, Direction):				
MAXIMO Tracking #:				
Engineering Division Contact:	Peter Mattejat, PE – Tel: (410) 537-7874; Email: pmattejat@mdta.state.md.us			
Staff Initials				
Action	**Date Work Issued**	**Date Work Completed**	**Date of Post-Work Inspection**	**Comments**
PREVENTATIVE/ ANNUAL MAINTENANCE				
1) **MOWING** - Mow side slopes, perimeter area trim excessive turf growth (>6"). ***Do not mow landscape plants.***				
2) **TRASH & DEBRIS REMOVAL** – Remove trash and debris from within and around site.				
3) **VEGETATION MAINTENANCE** - Remove any woody vegetation (volunteers) in the BMP, adjacent side slopes and near inflow, control and outflow structures.				
Check for standing water in observation well. In case of 'significant' depth of water after 72 hours since last significant rainfall, contact OEC Environmental Engineering.				
AS-NEEDED REPAIR/ REMEDIATION				
4) **INVASIVE/ NOXIOUS VEGETATION CONTROL** – Manage invasive vegetation, specifically Phragmites, within the BMP.				
5) **SEDIMENT REMOVAL** – If impoundment is heavily sedimented, remove sediment and debris, Stabilize disturbed areas.				
6) **INFLOW STABILIZATION** - Stabilize discharge locations (e.g. riprap) as-needed at the outfall of inflow pipes, inflow channels, weir over-flows, and outfall. Also includes stabilization adjacent to roadway edge. Stabilization methods typically include placement or redressing of stone or riprap.				
7) **SITE STABILIZATION** - Stabilize eroded / exposed areas. Stabilize with 4-inch topsoil, seed & mulch, and cover with Type A soil stabilization matting.				
8) **IMPOUNDMENT MAINTENANCE** – Repair eroded areas. Replace surface media as-needed. If ponding is excessive, contact OEC Environmental Engineering				
9) **UNDERDRAIN/ OUTLET MAINTENANCE** – Clear clogs within underdrain network, maintain stable outlet.				
10) **LANDSCAPING** - replace / supplement landscaping.				
Maintenance Performed by:				**Date: / / to / /**
NOTE: If major issues are encountered or guidance is required, contact MDTA Engineering Division.				

DRAFT

Vicinity Map: KB0004M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 0.5



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0004M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 0.5



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0004M01OVD190313-01



KB0004M01OVU190313-02



KB0004M01ACD190313-03



KB0004M01ACU190313-04



KB0004M01CST190313-05



KB0004M01CST190313-06



KB0004M01IND190313-07



KB0004M01INU190313-08



KB0004M01OFT190313-09

Vicinity Map: KB0005M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 0.5



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0005M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 0.5



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

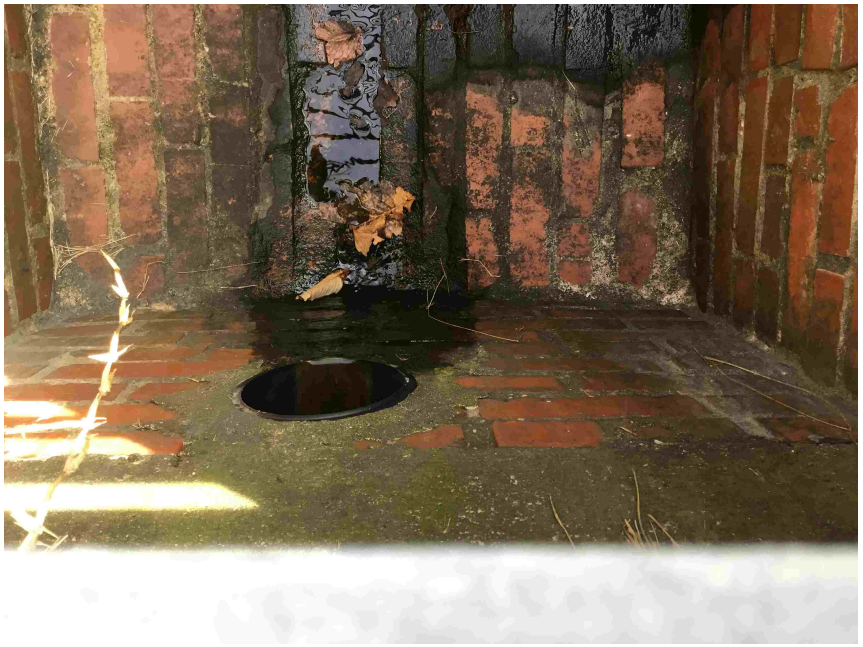
Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0005M01OVD190313-01



KB0005M01CST190313-02



KB0005M01CST190313-03



KB0005M01IND190313-04



KB0005M01INU190313-05



KB0005M01OFT190313-06



KB0005M01UTT190313-07



KB0005M01UTT190313-08

Vicinity Map: KB0010M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 1.1



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

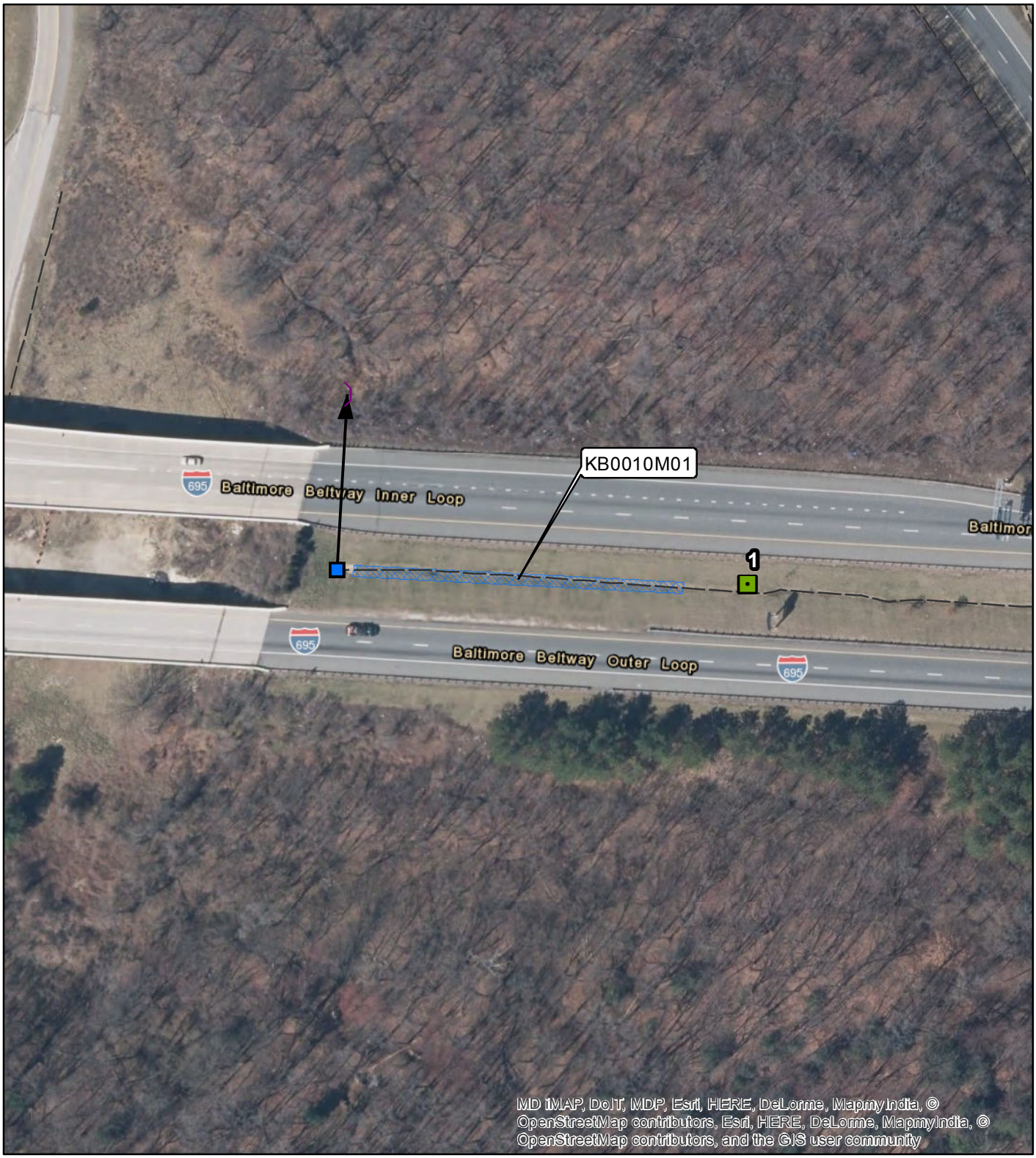
Base Map: Esri Imagery

N

Site Map: KB0010M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 1.1



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0010M01OVD190313-01



KB0010M01OVU190313-02



KB0010M01ACD190313-03



KB0010M01ACU190313-04



KB0010M01CST190313-05



KB0010M01CST190313-06



KB0010M01INU190313-07



KB0010M01INU190313-08

Vicinity Map: KB0012M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 1.2



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

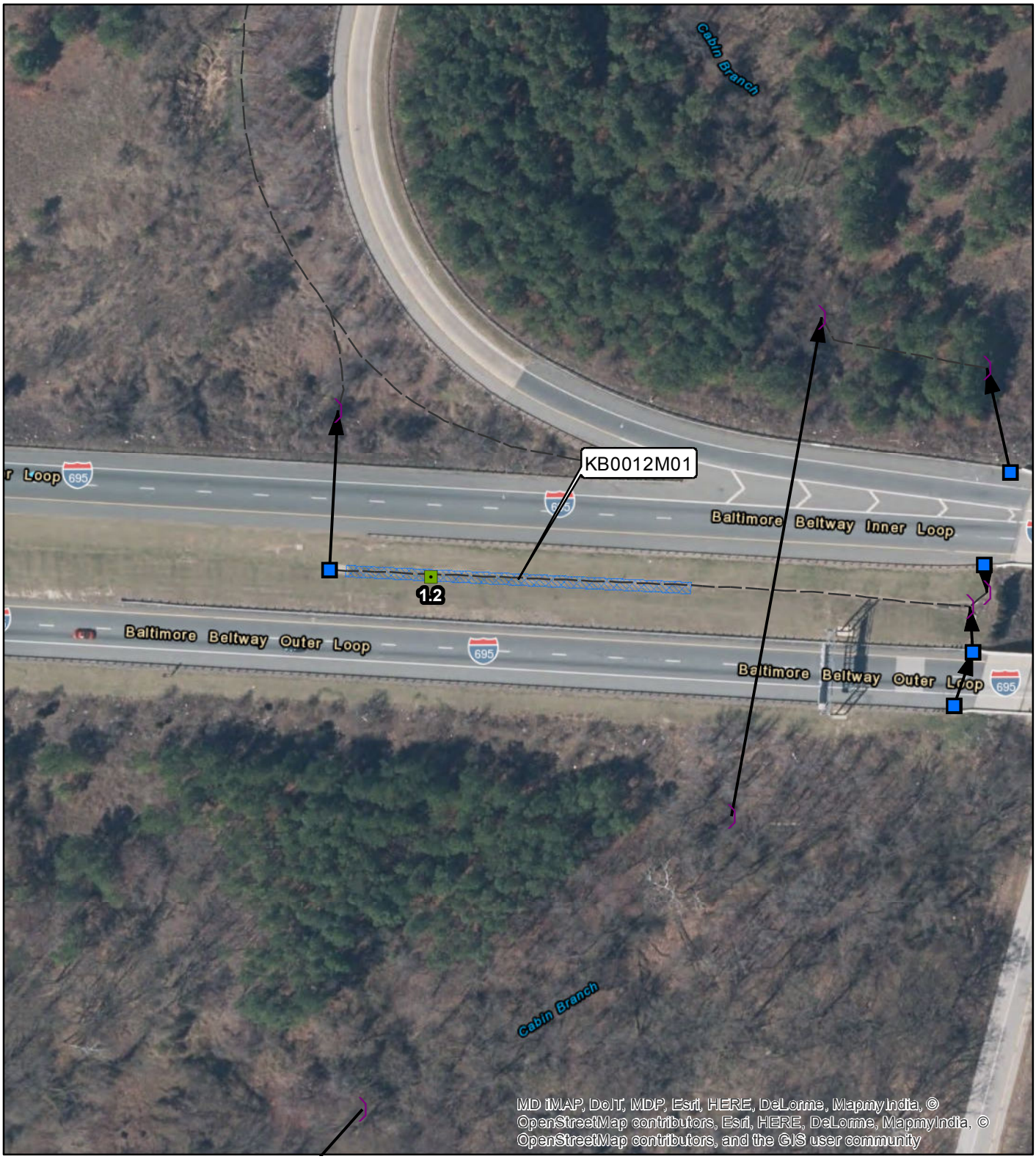
Base Map: Esri Imagery

N

Site Map: KB0012M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 1.2



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0012M01OVU190313-01



KB0012M01OVU190313-02



KB0012M01CST190313-03



KB0012M01CST190313-04



KB0012M01INU190313-05



KB0012M01INU190313-06



KB0012M01OFT190313-07



KB0012M01UTT190313-08

Vicinity Map: KB0455S01

BMP Type: Wet pond

Facility: Key Bridge Mile Point: 45.5



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

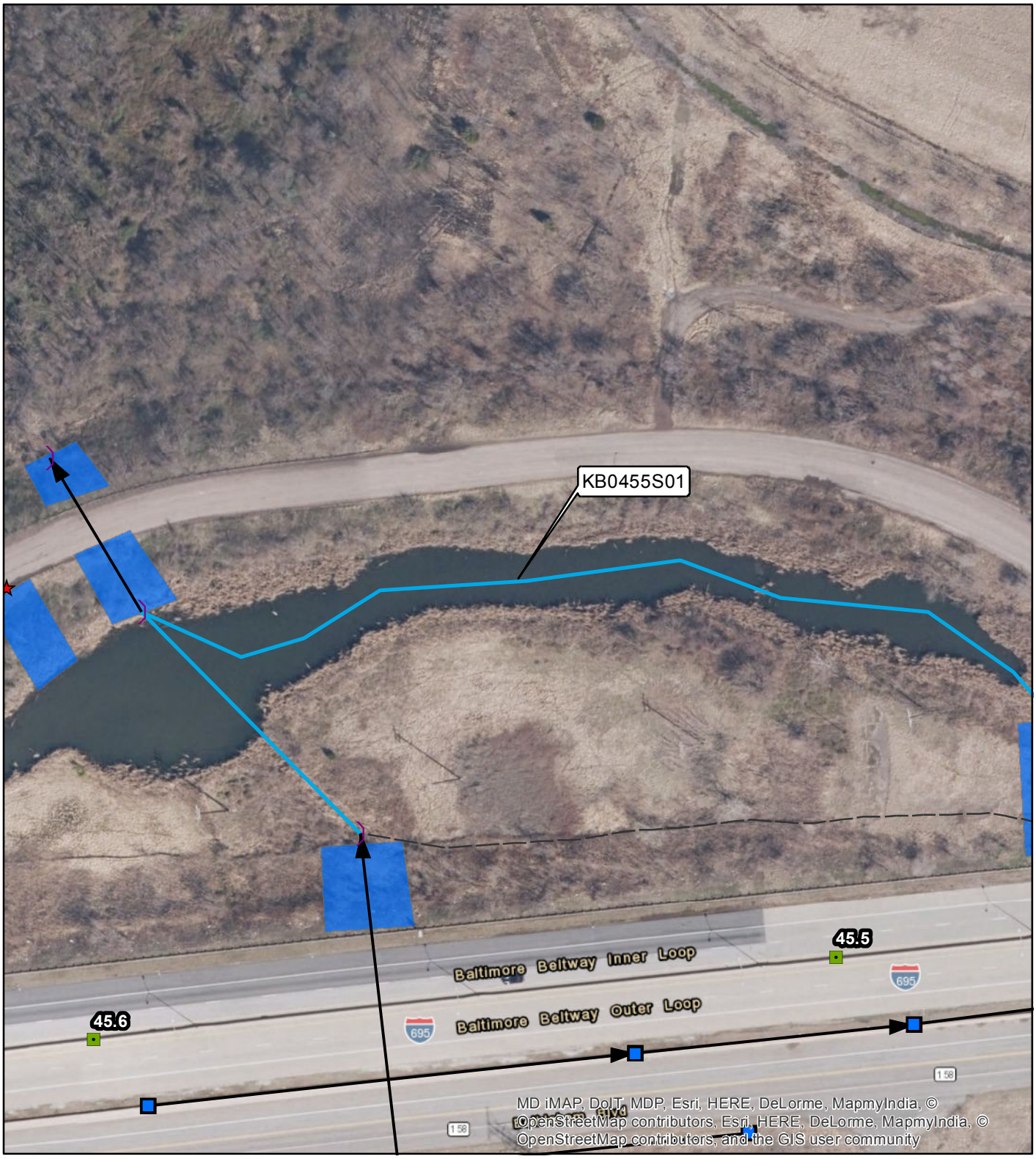
Base Map: Esri Imagery

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Site Map: KB0455S01

BMP Type: Wet pond

Facility: Key Bridge Mile Point: 45.5



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0455S01OVD180607-01

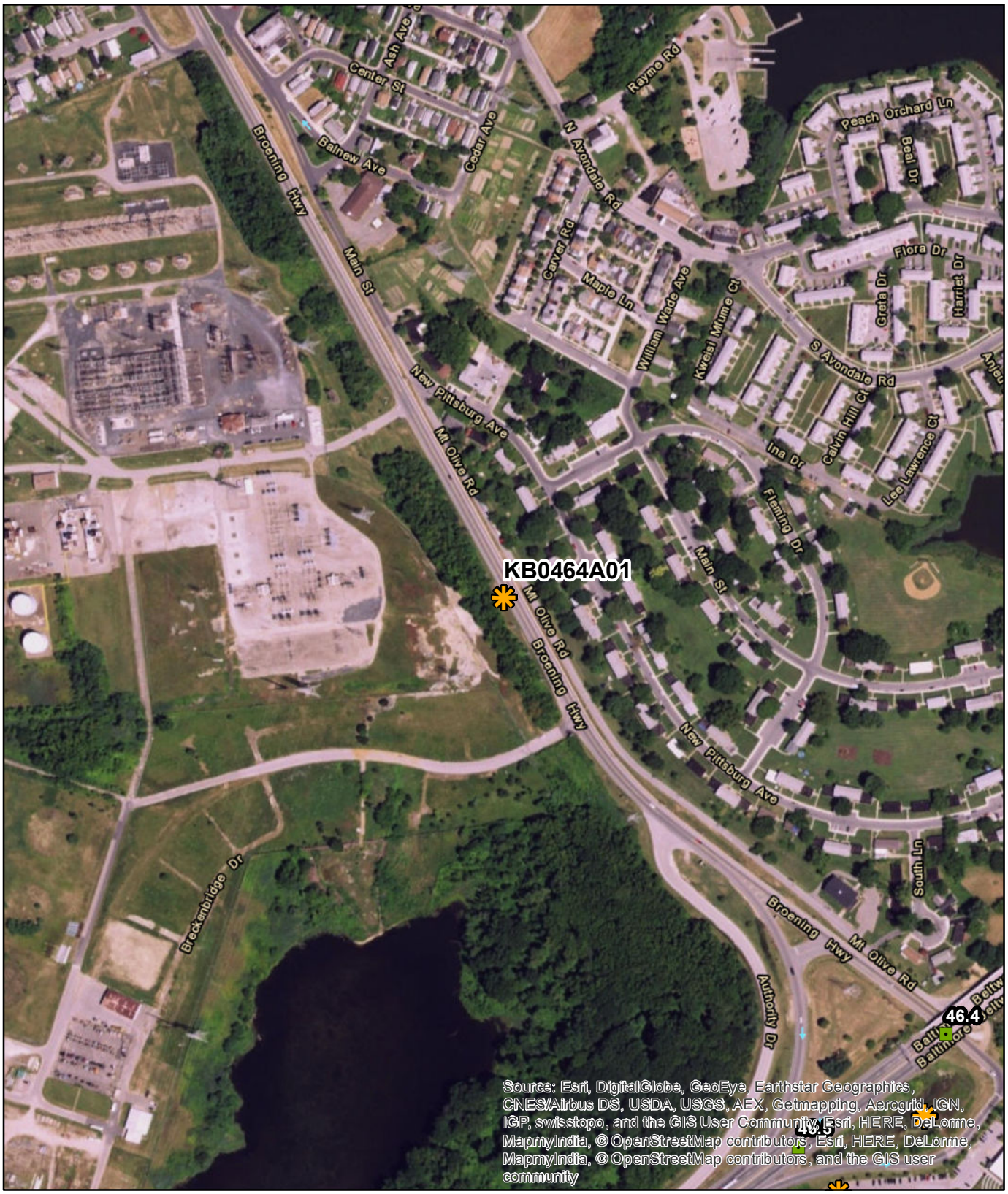


KB0455S01OVU180607-02

Vicinity Map: KB0464A01

BMP Type: Perimeter sand filter

Facility: Key Bridge Mile Point: 46.4



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0464A01

BMP Type: Perimeter sand filter

Facility: Key Bridge Mile Point: 46.4



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0464A01IND170612-01



KB0464A01INT170612-02



KB0464A01INU170612-03

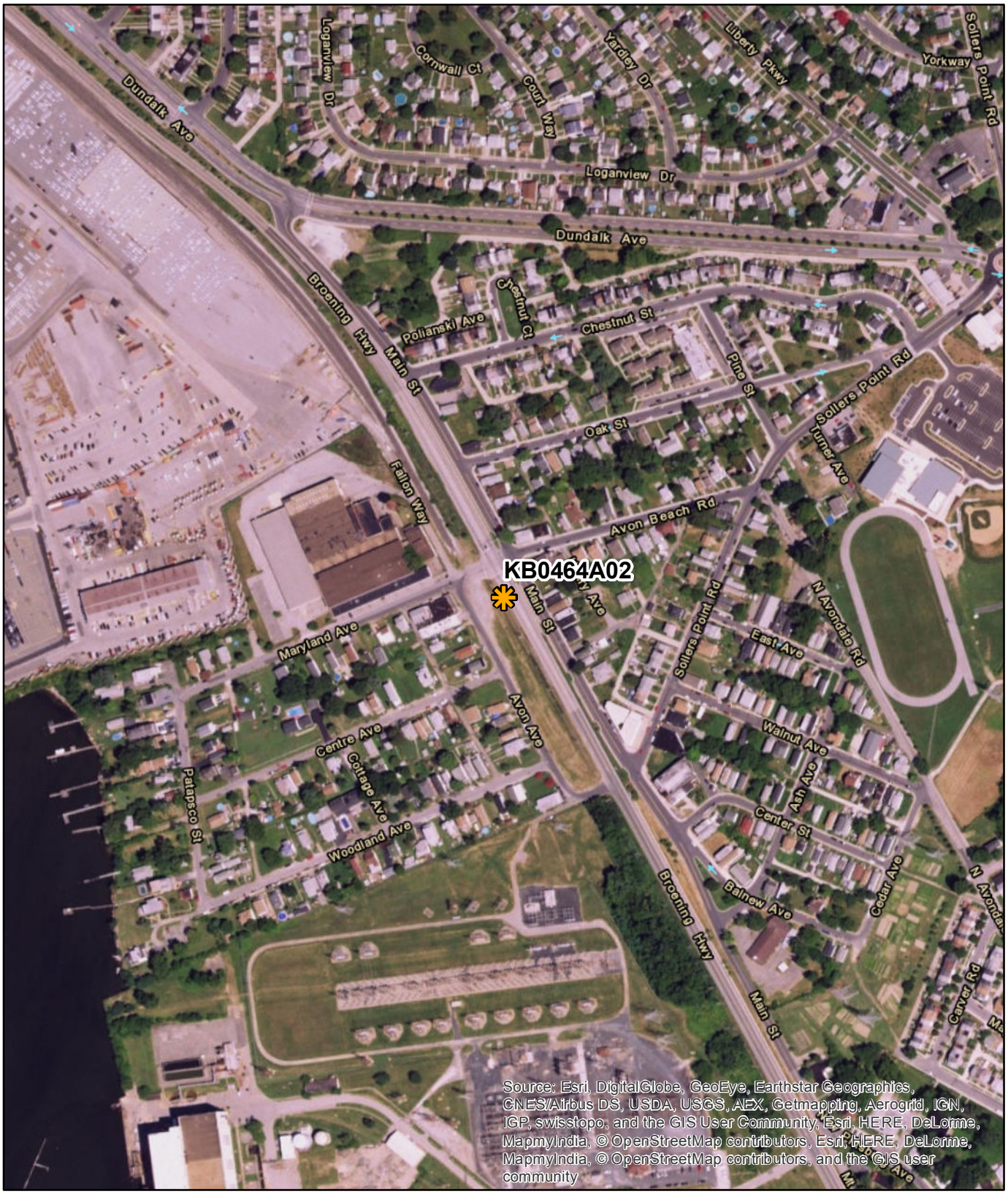


KB0464A01OVM170612-04

Vicinity Map: KB0464A02

BMP Type: Perimeter sand filter

Facility: Key Bridge Mile Point: 46.4



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0464A02

BMP Type: Perimeter sand filter

Facility: Key Bridge Mile Point: 46.4



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0464A02OVU170612-01



KB0464A02INU170612-02



KB0464A02INU170612-03

Vicinity Map: KB0464N01

BMP Type: Wet extended detention pond

Facility: Key Bridge Mile Point: 46.4



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0464N01

BMP Type: Wet extended detention pond

Facility: Key Bridge Mile Point: 46.4



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type

Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0464N01OVD180607-01



KB0464N01OVU180607-02



KB0464N01OVU180607-03



KB0464N01CSI180607-04



KB0464N01CSU180607-05



KB0464N01IND180607-06

Vicinity Map: KB0465F01

BMP Type: Biofiltration

Facility: Key Bridge Mile Point: 46.5



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0465F01

BMP Type: Biofiltration

Facility: Key Bridge Mile Point: 46.5



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0465F01OVU190313-01



KB0465F01CST190313-02



KB0465F01CST190313-03



KB0465F01CST190313-04



KB0465F01INT190313-05



KB0465F01OFT190313-06

Vicinity Map: KB0467F01

BMP Type: Bioretention

Facility: Key Bridge Mile Point: 46.7



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0467F01

BMP Type: Bioretention

Facility: Key Bridge Mile Point: 46.7



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0467F01INM170612-01



KB0467F01OFT170612-02



KB0467F01OFT170612-03



KB0467F01OVT170612-04

Vicinity Map: KB0468E01

BMP Type: Biofiltration

Facility: Key Bridge Mile Point: 46.8



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0468E01

BMP Type: Biofiltration

Facility: Key Bridge Mile Point: 46.8



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0468E01OVD190313-01



KB0468E01OVU190313-02



KB0468E01ACD190313-03



KB0468E01ACU190313-04



KB0468E01CST190313-05



KB0468E01CST190313-06



KB0468E01EBU190313-07

Vicinity Map: KB0469A01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 46.9



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0469A01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 46.9



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0469A01OVU190313-01



KB0469A01ACU190313-02



KB0469A01CST190313-03



KB0469A01INM190313-04



KB0469A01INU190313-05



KB0469A01INU190313-06



KB0469A01INU190313-07

Vicinity Map: KB0470A01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 47



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0470A01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 47



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0470A01OVD190313-01



KB0470A01ACD190313-02



KB0470A01CST190313-03



KB0470A01CST190313-04



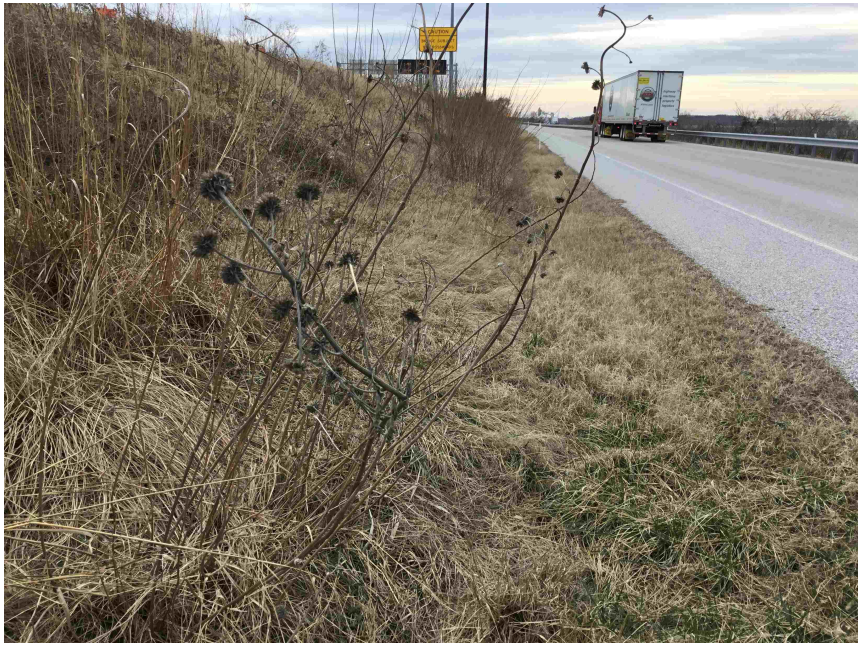
KB0470A01CST190313-05



KB0470A01IND190313-06



KB0470A01IND190313-07



KB0470A01INU190313-08



KB0470A01OFD190313-09



KB0470A01OFD190313-10



KB0470A01UTT190313-11

Vicinity Map: KB0470F01

BMP Type: Dry swale

Facility: Key Bridge Mile Point: 47



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0470F01

BMP Type: Dry swale

Facility: Key Bridge Mile Point: 47



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

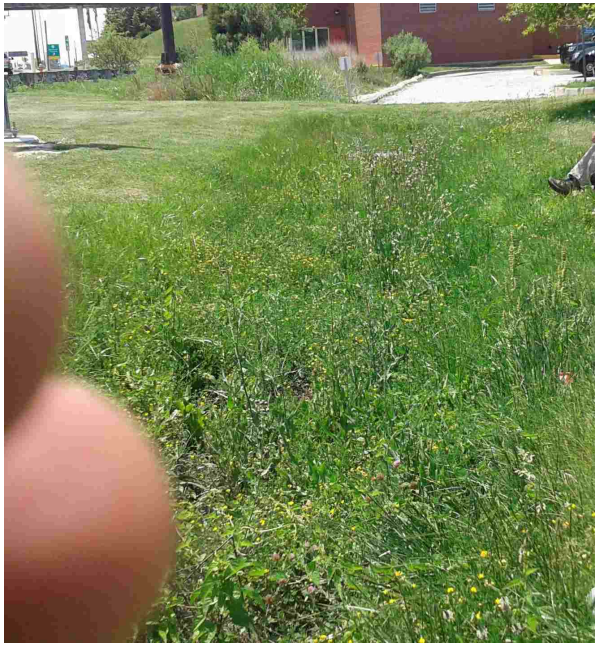
N

Maryland Transportation Authority

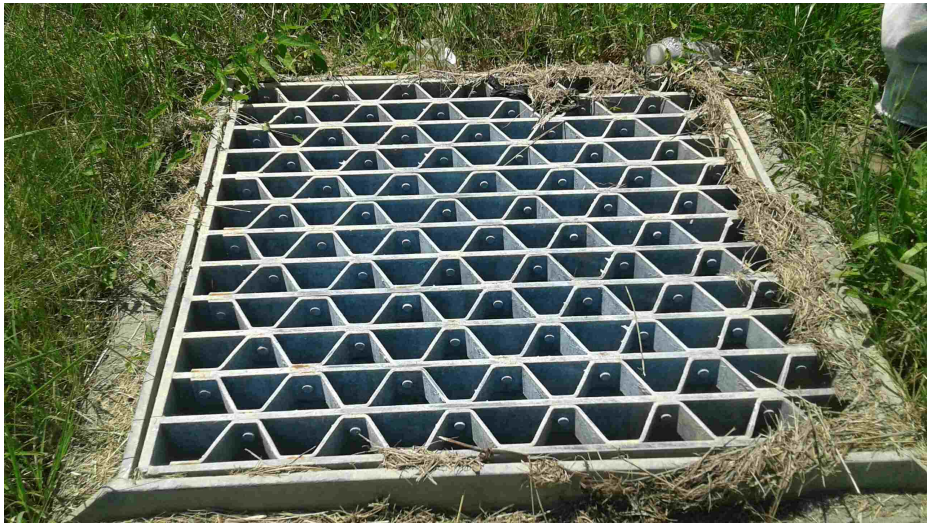
Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0470F01INU170612-01



KB0470F01OFD170612-02



KB0470F01OFT170612-03

Vicinity Map: KB0472A01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 47.2



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0472A01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 47.2



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0472A01OVD190313-01



KB0472A01CST190313-02



KB0472A01CST190313-03



KB0472A01IND190313-04



KB0472A01INT190313-05



KB0472A01INT190313-06



KB0472A01INU190313-07



KB0472A01OFT190313-08



KB0472A01UTT190313-09

Vicinity Map: KB0472A02

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 47.2



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0472A02

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 47.2



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0472A02OVD190313-01



KB0472A02OVD190313-02



KB0472A02OVU190313-03



KB0472A02OVU190313-04



KB0472A02CST190313-05



KB0472A02CST190313-06



KB0472A02CST190313-07



KB0472A02INT190313-08



KB0472A02INU190313-09

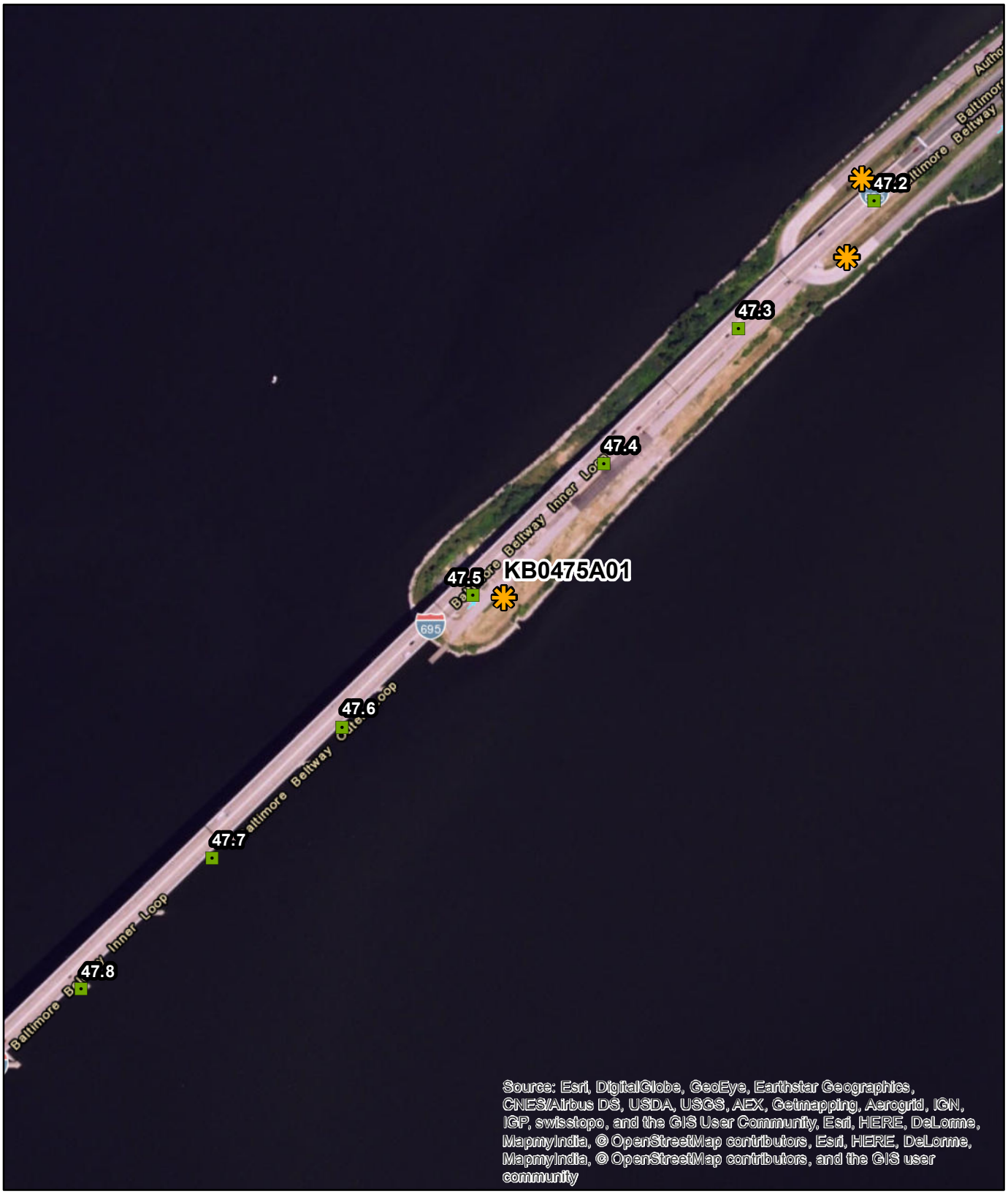


KB0472A02OFD190313-10

Vicinity Map: KB0475A01

BMP Type: Bioretention

Facility: Key Bridge Mile Point: 47.5



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

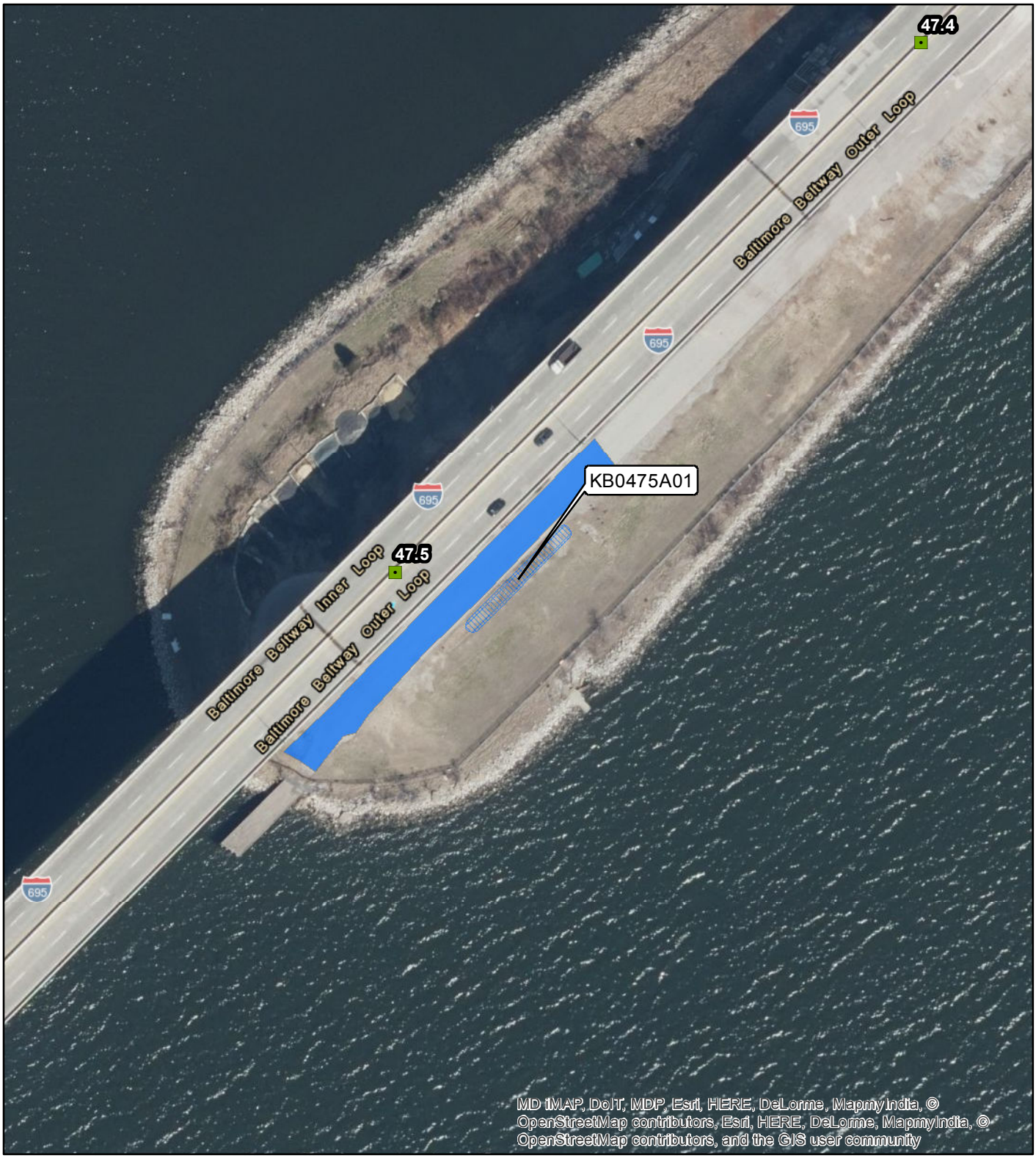
Base Map: Esri Imagery

N

Site Map: KB0475A01

BMP Type: Bioretention

Facility: Key Bridge Mile Point: 47.5



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0475A01OVD170627-01



KB0475A01OVD170627-02



KB0475A01OVU170627-03



KB0475A01OVU170627-04



KB0475A01OVM170627-05



KB0475A01OVM170627-06



KB0475A01TRD170627-07



KB0475A01TRD170627-08

Vicinity Map: KB0493M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 49.3



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

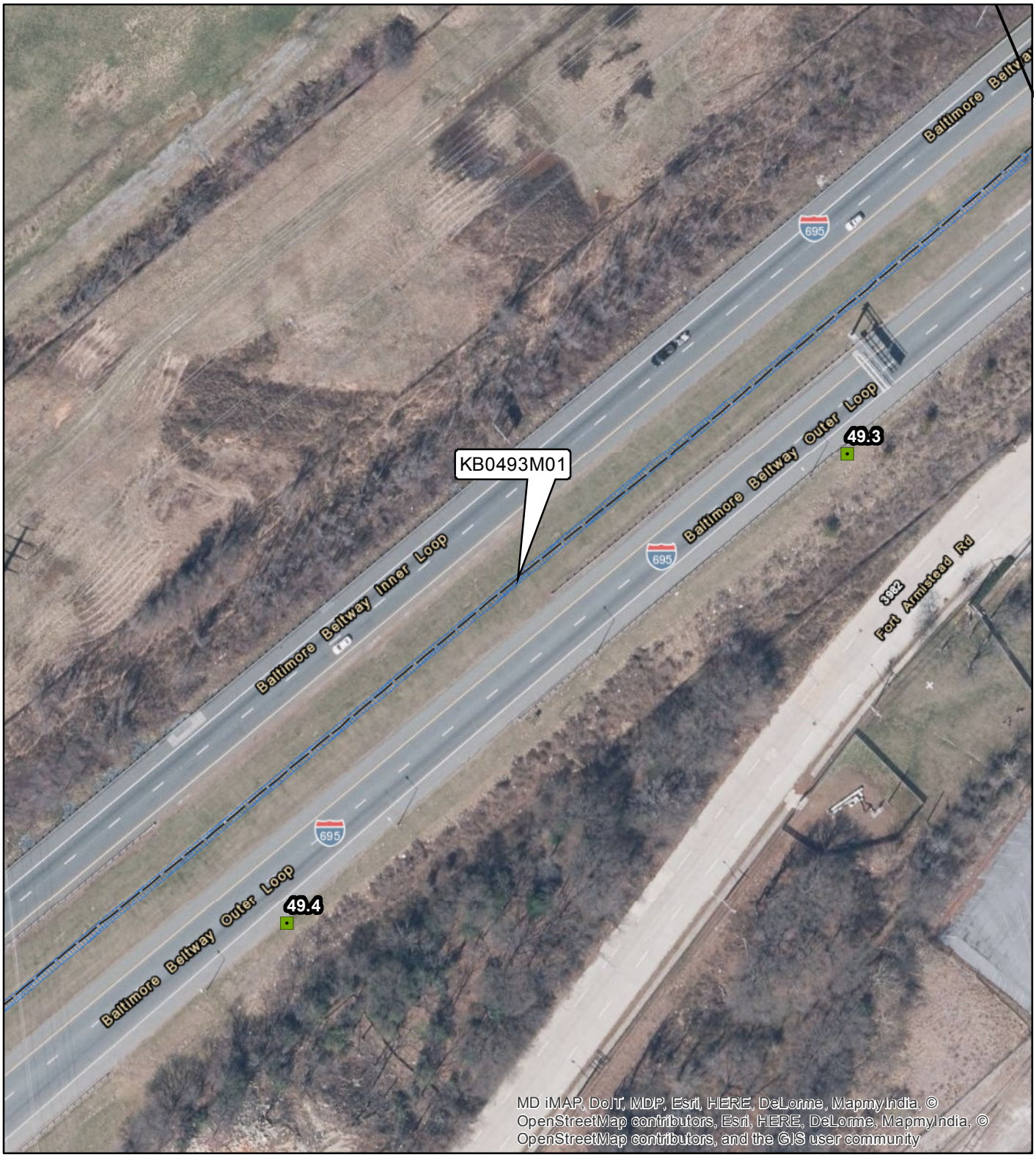
Base Map: Esri Imagery

N

Site Map: KB0493M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 49.3



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0493M01OVD190313-01



KB0493M01OVU190313-02



KB0493M01CST190313-03



KB0493M01CST190313-04



KB0493M01CST190313-05



KB0493M01IND190313-06



KB0493M01IND190313-07

Vicinity Map: KB0496M01

BMP Type: Grass Swale

Facility: Key Bridge Mile Point: 49.6



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0496M01

BMP Type: Grass Swale

Facility: Key Bridge Mile Point: 49.6



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
- Inlet
- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

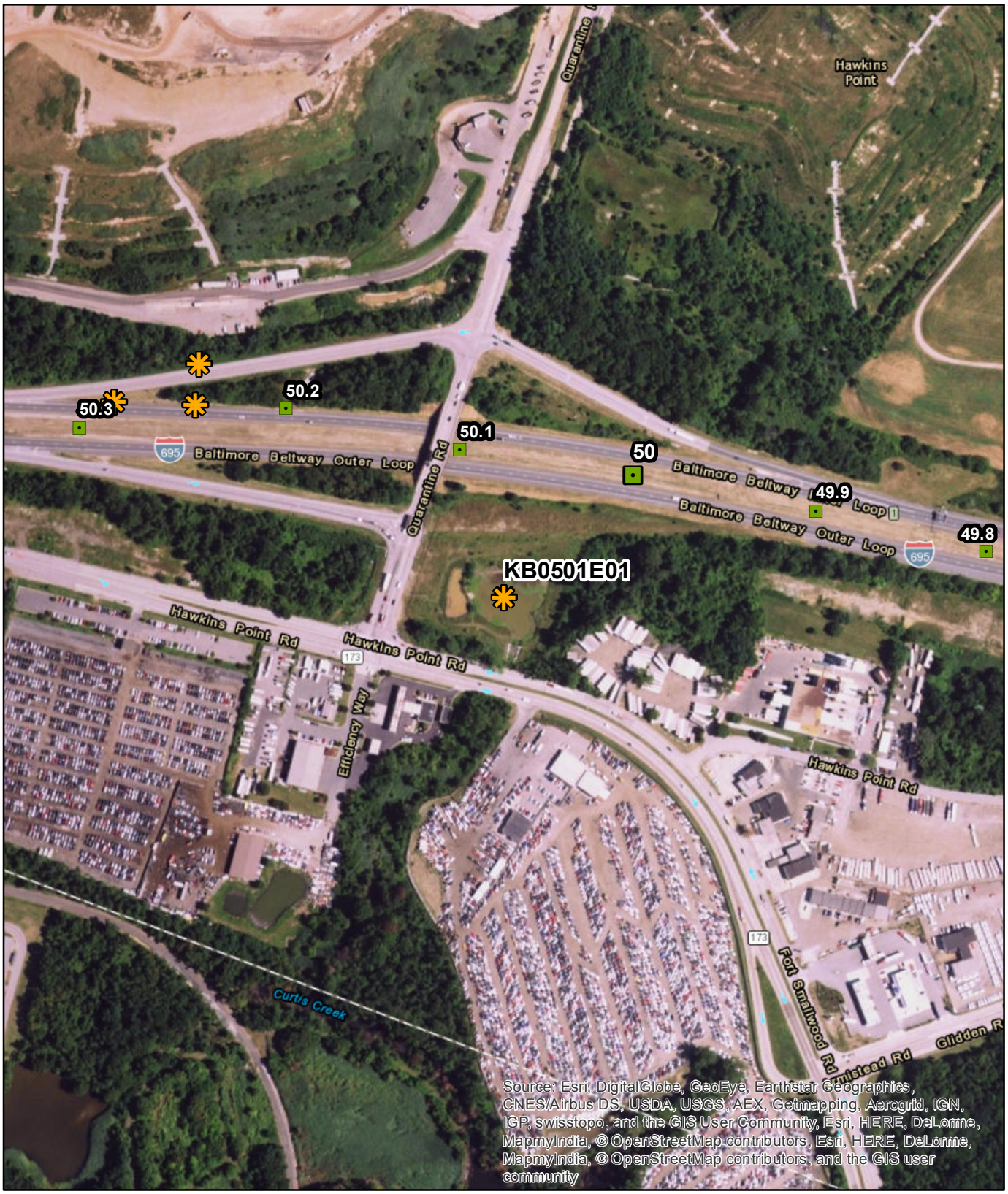
Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery

Vicinity Map: KB0501E01

BMP Type: Wet pond

Facility: Key Bridge Mile Point: 50.1



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0501E01

BMP Type: Wet pond

Facility: Key Bridge Mile Point: 50.1



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0501E01CSD170612-01



KB0501E01CSM170612-02



KB0501E01CST170612-03



KB0501E01FBD170612-04



KB0501E01FBM170612-05



KB0501E01FBM170612-06



KB0501E01FBU170612-07



KB0501E01OVM170612-08



KB0501E01TRT170612-09

Vicinity Map: KB0503A01

BMP Type: Grass Swale

Facility: Key Bridge Mile Point: 50.3



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0503A01

BMP Type: Grass Swale

Facility: Key Bridge Mile Point: 50.3



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
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- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

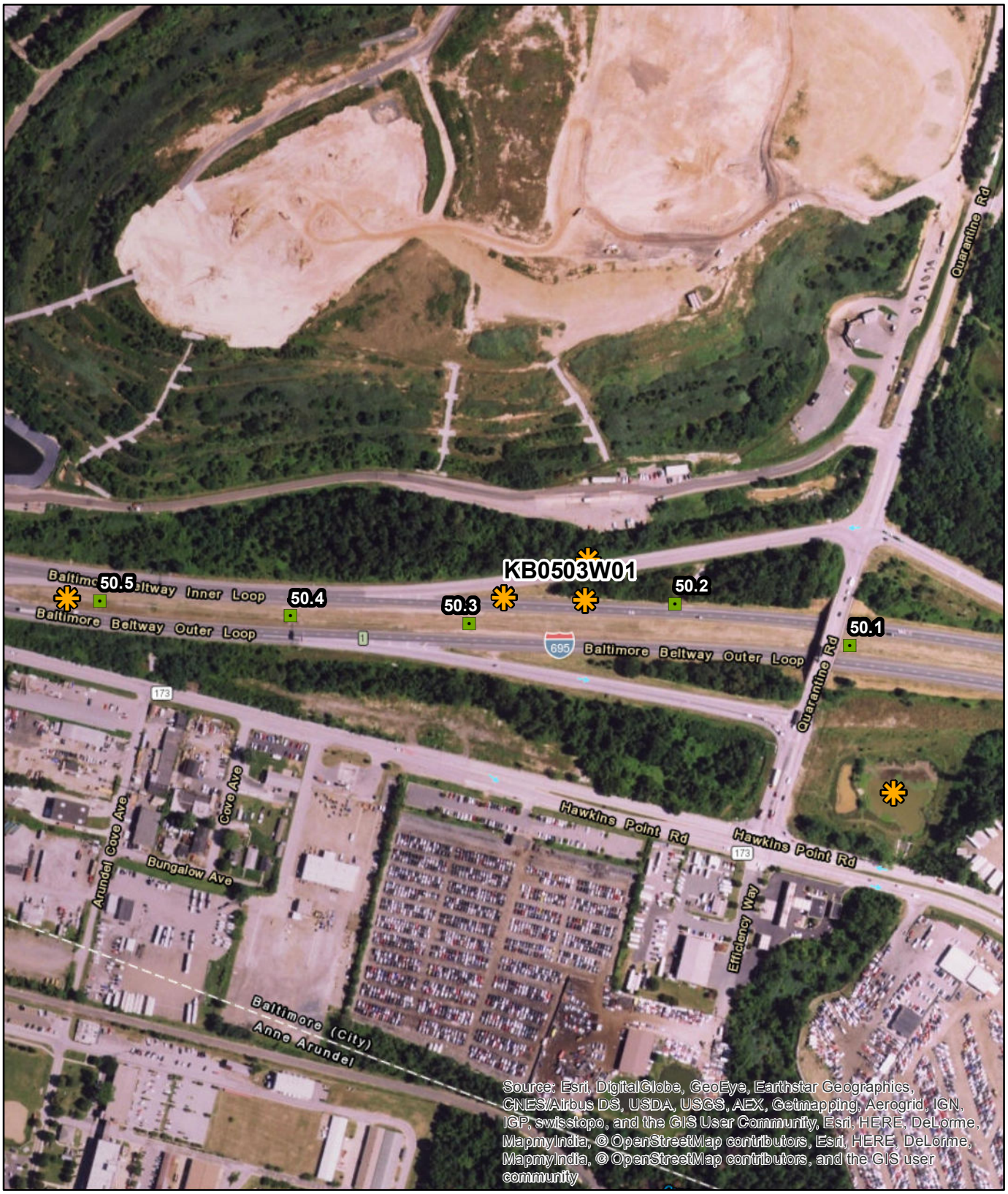
Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery

Vicinity Map: KB0503W01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 50.2



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

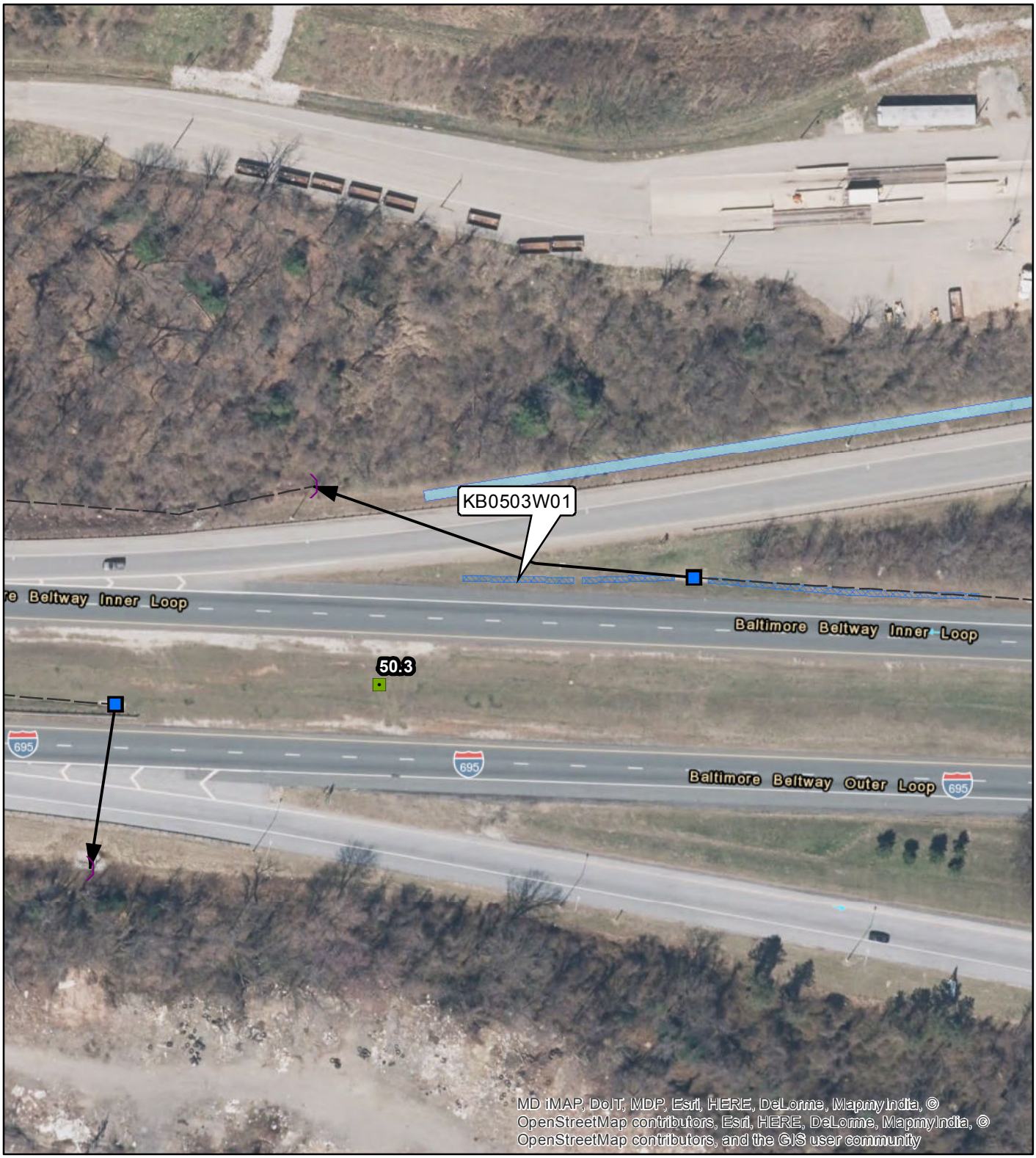
Base Map: Esri Imagery

N

Site Map: KB0503W01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 50.2



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0503W01OVD190313-01



KB0503W01OVU190313-02



KB0503W01OVU190313-03



KB0503W01ACU190313-04



KB0503W01CST190313-05



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KB0503W01IND190313-09

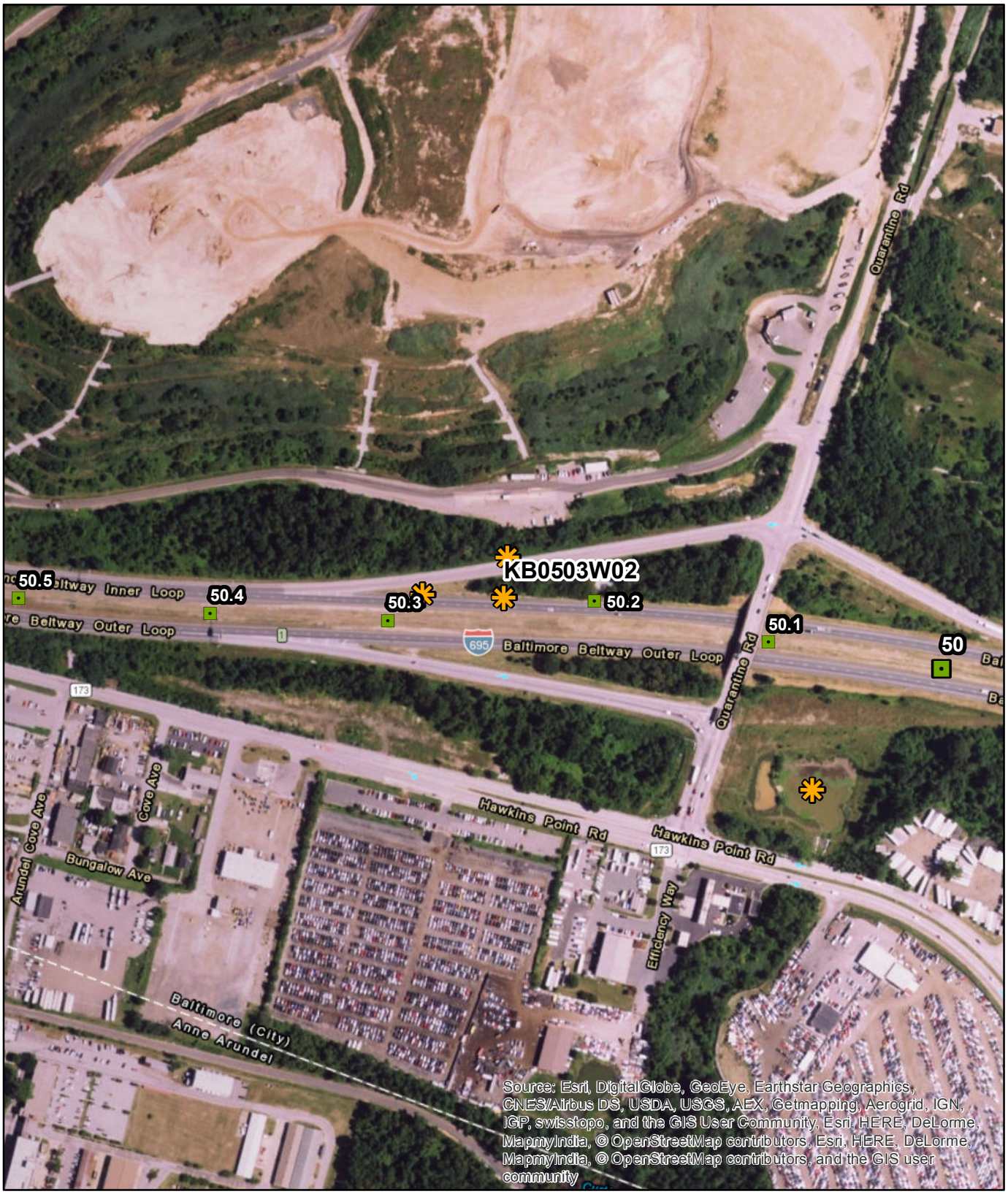


KB0503W01INU190313-10

Vicinity Map: KB0503W02

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 50.2



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

Base Map: Esri Imagery

N

Site Map: KB0503W02

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 50.2



- Flow Splitter
- SWM Riser
- Weir
- End and Headwalls
- Pipe Connection
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- Manhole
- Parking
- BMP Gate
- Storm Drain
- Ditch
- Hydraulic Connection
- 12' Mow Access to the BMP

BMP Footprint Type

- Filtering
- Infiltration
- Open Channel System
- Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0503W02OVD190313-01



KB0503W02OVU190313-02



KB0503W02ACU190313-03



KB0503W02ACU190313-04



KB0503W02INU190313-05

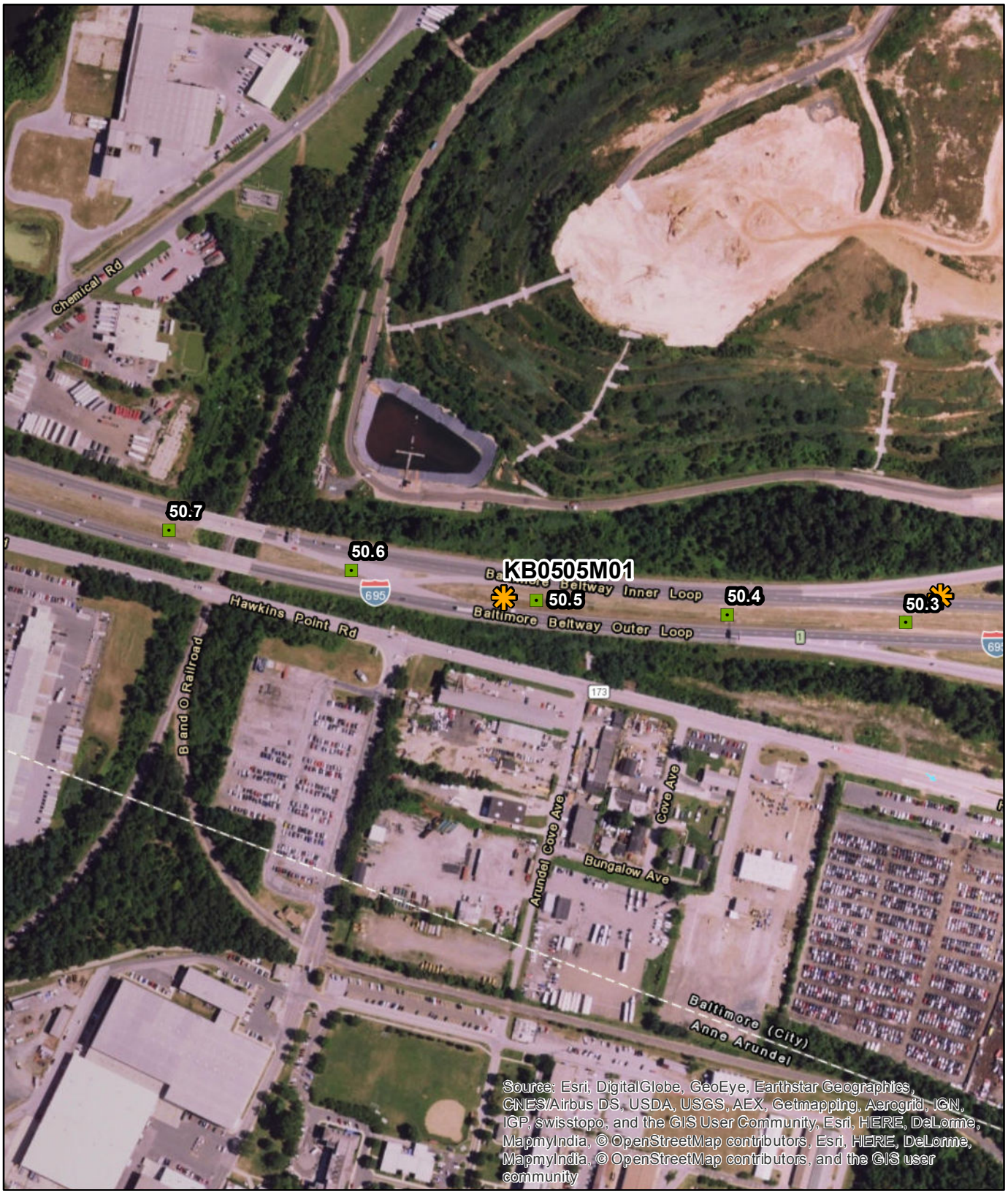


KB0503W02INU190313-06

Vicinity Map: KB0505M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 50.5



Maryland Transportation Authority

0 200 400 800 Feet

Map Prepared: 8/7/2017

Data Sources: MDTA NPDES Geodatabase

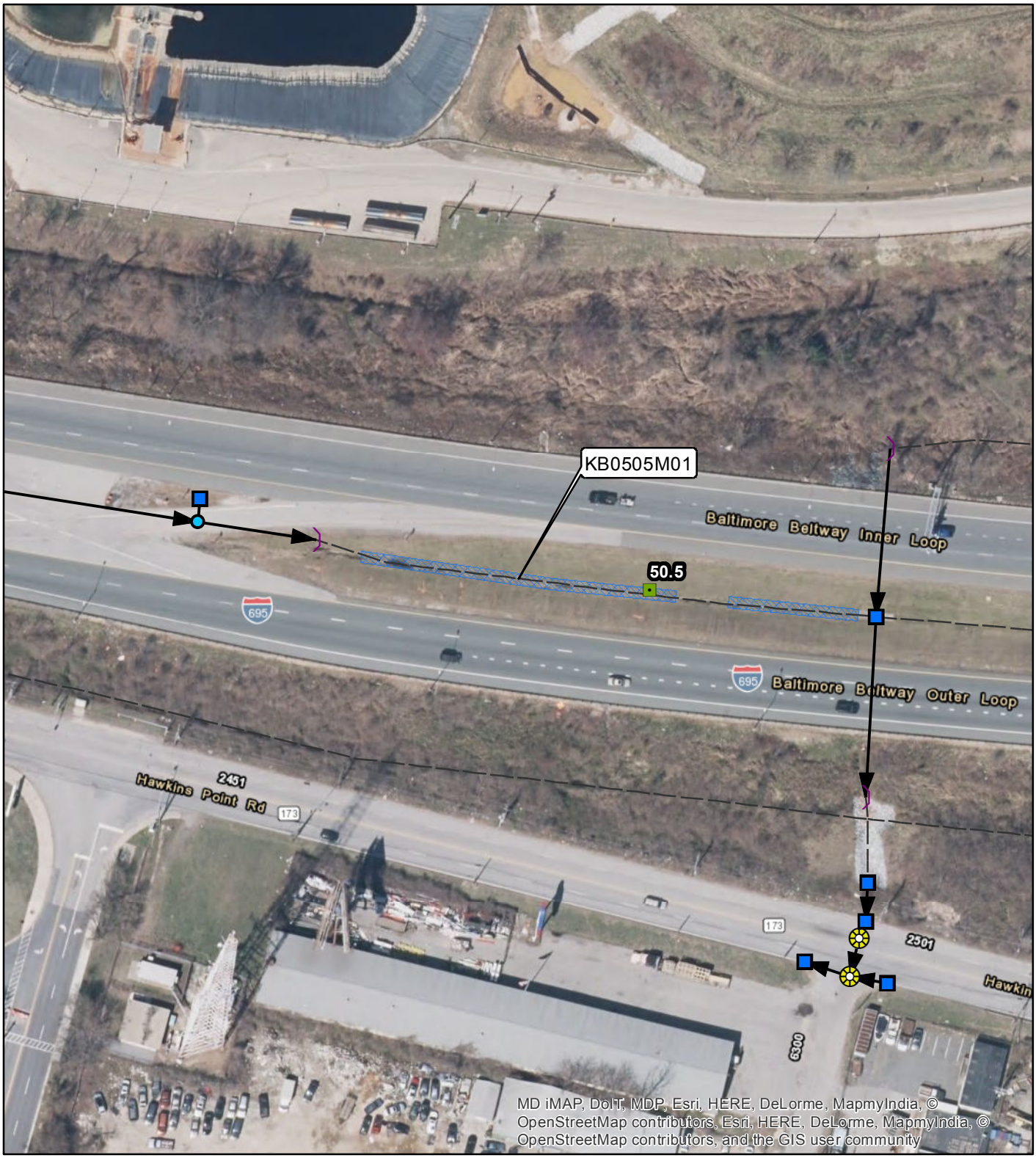
Base Map: Esri Imagery

N

Site Map: KB0505M01

BMP Type: Modified Bio-Swale

Facility: Key Bridge Mile Point: 50.5



Flow Splitter
SWM Riser
Weir
End and Headwalls
Pipe Connection
Inlet
Manhole

Parking
BMP Gate
Storm Drain
Ditch
Hydraulic Connection
12' Mow Access to the BMP

BMP Footprint Type
Filtering
Infiltration
Open Channel System
Hydrodynamic Structures

0 75 150 300 Feet

N

Maryland Transportation Authority

Map Prepared: 8/7/2017
Data Sources: MDTA NPDES Database
Base Map: Esri Imagery



KB0505M01OVD190313-01



KB0505M01CST190313-02



KB0505M01CST190313-03



KB0505M01CST190313-04



KB0505M01IND190313-05



KB0505M01IND190313-06



KB0505M01INU190313-07

Stormwater Best Management Practices (BMP) Maintenance Manual

Francis Scott Key Bridge (KB) Facility

Baltimore County, Baltimore City, Anne Arundel County

Version 1.0

September 2020

Prepared By:

Maryland Transportation Authority

Engineering Division
Baltimore, Maryland

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1. Introduction

This Facility Maintenance Manual documents the stormwater Best Management Practices (BMPs) affiliated with the Francis Scott Key Bridge (KB) facility and related roadways. This manual includes BMP inventory, location maps and site photos to locate and identify the BMPs. The manual also has maintenance work order forms. A key reference to this facility manual is MDTA's BMP Maintenance Guidance Manual, which serves as a reference tool for maintenance staff to understand and maintain BMPs.

The following pages provide a general overview of the groups of BMPs within MDTA's inventory. Understanding the basic function and key components of a BMP is important to ensuring proper maintenance is performed.

2. Stormwater BMPs Inventory

Francis Scott Key Bridge (KB) spans the Patapsco River and is 1.8 miles long. It links the I-695 beltway around Baltimore City. It opened in March 1977 and is part of a system of approaches and roadways that span 10.5 miles. Tolls are collected in both directions, at a toll plaza on the Dundalk side of the Harbor. The FSK Bridge system also includes two administrative buildings, one maintenance building, a police administrative building, and a salt storage dome.

3. Stormwater BMP Maintenance

The BMP Maintenance Guidance Manual details procedures to follow to perform routine and cyclical maintenance activities. Routine maintenance consists of the annual activities to properly maintain the performance and overall stability of a BMP. Cyclical maintenance involves actions that are performed less frequently than routine maintenance. These actions may focus on specific BMP components and may be performed by MDTA's maintenance staff or may require specific contractors. Activities may involve, but are not limited to, vegetation maintenance, site stabilization, trash removal, structure maintenance, sediment / debris removal, drainage repair, landscaping and invasive species control.

Maintenance activities vary based upon the BMP types (which dictate the general mechanisms by which a BMP provides stormwater management) and subtypes (which describe the specific mechanisms). The BMP subtypes are further sorted into BMP groups, to simplify the identification of issues, and BMP maintenance categories, which classify maintenance needs and the resulting work order forms. Table 3-1 provides a breakdown of type, subtype, group, and maintenance category.

Table 3-1 BMP Maintenance Categories

BMP Type	BMP Subtype	BMP Group	BMP Maintenance Category
Filtering	Biofiltration	Bioretention	Small Scale/ Linear
Filtering	Bioretention	Bioretention	Small Scale/ Linear
Filtering	Micro Bioretention	Bioretention	Small Scale/ Linear
Filtering	Rain Garden	Bioretention	Small Scale/ Linear
Filtering	Bioswale	Bio-Swale	Small Scale/ Linear
Filtering	Modified Bio-Swale	Bio-Swale	Small Scale/ Linear
Filtering	Linear sand filter	Linear Filtration / Infiltration Trench	Small Scale/ Linear
Filtering	Perimeter sand filter	Perimeter sand filter	Small Scale/ Linear
Filtering	Surface sand filter	Surface sand filter	Small Scale/ Linear
Filtering	Underground Stormfilter	Underground Qualitative Treatment	Other
Hydrodynamic Structures	Underground water quality pretreatment	Underground Qualitative Treatment	Other
Hydrodynamic Structures	Underground extended detention	Underground Quantitative Treatment	Other
Hydrodynamic Structures	Underground Storage	Underground Quantitative Treatment	Other
Infiltration	Infiltration basin	Infiltration basin	Pond/ Basin
Infiltration	Infiltration trench	Infiltration trench	Small Scale/ Linear
Infiltration	Recharge trench-ICC	Linear Filtration / Infiltration Trench	Small Scale/ Linear

BMP Type	BMP Subtype	BMP Group	BMP Maintenance Category
Infiltration	Permeable Paving	Permeable Pavement Area	Other
Infiltration	Porous pavers	Permeable Pavement Area	Other
Infiltration	Underground infiltration trench	Underground Qualitative Treatment	Other
Open Channel System	Dry swale	Open Channel System	Small Scale/ Linear
Open Channel System	Grass Channel	Open Channel System	Small Scale/ Linear
Open Channel System	Grass Swale	Open Channel System	Small Scale/ Linear
Open Channel System	Modified Grass Swale	Open Channel System	Small Scale/ Linear
Pond	Dry extended detention pond	Dry Pond	Pond/ Basin
Pond	Dry pond	Dry Pond	Pond/ Basin
Pond	Sand storage pond	Sand storage pond	Pond/ Basin
Pond	Micropool extended detention pond	Wet Pond	Pond/ Basin
Pond	Pocket pond	Wet Pond	Pond/ Basin
Pond	Wet extended detention pond	Wet Pond	Pond/ Basin
Pond	Wet pond	Wet Pond	Pond/ Basin

4. BMP Groups

The following pages provide a general overview of the groups of BMPs within MDTA's inventory. These groups have been created to simplify the process of identifying issues in need of remediation. Understanding the basic function and key components of a BMP is important to ensuring proper maintenance is performed.

Bioretention



These BMPs are landscaped areas that provide temporary surface storage above a filter bed of planting soil and / or other MDE-approved filter media. Features include a riser or weir, an underdrain, an outfall pipe / riprap, and an embankment. Common maintenance issues include accumulation of sediment, clogging of the filter media, and dead / diseased vegetation. Bioretention BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Biofiltration
- Bioretention
- Micro-Bioretention
- Rain Garden

Bio-Swale



These BMPs are landscaped channels with check dams that provide temporary surface storage above a filter bed of planting soil and / or other MDE-approved filter media. Features include an underdrain and an inlet structure at the downstream end of the channel. Common maintenance issues include accumulation of sediment, clogging of the filter media, dead / diseased vegetation, and scour of the channel bottom. Bio-Swale BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Bioswale
- Modified Bio-Swale

Linear Filtration / Infiltration Trench



These BMPs are grassy channels atop a layer of sand media. If the trench has an underdrain connected to an outfall pipe, it is considered an infiltration trench. If there is no underdrain and runoff infiltrates into the soil below the media, it is a recharge trench. Features include a gravel bed topped with a filter layer of pea gravel. Common maintenance issues include clogging of the filter bed and scour of the channel bottom. Linear Filtration / Infiltration Trench BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Linear Sand Filter
- Recharge Trench (ICC only)

Perimeter Sand Filter



These BMPs are underground chambers that contain a sedimentation chamber and a sand filter. Features include access grates, a weir separating the sedimentation chamber from the sand filter, and an underdrain for the sand filter that connects to the outfall pipe. Common maintenance issues include blockage of the access grates, clogging of the sand filter media, and accumulation of trash within the underground chamber. Perimeter Sand Filter BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

Surface Sand Filter



These BMPs are small basins that provide temporary storage above a sand filter bed. Features include a pretreatment area for larger sediments and an underdrain system beneath the sand filter bed. Common maintenance issues include accumulation of sediment and clogging of the filter media. Surface Sand Filter BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

Underground Qualitative Treatment



These BMPs are underground chambers that are supplied runoff through an inflow pipe and provide quantitative treatment by either infiltration or filtration. Features include an inflow pipe and filter / infiltration media chamber(s). If used as a pretreatment facility, the outfall pipe doubles as the inflow pipe for a downstream facility. Common maintenance issues include clogging of the filter / infiltration media and accumulation of trash within the underground chamber. Underground Qualitative Treatment BMPs are categorized as Other for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Underground Infiltration Trench
- Underground Storm Filter
- Underground Water Quality Pretreatment

Underground Quantitative Treatment



These BMPs are underground chambers / pipes that provide temporary storage of runoff. Features include an inflow pipe and an orifice designed to drain the chamber over a 12 – 24 hr. period. Common maintenance issues accumulation of trash within the underground chamber / pipe and clogging of the orifice. Underground Quantitative Treatment BMPs are categorized as Other for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Underground Extended Detention
- Underground Storage

Infiltration Basin



These BMPs are basins created by embankments that provide temporary surface storage for runoff. Stored water infiltrates out through the bottom of the facility. Features include pretreatment techniques to preserve the performance of the infiltration bed (grass channel, sand layer, etc.), an inflow pipe / channel, riprap, forebay, riser / weir, outfall pipe / riprap and embankment. Common maintenance issues include accumulation of sediment and clogging of the soil within the infiltration bed. Infiltration Basin BMPs are categorized as Pond / Basin for the purposes of BMP Maintenance Categories.

Infiltration Trench



These BMPs are channels with a gravel bed that encourages runoff to infiltrate below the surface. Features include a gravel bed topped with a filter layer of pea gravel. Clogging of the gravel layers is a common maintenance issue. Infiltration Trench BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

Permeable Pavement Area



These BMPs include any form of paved area that is designed to enable runoff to infiltrate into the soil below the pavements, effectively reducing the amount of impervious cover and giving the area runoff characteristics comparable to vegetated areas. They consist of a surface layer of either porous asphalt / concrete or permeable interlocking concrete pavers and a subsurface layer of either graded stone or sand. Common maintenance issues include clogging of the pores / the spaces between pavers and damage to the paved area due to vegetation growing in the openings in the pavements. Permeable Pavement Area BMPs are categorized as Other for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Permeable Paving
- Porous Pavers

Open Channel System



These BMPs are grass-lined channels in which infiltration occurs as water flows along the channel bottom. May feature a bed of permeable soil and an underdrain if natural soil conditions would not promote infiltration. Common maintenance issues include clogging of the permeable bed and scour of the channel bottom. Open Channel System BMPs are categorized as Small Scale / Linear for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Dry Swale
- Grass Channel
- Grass Swale
- Modified Grass Swale

Dry Pond



These BMPs are basins created by excavation and / or embankments to provide temporary surface storage for runoff. Stored water discharges through a low-flow orifice at a controlled rate over as long as a 48 hr. period. Features include inflow pipe / channel, riprap, forebay, low flow orifice / pipe, riser / weir, outfall pipe / riprap and embankments. Common maintenance issues include accumulation of sediment, clogging of the low-flow orifice, and ponding of water beyond the design period. Dry Pond BMPs are categorized as Pond / Basin for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Dry Extended Detention Pond
- Dry Pond

Wet Pond



These BMPs are basins created by excavation and / or embankments to house a permanent pool, which is fed by stormwater runoff. May have a low-flow orifice to provide temporary surface storage above the permanent pool. Features include inflow pipe / channel, riprap, forebay, rock window, low flow orifice / pipe, riser / weir, outfall pipe / riprap and embankment. Common maintenance issues include accumulation of sediment and clogging of the low-flow orifice. Wet Pond BMPs are categorized as Pond / Basin for the purposes of BMP Maintenance Categories.

The BMP subtypes within this group include:

- Extended Detention Shallow Wetland
- Micropool Extended Detention Pond
- Pocket Pond
- Wet Extended Detention Pond
- Wet Pond

Sand Storage Pond



These BMPs are basins created by excavation and / or embankments to provide temporary surface storage for runoff. Stored water drains from the facility through a sand filter bed that occupies past of the facility's bottom. Features include inflow pipe / channel, riprap, forebay, riser / weir, outfall pipe / riprap and embankments. Common maintenance issues include accumulation of sediment, clogging of the filter media, and ponding of water within the basin. Sand Storage Pond BMPs are categorized as Pond / Basin for the purposes of BMP Maintenance Categories.

5. BMP Maintenance Categories

As previously stated, BMP maintenance categories classify maintenance needs and the resulting work order forms used. The three categories are:

- Pond/ Basin
- Small Scale/ Linear
- Other

Those BMP groups covered by the Pond / Basin and the Small Scale / Linear categories have standardized lists of maintenance activities that generally apply to all BMPs within the category. These activities can be reviewed on the Maintenance Work Order Forms in Appendix A; they are also summarized below. Maintenance requirements for BMPs such as underground storage and permeable paving which fall under 'Other' categories are typically different from requirements for ponds or linear devices and do not also share all maintenance needs between each other. As a result, the BMP Maintenance Guidance Manual would be referred to on a case by case basis for these BMPs.

Pond / Basin

Preventative and annual maintenance activities for this category include mowing, trash and debris removal, and vegetation maintenance.

- Mowing should be conducted to provide access to any inflow, control, and outflow structures as well as along the side slopes for forebays and basins. Excess turf growth (greater than 6.0") within the basins should be trimmed. It is essential to not mow landscape plants.
- Trash and debris should be removed from forebays, impoundment areas, risers, and outfalls.
- For vegetation maintenance, any woody vegetation (volunteers) within the BMP and on adjacent side slopes should be removed. This is especially applicable to the BMP embankment. Woody vegetation should also be removed from near inflow, control, and outflow structures.

Repair and remediation activities that should be conducted as necessary include control of invasion or noxious vegetation, sediment removal, inflow stabilization, site stabilization, impoundment maintenance, control structure maintenance, and landscaping.

- Invasive vegetation within the BMP should be managed. Management of Phragmites specifically is a priority.
- If forebay or impoundment is heavily sedimented, remove sediment and debris, then stabilize disturbed areas.
- Stabilize discharge locations (e.g. riprap) as necessary at the outfall of inflow pipes, inflow channels, weir over-flows, and outfall. Stabilization methods typically include placement or redressing of stone or riprap.

- Eroded or exposed areas should be stabilized using 4-inch topsoil, seed, and mulch and then covered with Type A soil stabilization matting.
- Eroded and exposed areas within impoundments should be repaired. In the event of excessive ponding (such as if a BMP does not drain within its drawdown time), contact OEC Environmental Engineering.
- Defects within control structures should be repaired. These defects may include, but are not limited to, cracks, clogged low-flow pipes / openings, and pipe separations.
- Landscaping should be replaced or supplemented as necessary.

A typical schematic for BMPs within the Pond / Basin maintenance category has been included in Figure 5-1, while a maintenance activity schedule is presented in Table 5-1.

Figure 5-1 Schematic of Typical Pond/ Basin BMP

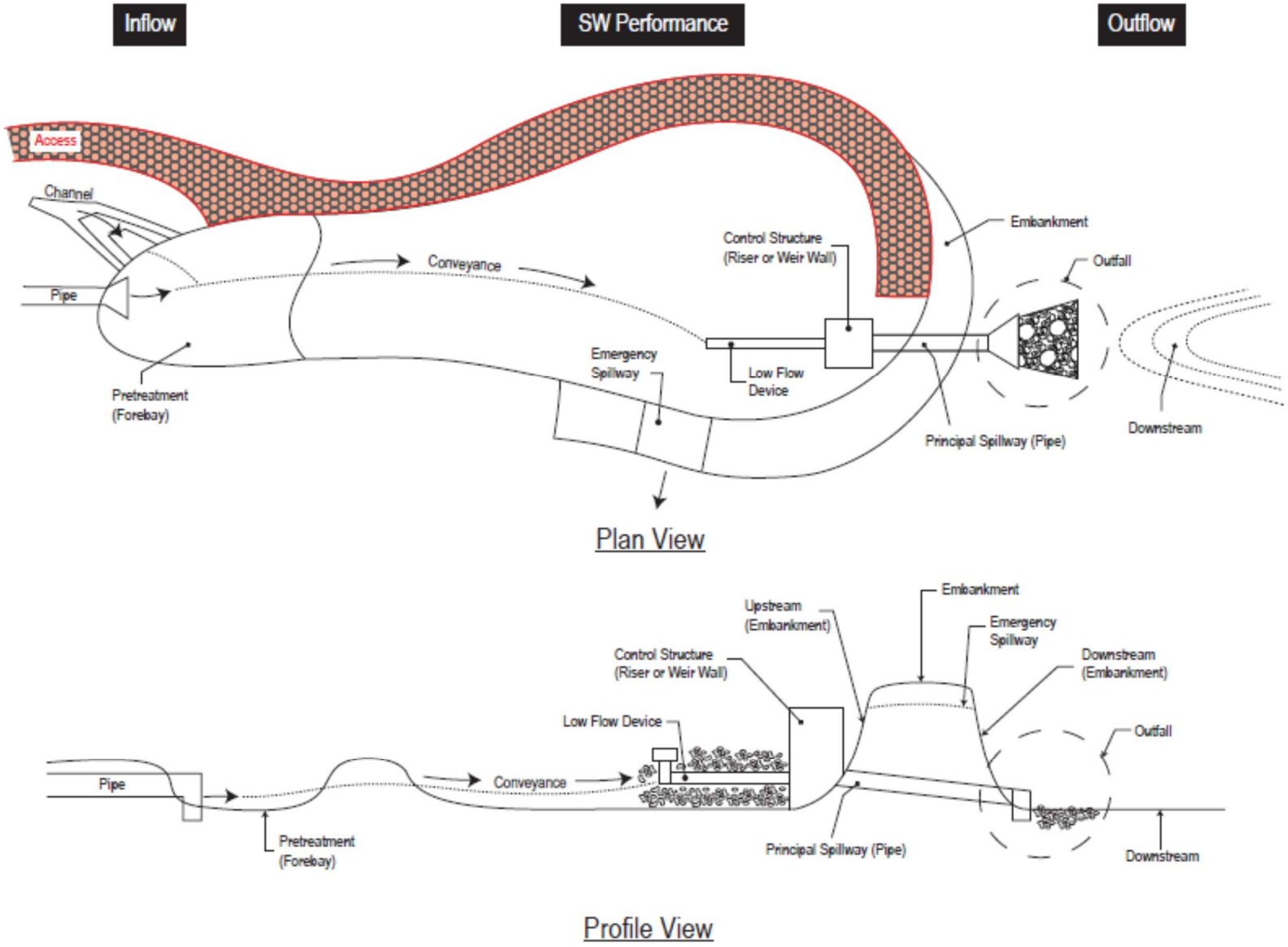


Table 5-1 Maintenance Activity Schedule for Ponds/ Basins

Action	Frequency	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Inspection	1X per year or more	Check: pipe or ditch inflow, riser structure, riprap spillways, ponding depth, slope stability and other conditions			X									
Routine Inspection	4X during Spring/ Summer	Monitor within BMP: vegetative growth, invasive vegetation, sedimentation in forebay and basin, slope stability, erosion.				X		X		X		X		
Mowing	4X per year	Mow side slopes and embankment; trim excessive turf growth in basin				X		X		X		X		
Trash and Debris Removal	1X per year or more	Remove / dispose of accumulated trash and debris within and around site												
Vegetation Management	1X per year or more	Remove volunteered woody vegetation, especially along embankment												
Invasive Vegetative Control	1X per year or more	Manage invasive species. As-needed repair impoundment surface if disturbed.												
Sediment Removal	As-needed, at least every 5 years	Remove / dispose of accumulated sediment within forebay and/or impoundment												
Inflow Stabilization	As-needed	Stabilize discharge locations (outfalls, weirs, etc.)												
Site Stabilization	As-needed	Stabilize site area												
Impoundment Maintenance	As-needed	Repair eroded / exposed areas. Monitor for excessive ponding												
Control Structure Maintenance	As-needed	Repair defects to control structure (e.g., cracks, clogged low-flow pipes / openings, pipe separations)												
Landscaping	As-needed	Replace / Supplement landscaping												

Small Scale / Linear

Preventative and annual maintenance activities for this category include mowing, trash and debris removal, vegetation maintenance, and checking for standing water within observation wells.

- Mowing should be conducted on side slopes and around the perimeter of the BMP. Excess turf growth (greater than 6.0") within the BMP should be trimmed. It is essential to not mow landscape plants.
- Trash and debris should be removed from within and around the BMP.
- For vegetation maintenance, any woody vegetation (volunteers) within the BMP, on adjacent side slopes, and near inflow, control, or outflow structures should be removed.
- The observation wells should be checked for standing water. In the case of significant depth of water after 72 hours since the last significant rainfall, contact OEC Environmental Engineering.

Repair and remediation activities that should be conducted as necessary include control of invasion or noxious vegetation, sediment removal, inflow stabilization, site stabilization, impoundment maintenance, underdrain and outlet maintenance, and landscaping.

- Invasive vegetation within the BMP should be managed. Management of Phragmites specifically is a priority.
- If forebay or impoundment is heavily sedimented, remove sediment and debris, then stabilize disturbed areas.
- Stabilize discharge locations (e.g. riprap) as necessary at the outfall of inflow pipes, inflow channels, weir over-flows, and outfall. Areas adjacent to the roadway edge should also be stabilized. Stabilization methods typically include placement or redressing of stone or riprap.
- Eroded or exposed areas should be stabilized using 4-inch topsoil, seed, and mulch and then covered with Type A soil stabilization matting.
- Eroded and exposed areas within impoundments should be repaired. Surface media should be replaced as needed. In the event of excessive ponding (such as if a BMP does not drain within its drawdown time), contact OEC Environmental Engineering.
- Clogs within the underdrain network should be cleared. The outlet to the underdrain network should be stabilized as necessary.
- Landscaping should be replaced or supplemented as necessary.

A typical schematic for BMPs within the Small Scale / Linear maintenance category has been included in Figure 5-2, while a maintenance activity schedule is presented in Table 5-2. Additionally, a schematic for bioswale mowing has been included in Figure 5-3.

Figure 5-2 Schematic of Typical Small Scale/ Linear BMP

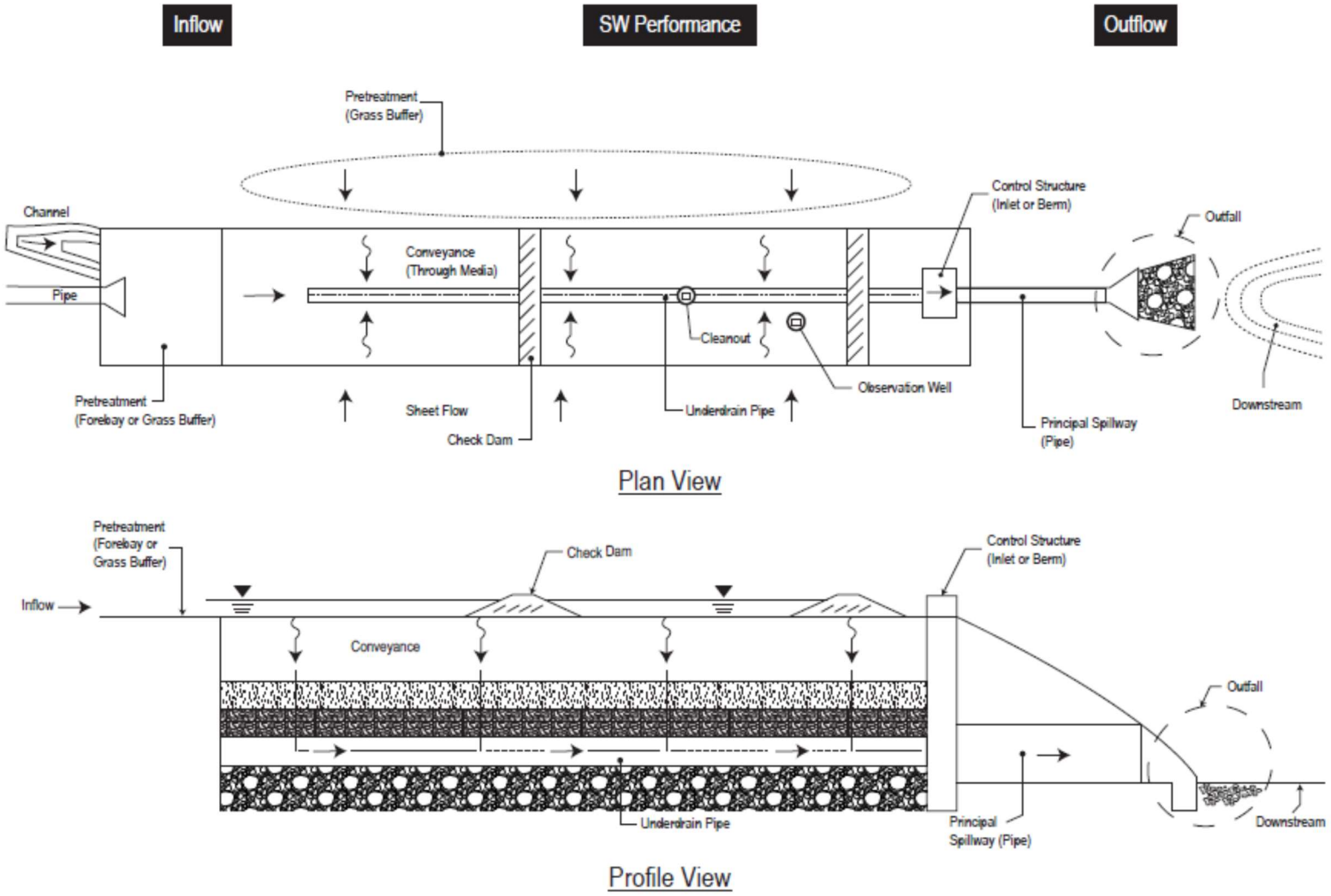


Table 5-2 Maintenance Activity Schedule for Small Scale/ Linear Practices

Action	Frequency	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Inspection	1X per year or more	Check: water-level in observation well, surface media, volunteer/ invasive vegetation, erosion/ sediment …			X									
Mowing	4X per year	Mow side slopes, perimeter area; trim excessive turf growth.				X		X		X		X		
Trash and Debris Removal	1X per year or more	Remove / dispose of accumulated trash and debris within and around site												
Vegetation Management	1X per year or more	Remove volunteered woody vegetation and excessive growth of other vegetation												
Invasive Vegetative Control	1X per year or more	Manage invasive species. As-needed, repair impoundment surface if disturbed.												
Sediment Removal	As-needed, at least every 5 years	Remove / dispose of accumulated sediment within impoundment area.												
Inflow Stabilization	As-needed	Stabilize discharge locations (outfalls, ditches, sheet flow, etc.)												
Site Stabilization	As-needed	Stabilize site area												
Impoundment Maintenance	As-needed	Repair eroded areas. Replace surface media as needed. Monitor for excessive Ponding. Repair damage to observation well, cleanouts…												
Underdrain / Outlet Maintenance	As-needed	Clear clogs within underdrain network, maintain stable outlet												
Landscaping	As-needed	Replace / Supplement landscaping												

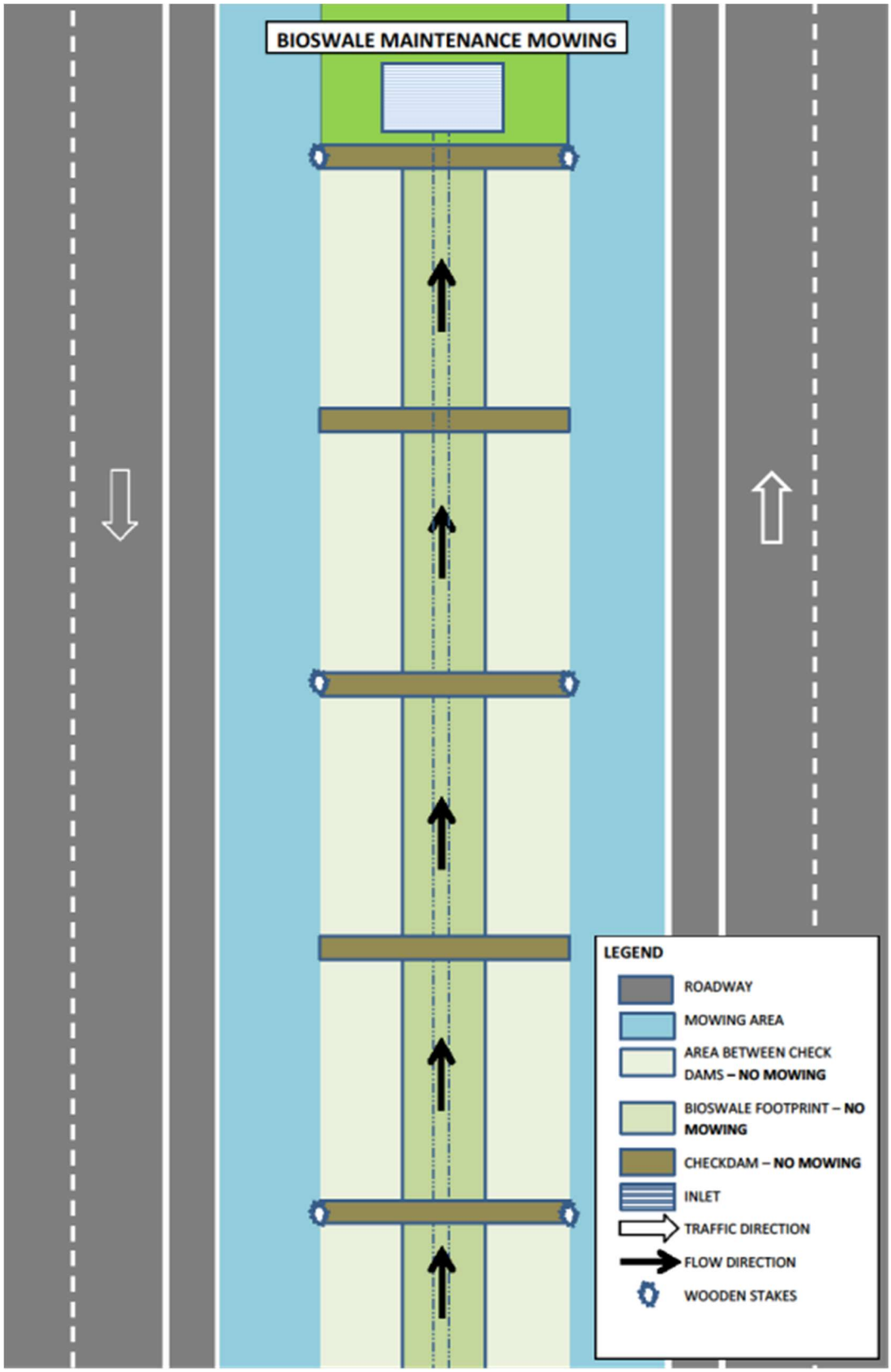


Figure 5-3 Schematic of Bioswale Maintenance Mowing

6. Stormwater BMP's Inventory

Table 6-1 summarizes the stormwater BMPs that this facility is responsible for maintaining. Figure 6-1 provides an overview of the existing BMP locations. Aerial vicinity and site maps of these BMPs, along with site photos, can be found in Appendix B. The BMP Maintenance Guidance Manual describes these BMPs and their components in detail.

Table 6-1 Stormwater BMPs - Overall Summary

BMP Group	Number of BMPs
Bioretention	4
Bio-Swale	12
Linear Filtration / Infiltration Trench	0
Perimeter Sand Filter	2
Surface Sand Filter	0
Underground Qualitative Treatment	0
Underground Quantitative Treatment	0
Infiltration Trench	0
Infiltration Basin	0
Permeable Pavement Area	0
Open Channel System	3
Dry Pond	0
Wet Pond	3
Sand Storage Pond	0
Total	**24**

Table 6-2 BMP Inventory by Group – Bioretention

No	BMP ID	Milepoint	Direction	BMP Type	BMP Subtype	Year Built	BMP Maintenance Category
1	KB0465F01	46.5	Facility	Filtering	Biofiltration	2014	Small Scale/ Linear
2	KB0467F01	46.7	Facility	Filtering	Bioretention	2004	Small Scale/ Linear
3	KB0468E01	46.8	Eastbound	Filtering	Biofiltration	2014	Small Scale/ Linear
4	KB0475A01	47.5	Approach	Filtering	Bioretention	2006	Small Scale/ Linear

Table 6-3 BMP Inventory by Group – Bio-Swale

No	BMP ID	Milepoint	Direction	BMP Type	BMP Subtype	Year Built	BMP Maintenance Category
1	KB0004M01	0.5	Median	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
2	KB0005M01	0.5	Median	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
3	KB0010M01	1.1	Median	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
4	KB0012M01	1.2	Median	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
5	KB0469A01	46.9	Approach	Filtering	Modified Bio-Swale	2013	Small Scale/ Linear
6	KB0470A01	47.0	Approach	Filtering	Modified Bio-Swale	2013	Small Scale/ Linear
7	KB0472A01	47.2	Approach	Filtering	Modified Bio-Swale	2013	Small Scale/ Linear
8	KB0472A02	47.2	Approach	Filtering	Modified Bio-Swale	2013	Small Scale/ Linear
9	KB0493M01	49.3	Median	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
10	KB0503W01	50.2	Westbound	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
11	KB0503W02	50.2	Westbound	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear
12	KB0505M01	50.5	Median	Filtering	Modified Bio-Swale	2014	Small Scale/ Linear

Table 6-4 BMP Inventory by Group – Perimeter Sand Filter

No	BMP ID	Milepoint	Direction	BMP Type	BMP Subtype	Year Built	BMP Maintenance Category
1	KB0464A01	46.4	Approach	Filtering	Perimeter sand filter	2005	Small Scale/ Linear
2	KB0464A02	46.4	Approach	Filtering	Perimeter sand filter	2005	Small Scale/ Linear

Table 6-5 BMP Inventory by Group – Open Channel System

No	BMP ID	Milepoint	Direction	BMP Type	BMP Subtype	Year Built	BMP Maintenance Category
1	KB0470F01	47.0	Facility	Open Channel System	Dry Swale	2004	Small Scale/ Linear
2	KB0496M01	49.6	Median	Open Channel System	Grass Swale	2005	Small Scale/ Linear
3	KB0503A01	50.3	Approach	Open Channel System	Grass Swale	2005	Small Scale/ Linear

Table 6-6 BMP Inventory by Group – Wet Pond

No	BMP ID	Milepoint	Direction	BMP Type	BMP Subtype	Year Built	BMP Maintenance Category
1	KB0455S01	45.5	Southbound	Pond	Wet Pond	1995	Pond/ Basin
2	KB0464N01	46.4	Northbound	Pond	Wet Extended Detention Pond	1990	Pond/ Basin
3	KB0501E01	50.1	Eastbound	Pond	Wet Pond	2011	Pond/ Basin



Figure 6-1 KB BMPs Overview Map

7. References and Resources

The following are key resources available within MDTA:

- Stormwater Best Management Practices (BMP) Maintenance Guidance Manual
- Google Earth GIS Enterprise (MDTA's computer network)
- Stormwater Best Management Practices (BMP) Inspection Manual

Other relevant resources that are readily available are:

- U.S. Environmental Protection Agency (EPA) – BMP maintenance:

http://water.epa.gov/polwaste/npdes/swbmp/BMP-Inspection-and-Maintenance.cfm

- Maryland Department of Environment (MDE) – BMP design:

http://www.mde.maryland.gov/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx

APPENDICES

Appendix A - Maintenance Work Order Forms

Appendix B – BMP Maps and Photos

Appendix F: Pollution Prevention and Good Housekeeping Supporting Documentation

Maryland Transportation Authority	Universal Waste Handling and Disposal			
	Document #: S-OPS-ENVF-A-0007-01	**Original Approval Date: 6/22/09**	**Revised Approval Date: 6/10/10**	**Division of Operations – Environment**

Purpose Procedure References Other Divisions Impacted Contact Information Procedure Status DFD

Important Note: It is the responsibility of anyone using this SOP to ensure that he/she has the most current version.

Purpose

The purpose of this document is to ensure that all Maryland Transportation Authority (MDTA) Division of Operations facilities manage Universal Waste (UW) properly, safely, and in a manner consistent with all environmental regulations. UW includes any of the hazardous wastes described in 40 CFR 273, which include batteries (automotive and dry cell), pesticides, mercury-containing equipment and lamps, and lamp ballasts.

This document includes the following processes:

- Handling and Storage of Universal Waste
- Transport/Disposal of Universal Waste
- Training

Applicability

This procedure applies to all MDTA Division of Operations facilities which generate UW and are designated as either Small Quantity Handlers of UW (SQHUW) or Large Quantity Handlers of UW (LQHUW). Additionally, this procedure applies to all Division of Operations facility personnel who engage in operations that generate or otherwise handle universal waste.

Responsibility

Chief Facility Maintenance Officer (CFMO)* - Ensure that proper universal waste handling, labeling and disposal occurs, arrange timely off-site disposal of universal waste with an MDTA approved, licensed contractor, and ensure that all records are maintained and that all required inspections are performed.

Environmental Compliance Office (ECO) - Serve as the universal waste coordinator for all facilities, provide program oversight for the universal waste program, and conduct all required training.

MDTA Sign Shop – Create appropriately sized and labeled signs for each facility's UW storage area, upon request. This includes signs for used batteries, fluorescent lamps, etc.

All MDTA facility employees - Properly handle and dispose of all universal waste generated by their activities.

*Note - or highest level Maintenance Supervisor

Equipment

Personal Protective Equipment (PPE)

Storage containers – Storage containers may be used to maintain UW within designated storage areas provided they are maintained in good order. Containers may be stored inside facility buildings or outside. Appropriate containers should be used for its location.

Signs – UW signage is mandatory for any area or container holding UW. Permanent signs may be

created by the MDTA Sign Shop. Handwritten signs are appropriate in certain circumstances.

HANDLING AND STORAGE OF UNIVERSAL WASTE

Procedure

Step 1: Operations employee moves UW to designated container(s).

A. Move waste to the designated UW storage area upon completion of the activity which produced the waste.
B. Handle the UW carefully to reduce risk of release into the environment.
C. Verify that universal waste is stored only in designated UW disposal containers.

Note:

1. The UW storage area is different from Satellite Accumulation Area or Hazardous Waste Storage Area.

Step 2: Operations employee ensures that UW is stored in a manner which prevents a release into the environment.

A. Immediately contact the CFMO and the ECO in the event of a release of any UW substance.
B. Ensure that UW which is cracked, damaged or broken is properly managed:
    1. In a structurally sound, leak proof container, compatible with the UW material.
    2. In a closed container, except when adding or removing waste.
    3. In a manner that prevents further damage to the UW material.
C. Containerized UW material (e.g., fluorescent lamps) should be stored as follows:
    1. Kept closed, except when adding or removing UW.
    2. Compatible with the materials to be stored.
    3. Structurally sound, leak-free and designed to prevent breaking and/or damage to the contents.
    4. Displays the words 'UNIVERSAL WASTE'.
    5. Labeled with the type of waste (e.g. Fluorescent Lamps).
    6. Labeled with the accumulation start date.
D. Non-containerized UW material (e.g., used batteries) should be stored as follows:
    1. The UW staging area should be located in an area free of potential disturbance.
    2. UW should be stored on pallets with absorbent material placed underneath.
    3. Proper signage should be installed above the UW storage area. Signs should include the following:
        a. The words 'UNIVERSAL WASTE'.
        b. The type of waste (e.g. Batteries).
        c. The accumulation start date:

Note:

1. UWs may be stored in their designated disposal containers for no more than one (1) calendar year from the accumulation start date.
2. Damaged UW that has not resulted in a release of a UW substance may be stored with general UW at the facility.
3. The accumulation start date is the date in which the first item of UW is placed into the designated container.
4. The accumulation start date must be placed on the label upon first placing UW into an empty container.

Step 3: Operations employee periodically checks the handler status of the facility.

A. Verify that the total accumulated UW at the facility is less than 5,000kg (approximately 11,000 pounds) utilizing Step 4 below.
B. Notify the CFMO to arrange for disposal prior to reaching the 5,000kg threshold.
C. Notify the CFMO immediately if, due to circumstances beyond the control of the MDTA, 5,000kg or more of UW is accumulated or is anticipated to be accumulated.

Note:

1. MDTA facilities, classified as Small Quantity Handlers (SQHUW), **may not** accumulate more than 5,000 kg of UW at any one time.

Step 4: CFMO or designee of each facility inspects UW storage areas on a weekly basis.

A. Verify that UW storage areas in consolidation buildings are kept clean and free of spilled or broken product.
B. Ensure that designated UW disposal containers are available and are capable of receiving waste at all times.

Note:

1. Inspections are performed in accordance with the procedures established Weekly Inspections.

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TRANSPORT/DISPOSAL OF UNIVERSAL WASTE

MDTA facilities do not directly dispose of UW off-site; such actions are performed by an MDTA approved, licensed Contractor. However, MDTA facilities are permitted to self-transport UW to another UW handler (MDTA facility only). MDTA ECO will ensure that any Contractors handling universal waste on behalf of MDTA are licensed by the relevant regulatory agencies.

Procedure

Step 1: CFMO or designee notifies ECO in writing when UW needs disposal.

A. Proper disposal occurs:
   1. Within one (1) year of the accumulation start date on each container's label.
   2. Before UW containers reach their capacity (see note 1 below).
   3. Prior to reaching the 5,000kg small quantity handler threshold.

Step 2: ECO coordinates the waste disposal with the Universal Waste Contractor.

A. Provide the following:
   1. Analytical and/or waste profile data.
   2. Provide location of waste.
   3. Facility contact.
   4. Date waste must be removed.

Note:

1. There may be a lag time of up to two (2) weeks between the initial contact with the UW Contractor and the date of scheduled removal.

Step 3: UW Contractor, along with the CFMO or designee inspects the UW containers for transport.

Step 4: UW Contractor prepares and labels waste for transport and disposal on specified date.

A. If not previously applied, affix a label to each container which includes the following information:
   1. "UNIVERSAL WASTE."
   2. Contents of the container.
   3. Accumulation start date.
   4. Generator's name, facility name and address.

B. Ensure that all packaging is properly closed to avoid accidental opening during transportation.

Step 5: Under the supervision of the CFMO or designee, the Universal Waste Contractor moves the UW to transport vehicle(s).

A. Use hand trucks or forklift to lift the UW containers.
B. Secure UW containers to prevent tipping.

Step 6: Universal Waste Contractor completes the shipping papers.

A. Complete a manifest, bill of lading or other shipping document with the following information:
   1.Name and address of the originating UW handler
   2.Quantity of each type of UW shipped
   3.Date of UW shipment
B. Obtain signature of the representative of the ECO or the CFMO or designee of the generating facility.
C. Give a copy of the completed shipping document to the ECO or the CFMO or designee of the generating facility, prior to leaving generating facility.

Step 7: ECO receives a shipping document and/or certificate of treatment receipt within 45 calendar days of waste being shipped off-site.

A. File a copy of the receipt at the ECO office.
B. Forward a copy of the receipt to the generating facility for their records (electronic copies are acceptable).
C. CFMO or ECO contacts the Universal Waste Contractor if the receipt is not returned within 35 calendar days.
   1. Document that this contact was made with the respondent's name, date and time of the phone call.

Note:

1.If the facility is having difficulty obtaining paperwork from the vendor, contact the ECO for assistance.
2.Copies of all UW shipping documents or other supporting documentation must be filed on site (generating facility) in accordance with Standardized Environmental Record Keeping.

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TRAINING

Procedure

Step 1: The ECO provides UW awareness training to all employees who handle or otherwise manage UW (See Attachment A).

A. Verify that Operations employees receive training that includes at a minimum:
   1. Proper handling procedures to minimize risk of spills or contamination.
   2. Emergency response procedures appropriate for the types of waste being handled.
   3. Review of this SOP.

B. This training should occur within 30 days of new hires expected to handle UW. For all other employees, this training will be provided annually.

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References

Hazardous Material Management
Standardized Environmental Record Keeping
Weekly Inspections
S-OPS-HDQO-A-0005-01 – Training Process for Standard Operating Procedures
S-OPS-HDQO-A-0011 – Entering SOP Training into LMS
S-OPS-HDQO-A-0012 – Operations Division Training Administration

Other Divisions Impacted

None

Contact Information

MDTA Environmental Compliance Office (ECO)
MDE Hazardous Waste Enforcement Division

Procedure Status Information

This document can be found on the MDTA Intranet

Original Date	**Author**	
6/22/09	Paul J. Truntich, Jr.	
Date of this revision:	**Date of next revision:**	
6/7/10	**6/15/2011**	

Revision Number	**Revision Date**	**Summary of Changes**	**Author**
01	**6/7/10**	**Expanded the 'Equipment' section; modified the 'Handling and Storage' section and minor editorial changes.**	

Approved by: (signature on file)	**Title**	**Date**
Derek Jones	Director of Operations	6/10/10

Distributed to:	**Title**
Various	Facility Administrators

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Data Flow Diagram

N/A

ATTACHMENT A

Training	Required		Regulation	Affected Personnel	Training Description	Frequency	Training Record Retention
	SQG	LQG					
Universal Waste Management	Yes	Yes	COMAR 26.13.10.17; .21	Facility personnel handling universal wastes (maintenance, road crews, pesticide personnel, etc.)	Training must entail proper handling of wastes onsite and response to spills of universal wastes during normal operations and emergency procedures. Training is required of all handlers of universal waste.	Annually	Not required; recommended duration of employment

Maryland Transportation Authority	Hazardous Waste Management			
	Document #: **S-EHS-ENVF-A-0003-01**	**Original Approval Date:** 6/22/09	**Revised Approval Date:** 8/23/10	**Division of Environmental Management**

Purpose Procedure References Other Divisions Impacted Contact Information Procedure Status DFD

Important Note: It is the responsibility of anyone using this SOP to ensure that he/she has the most current version.

Purpose

The purpose of this document is to ensure that all Maryland Transportation Authority (MDTA) Division of Operations facilities practice the safe and proper procedures for the management of hazardous waste, in a manner consistent with all environmental regulations.

This document contains the following processes:

- Determination of Generator Status
- Characterization of Hazardous Waste Streams
- Handling/Storage of Hazardous Waste
- Transport/Disposal of Hazardous Waste
- Training
- Biennial Hazardous Waste Report
- Facility Contingency Plan

Applicability

This procedure is applicable to all MDTA Division of Operations facilities, classified as Small Quantity Generators (SQG) or Fully Regulated Generators (FRG, defined by Federal regulations as a Large Quantity Generator or LQG), which generate, handle, store or dispose of hazardous waste.

Additionally, this procedure applies to all MDTA Division of Operations employees who engage in hazardous waste generation, handling, storage or disposal, and to personnel in the MDTA Division of Operations responsible for environmental compliance.

Responsibility

Chief Facility Maintenance Officer (CFMO)* or designee - Ensure that hazardous waste operations are conducted in accordance with the procedures described in this document and arrange for transport and disposal of hazardous waste through the Division of Operation's Environmental Compliance Office (ECO).

Environmental Compliance Office (ECO) - Serve as hazardous waste coordinator for all facilities and administer and track all required training.

MDTA Division of Operations Employees - Handle hazardous waste safely, properly, and in accordance with all environmental regulations and this SOP.

Office of Risk Management - Implement and oversee the Authority's overall risk management and safety programs.

*Note - or highest level Maintenance Supervisor

Equipment

Personal Protective Equipment (PPE)
Spill Kit
Flammable Materials Locker

DETERMINATION OF GENERATOR STATUS

Procedure

Step 1: ECO, CFMO or designee determines the generator status of the facility.

A. Classify as Small Quantity Generator (SQG) if facility:
   1. Generates less than 220 lbs of hazardous waste or less than 2.2 lbs of acute hazardous waste in any calendar month; or
   2. Accumulates no more than 220 lbs of hazardous waste or less than 2.2 lbs of acute hazardous waste at any time.

B. Classify as Fully Regulated Generator (FRG) if facility:
   1. Generates 220 lbs or more of hazardous waste or 2.2 lbs or more of acute hazardous waste in any calendar month; or
   2. Accumulates more than 220 lbs of hazardous waste or 2.2 lbs or more of acute hazardous waste at any time.

Notes:

1. Facilities are required to comply with the appropriate regulations associated with their generator status.
2. Maryland has its own, more stringent, generator classifications and definitions, which differ from the Federal classifications.
3. Generator status may change from month-to-month depending upon the amount of hazardous waste generated at an MDTA facility.

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CHARACTERIZATION OF HAZARDOUS WASTE STREAMS

The MDTA is responsible for characterizing all potentially hazardous waste streams based upon the analytical results of a representative sample of the waste stream.

Procedure

Step 1: CFMO or designee notifies the ECO in writing when a new and potentially hazardous waste stream is identified that has not been characterized previously.

Step 2: ECO takes a representative sample of the waste stream and submits it to the MDTA contracted laboratory for analysis.

A. Ensure that all samples are collected and managed in accordance with the laboratory specified guidelines.
B. Use the sample containers, sample quantities and quality control procedures provided by the lab for the representative sample.

C. Send or deliver the sample to the lab.

Notes:

1. All chemical analysis is performed off-site by the MDTA contracted lab.
2. The MDTA will take samples of the first 2 to 3 drums of all new waste streams to develop a profile of the waste stream. Further sampling will not be needed if the processes at the facility that generate the waste stream do not change.
3. Samples are analyzed for the following:
   - Toxicity Characteristic Leaching Procedure (TCLP);
   - Flash point;
   - pH; and
   - Total Petroleum Hydrocarbons (TPH), if the waste material has the potential to be impacted by petroleum products.

Step 3: ECO determines the appropriate handling, storage and disposal methods of the material upon receipt of the lab results.

A. Notify the CFMO, in writing, of the analytical results and direct how the hazardous waste will be managed.

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HANDLING/STORAGE OF HAZARDOUS WASTE

Hazardous waste generated at any MDTA facility is stored in the appropriate Satellite Accumulation Area (SAA) or Hazardous Waste Storage Area (HWSA).

An SAA is a temporary accumulation area, located at or near the point of generation, in which small quantities of hazardous waste can be stored prior to being transferred to the HWSA. A facility may have several SAAs; however, only one SAA may exist at or near each point of generation.

The HWSA is the centralized storage place for hazardous waste awaiting final disposal. Each MDTA facility shall have only one HWSA.

Step 1: Operations employee utilizes approved handling procedures when handling hazardous waste.

A. Wear appropriate Personal Protective Equipment (PPE).
   1. Gloves
   2. Goggles
   3. Smock
   4. Respirators (if applicable)

B. Use equipment appropriate for the type of hazardous waste being handled.
   1. Inspect equipment prior to every use.

C. Use appropriate spill prevention measures.
   1. Gauge the container contents to determine the available capacity for filling.
   2. Provide appropriate overfill and spill protection.

Note:

1. MDTA may elect to supply appropriate spill response materials capable of containing a spill in the immediate vicinity in lieu of secondary containment (SAA only).
2. Refer to Office of Risk Management or ECO regarding use of PPE.

Step 2: Operations employee moves hazardous waste from point of origination to designated container(s) in SAA.

A. Move waste to the appropriate SAA upon completion of the activity which produced the waste.
B. Handle the hazardous waste carefully to reduce risk of release into the environment.
C. Verify that hazardous waste is stored only in a designated waste disposal container.

Note:

1. The Operations employee who creates the hazardous waste is directly responsible for proper management of the waste in accordance with this procedure.

Step 3: CFMO or designee manages the SAA to ensure that hazardous waste is stored in a manner which prevents a release into the environment.

A. Visually inspect the SAA on a weekly basis in accordance with facility Weekly Inspections SOP.
B. Ensure that the SAA has no more than 55 gallons of hazardous waste, or one (1) quart of acute hazardous waste, stored at any point in time.
    1. Arrange for removal of any hazardous waste which meets 55 gallon limit to the HWSA within 24 hours or immediately transport the waste off-site for disposal (see Transport/Disposal section of this document).
    2. Mark the container with the date that the 55 gallon limit is reached.
C. Verify the SAA is properly labeled with the words "Satellite Accumulation Area."
D. Verify that hazardous waste containers are:
    1. In good condition and compatible with the waste stored within.
    2. Labeled 'HAZARDOUS WASTE' or with other words that identify the contents within.
    3. Kept closed except when adding or transferring waste.
E. Ensure that wastes of different types are maintained in separate containers, in a manner that prevents contact between incompatible wastes. A listing of potentially incompatible wastes has been included as Attachment A.
F. Ensure ignitable and/or reactive wastes are stored a minimum of fifty (50) feet from the property boundary.
G. Flammable wastes should be stored in a steel drum.
    1. Liquid wastes should be placed in a sealed drum through a UL listed funnel with a lockable lid.
    2. Solid wastes should be placed in an open top drum with a UL listed lid with a fusable link. Once the drum is full the lid should be moved to a new drum a solid lid with a bolted ring should be placed on the drum for transportation to the HWSA and disposal.

Notes:

1. A facility is permitted to establish multiple SAA's.
2. Once waste is transported from the SAA to the HWSA, it is subject to the regulations for the HWSA.

Step 4: CFMO or designee manages the HWSA to ensure that hazardous waste is stored in a manner which prevents a release into the environment.

A. Inspect the HWSA on a weekly basis in accordance with the facility Weekly

Environmental Inspections SOP.

B. Ensure that only hazardous waste, associated containment(s), and safety equipment are stored in the HWSA.
    1. Ensure that no virgin product, other hazardous materials, non-hazardous materials, or non-characterized wastes are stored in the HWSA.
C. Verify that a 'HAZARDOUS WASTE' sign and a 'No Smoking' sign are prominently displayed (visible from a distance of at least 20 feet).
D. Ensure that where feasible the HWSA is located:
    1. Separate from the point of hazardous waste generation.
    2. Under cover or indoors.
        a. If indoors, the HWSA must allow for adequate ventilation and be located away from floor drains or cracks in the floor.
    3. Away from direct sunlight and ignition sources.
    4. In a lockable container or inside a fence equipped with lockable gate.
E. Verify that all hazardous waste containers:
    1. Are in good condition and compatible with the waste stored within.
    2. Are clearly labeled 'HAZARDOUS WASTE'.
    3. Include a label which indicates:
        a. Accumulation start date (the date on which hazardous waste is first placed in the HWSA).
        b. Name/type of waste (i.e. used oil, waste paint, etc.).
        c. Hazardous properties of the waste (flammable, corrosive, etc.).
    4. Are kept closed.
    5. Are stored in a manner that allows for inspection between containers;
        a. If arranged in aisles, the aisles should be at least two (2) feet in width.
    6. Are not stacked.
F. Ensure that containers are stored on or in secondary containment units or possess other acceptable means of secondary containment as follows:
    1. Secondary containment equipment must be constructed of materials appropriate for the waste being stored.
    2. Secondary containment areas/systems should be free of debris, trash, water, and any other materials that will limit its holding capacity.
    3. Upon accumulation of any free product in the secondary containment systems, the product must be pumped out or otherwise handled, removed, and disposed of in accordance with the 'Transport/Disposal' section of this document.
G. Ensure that wastes of different types are maintained in separate containers and in a manner that prevents contact between incompatible wastes. A listing of potentially incompatible wastes has been included as Attachment A.
H. Ensure that ignitable and/or reactive wastes are stored a minimum of fifty (50) feet from the property boundary.

Notes:

1. All containers offered for transport must conform to the regulations specified in the Federal Regulations 49 CFR 173, CFR 178 and CFR 179.
2. Hazardous waste must be removed from the HWSA and transported off-site for proper disposal by an MDTA-approved, licensed Hazardous Waste Contractor within ninety (90) calendar days of the accumulation start date.

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TRANSPORT/DISPOSAL OF HAZARDOUS WASTE

MDTA facilities do not directly dispose of or transport hazardous waste off-site. Such actions are performed by an MDTA-approved, licensed Hazardous Waste Contractor. MDTA ECO will ensure that any contractors handling hazardous waste on behalf of MDTA are licensed by the relevant regulatory agencies.

Procedure

Step 1: CFMO or designee notifies ECO in writing 45 calendar days from the initial accumulation date that hazardous waste needs disposal.

Note:

1. Hazardous waste must be removed from a facility within 90 calendar days of initial accumulation; however, the removal process must be started **45 calendar days** from the initial accumulation date, to allow time to coordinate with the licensed Hazardous Waste Contractor.

Step 2: ECO coordinates the waste disposal with the licensed Hazardous Waste Contractor.

A. Provide the following:
   1. Analytical and/or waste profile data.
   2. Approximate quantity.
   3. Provide location of waste.
   4. Facility contact.
   5. Date waste must be removed.

Note:

1. There may be a lag time of up to two (2) weeks between the initial contact with the licensed Hazardous Waste Contractor and the date of scheduled removal.

Step 3: The Hazardous Waste Contractor, along with the CFMO or designee inspects the hazardous waste containers for transport.

Step 4: Licensed Hazardous Waste Contractor prepares and labels waste for transport and disposal on specified date.

A. Affix a label to each container which includes the following information:
   1. "HAZARDOUS WASTE Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency" (EPA).
   2. The generator's name, facility name and address.
   3. The generator's EPA identification number.
   4. The appropriate manifest tracking number.

Step 5: Under the supervision of the CFMO or designee, the licensed Hazardous Waste Contractor moves the hazardous waste to transport vehicle(s).

A. Use hand trucks or forklift to lift 55 gallon hazardous waste containers.
B. Secure hazardous waste containers to prevent tipping.

Step 6: Licensed Hazardous Waste Contractor completes the hazardous waste manifest.

A. Complete the hazardous waste manifest using EPA Form 8700-22 or 8700-22A (if more than 1 transporter is used).
   1. Obtain signature of the representative of the ECO or the CFMO or qualified designee of the generating facility.
   2. Give a copy of the completed manifest to the ECO or the CFMO or designee of the generating facility, prior to leaving generating facility.

Step 7: ECO receives a manifest receipt within 45 calendar days of waste being shipped off-site.

A. Contact the Hazardous Waste Contractor if the receipt is not returned within 35 calendar days.
B. File a copy of the receipt at the ECO office.
C. Forward a copy of the receipt to the generating facility for their records (electronic copies are acceptable).
D. File an exception report with the Maryland Department of the Environment (MDE) if the manifest receipt is not returned within 45 calendar days of the hazardous waste shipment.
E. Document conversations using the MDTA Record of Telephone Conversation form and follow any instructions provided by MDE.

Note:

1. Copies of all manifests, exception reports, or other supporting documentation must be filed on-site (generating facility) in accordance with Standardized Environmental Record Keeping.

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TRAINING

Procedure

Step 1: ECO or designee provides hazardous waste management training on annually and "as needed" at his/her discretion.

A. Verify that authorized employees receive training that includes at a minimum:
   1. Hazard identification.
   2. Release prevention.
   3. Safe operating and material handling procedures.
   4. Safe work practices.
   5. Familiarity with suitable personal protective equipment (PPE).
   6. Basic emergency procedures.
   7. Other activities as required by specific job duties.
   8. Review of this SOP.

Note:

1. A table of required training topics and their frequencies has been included as Attachment B.

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BIENNIAL HAZARDOUS WASTE REPORT

Procedure

Step 1: ECO prepares and submits a Biennial Hazardous Waste Report to MDE

A. Prepare the report in accordance with the Biennial Hazardous Waste Report Preparation

and Submittal guidelines.

B. Submit the report by the 1st of March of each even numbered year, following the reporting period (i.e., the preceding odd numbered year).
   1. If MDE has issued another deadline for biennial hazardous waste report submittal, the most recently published MDE guideline shall supersede the deadline stated in this SOP.

C. Submit the report by the required deadline to:
   Maryland Department of the Environment
   Hazardous Waste Program
   1800 Washington Boulevard, Suite 605
   Baltimore, Maryland 21230-1719

D. File in accordance with Biennial Hazardous Waste Report Preparation and Submittal.

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FACILITY CONTINGENCY PLAN

Each facility must have a Facility Contingency Plan. Refer to each facility's Contingency Plan for facility-specific information.

Procedure

Step 1: CFMO or designee maintains a Contingency Plan for his/her facility.

A. Ensure the Contingency Plan includes at a minimum:
   1. Description of the actions facility personnel must take to comply with Federal Regulations 40 CFR 265.51 and 40 CFR 265.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.
   2. Description of arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services.
   3. List of names, addresses, and phone number(s) of all persons qualified to act as emergency coordinator.
      a. If more than one (1) person is listed in this section, the plan must designate a primary emergency coordinator.
   4. List of all emergency equipment at the facility (i.e. fire extinguishing systems, spill control equipment, communications and alarm systems and decontamination equipment), the location and a physical description of each item on the list, and a brief outline of its capabilities.
   5. Evacuation plan for facility personnel.

Note:

1. If the facility is already in possession of a Spill Prevention Control and Countermeasure (SPCC) Plan, it may be amended to include provisions for hazardous waste management. Combined plans are referred to as Integrated Contingency Plans or ICPs.

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References

Biennial Hazardous Waste Report Preparation and Submittal
EPA Form 8700-22 or 8700-22A
Hazardous Material Management
Federal Regulations CFR 173
Federal Regulations CFR 178
Federal Regulations CFR 179
Federal Regulations 40 CFR 265.51
Federal Regulations 40 CFR 265.56
Standardized Environmental Record Keeping
Weekly Inspections

Other Divisions Impacted

Office of Risk Management

Contact Information

MDTA Environmental Compliance Office (ECO)

Procedure Status Information

This document can be found on the MDTA Intranet.

Original Date	**Author**	
8/12/10	Paul J. Truntich, Jr.	
Date of this revision:	**Date of next revision:**	
	9/1/2011	

Revision Number	**Revision Date**	**Summary of Changes**	**Author**
		Added additional details on flammable liquid storage.	

Approved by: (signature on file)	**Title**	**Date**
Derek Jones	Director, Division of Operations	8/23/10

Distributed to:	**Title**
Various	Facility Administrators

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Data Flow Diagram

N/A

ATTACHMENT A - POTENTIALLY INCOMPATIBLE WASTES

This list shall serve only as an example of incompatible wastes. The generator shall always ensure the compatibility of hazardous wastes prior to placing in storage.

ATTACHMENT A The mixing of Group A with a Group B material may have the noted potential consequences.	
Group 1-A	**Group 1-B**
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Caustic wastewater	Electrolyte, acid
Lime sludge and other corrosive alkalis	Etching acid liquid or solvent
Lime wastewater	Pickling liquor and other corrosive acids
Lime and water	Spent acid
Spent caustic	Spent mixed acid
	Spent sulfuric acid
POTENTIAL CONSEQUENCES: HEAT GENERATION, VIOLENT REACTION	
Group 2-A	**Group 2-B**
Aluminum, beryllium, calcium, lithium, magnesium, potassium, sodium, zinc powder, and other reactive metals and metal hydrides	Any waste in Group 1-A or 1-B
POTENTIAL CONSEQUENCES: FIRE OR EXPLOSION, GENERATION OF FLAMMABLE HYDROGEN GAS	
Group 3-A	**Group 3-B**
Alcohols	Any concentrated waste in Groups 1-A or 1-B
	Calcium
	Lithium
	Metal hydrides
	Potassium
	SO_2, Cal_2, $COCl_2$, PCl3, CH_3SiCl_3
	Other water-reactive waste
POTENTIAL CONSEQUENCES: FIRE, EXPLOSION, OR HEAT GENERATION; GENERATION OF FLAMMABLE OR TOXIC GASES	
Group 4-A	**Group 4-B**
Alcohol	Concentrated Group 1-A or 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	
POTENTIAL CONSEQUENCES: FIRE, EXPLOSION, OR VIOLENT REACTION	
Group 5-A	**Group 5-B**
Spent cyanide and sulfide solutions	Group 1-B wastes
POTENTIAL CONSEQUENCES: GENERATION OF TOXIC HYDROGEN CYANIDE, CYANOGEN, CHLORIDE, OR HYDROGEN SULFIDE GAS	
Group 6-A	**Group 6-B**
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Chromic acid	Group 4-A wastes
Nitrates	Other flammable and combustible waste
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	
POTENTIAL CONSEQUENCES: FIRE, EXPLOSION, OR VIOLENT REACTION	

Source: 40 CFR 264, Appendix V

ATTACHMENT B

Training	Required		Regulation	Affected Personnel	Training Description	Frequency	Training Record Retention
	SQG	LQG					
RCRA Hazardous Waste Management	BMP	Yes	COMAR 26.13.03.05E referencing 26.13.05.02G	Facility personnel handling hazardous waste (maintenance shop, road crews, pesticide personnel, painters, etc.)	Classroom instruction or on the job training that teaches response procedures associated with HW-related emergencies, including use, inspection and maintenance of emergency equipment and systems; communication and alarm systems, responses to fires/explosions, and responses to groundwater contamination incidents.	New employee training prior to working unsupervised, annual training thereafter.	Facility closure; duration of employment + 3 year
Hazardous Communication (HAZCOM)	N/A	N/A	Annotated Code of Maryland, Title 5; COMAR 09.12	All facility personnel exposed to hazardous substances.	Training must detail the information found in the Hazard Communication program; provide information on work area hazards; location of written program, chemical list, and Material Safety Data Sheets; release detection, personnel protective equipment, and other emergency procedures.	When new chemical/physical health hazard introduced (not just new chemical)	Not required; recommended duration of employment
DOT Training	N/A	N/A	49 CFR 172.700	Personnel preparing hazardous materials/waste for shipment; signing manifest	Training must include general awareness, function specific, safety training, and security awareness training. Training record must include employees name, date of most recent training, description of training, name and address of instructor, and certification of completion.	Every 3 years	Duration of employment + 3 months
Spill Prevention Control and Counter Measures Plan	N/A	N/A	40 CFR 112	Maintenance shop, road crews, (oil handling personnel)	Oil handling personnel must be trained in material handling, equipment use and maintenance, discharge procedures protocols, regulations, facility operations and the SPCC plan.	Annual	3 years
Hazardous Waste Operations (HAZWOPER)	N/A	N/A	29 CFR 1910.120	Facility personnel that will respond to a release of hazardous substances. Staff who handle incidental releases	Training based on duties and level of response/exposure to hazardous waste response.	Initial, annual re-certification	Duration of employment

				not required.			

Maryland Transportation Authority

RECORD OF TELEPHONE CONVERSATION

DATE: _____ TIME: _____

CALLER INFORMATION

NAME: _____ TITLE: _____

COMPANY: _____ PHONE #: _____

INCOMING CALL: _____ OUTGOING CALL: _____

SUMMARY OF CONVERSATION:

FOLLOW-UP ITEMS:

- _____
- _____
- _____
- _____
- _____
- _____

_____

NAME OF MDTA REPRESENTATIVE DATE

_____

SIGNATURE OF MDTA REPRESENTATIVE

MARYLAND DEPARTMENT OF AGRICULTURE
PESTICIDE REGULATION SECTION
THE WAYNE A. CAWLEY, JR. BUILDING
50 HARRY S. TRUMAN PARKWAY
ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

9967607

PESTICIDE PUBLIC AGENCY PERMIT NO. 9055

MARYLAND TRANSPORTATION AUTHORITY BALTIMORE HARBOR
1150 FRANKFURST AVE
BALTIMORE, MD 21226

EXPIRES 06/30/2021

POST IN A CONSPICUOUS PLACE

APPLICATION CATEGORIES: 6

This permit is granted to this agency for the application of pesticides, in the category(ies) shown above, within the State of Maryland, in accordance with the provisions of the Agricultural Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

A listing of the Pest Control Categories as appears in the Regulations Pertaining To The Pesticide Applicators Law, Code of Maryland Regulations (COMAR) 15.05.01 is provided on the reverse side of this certificate (license or permit).

Joseph Bartenfelder
Secretary of Agriculture

MDA-355 (REV 11/02)

Under the provisions of the Regulations Pertaining To The Pesticide Applicators Law, Section 15.05.01.08 of COMAR, Maryland has established the following categories of pest control:

1. - Agricultural
    - A - Plant
    - B - Animal
    - C - Grain Treatment
2. - Forest
3. - Ornament or Turf
    - A - Ornamental Plants and Shade Trees - Exterior
    - B - Ornamental Plants - Interior
    - C - Turf and Lawn Pest Control
4. - Seed Treatment
5. - Aquatic
6. - Right of Way and Weed
7. - Industrial, Institutional, Structural, and Health Related Pest Control
    - A - General Pest Control
    - B - Wood Destroying Insects
    - C - Wildlife Control
    - D - Rodent Control
    - E - Fumigation
8. - Public Health
9. - Regulatory
10. - Demonstration and Research
11. - Miscellaneous
    - A - Wood Treatment
    - B - Tributltin (TBT) Antifoulant Paint
    - C - Sewer Root Control
12. - Consultant
13. - Aerial

MARYLAND DEPARTMENT OF AGRICULTURE
PESTICIDE REGULATION SECTION
THE WAYNE A. CAWLEY, JR. BUILDING
50 HARRY S. TRUMAN PARKWAY
ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

9967608

PUBLIC AGENCY APPLICATOR CERTIFICATE NO. 9055-8302

HARRY KLINGELHOFER

EXPIRES 06/30/2021

POST IN A CONSPICUOUS PLACE

MARYLAND TRANSPORTATION AUTHORITY BALTIMORE HARBOR
1150 FRANKFURST AVE
BALTIMORE, MD 21226

APPLICATION CATEGORIES: 6

This certifies that this individual has demonstrated knowledge and competence as a public agency applicator in the category(ies) shown above, under the provisions of the Agricultural Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

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ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

9967609

PUBLIC AGENCY APPLICATOR CERTIFICATE NO. 9055-77183

ROBERT LOWE

EXPIRES 06/30/2021

POST IN A CONSPICUOUS PLACE

MARYLAND TRANSPORTATION AUTHORITY BALTIMORE HARBOR
1150 FRANKFURST AVE
BALTIMORE, MD 21226

APPLICATION CATEGORIES: 6

This certifies that this individual has demonstrated knowledge and competence as a public agency applicator in the category(ies) shown above, under the provisions of the Agricultural Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

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Secretary of Agriculture

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10. - Demonstration and Research
11. - Miscellaneous
    - A - Wood Treatment
    - B - Tributltin (TBT) Antifoulant Paint
    - C - Sewer Root Control
12. - Consultant
13. - Aerial

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	ILL500035 ICC West PSD #1				
Quarter / Year:	2020/Q1	**Date / Time Collected:**	3/3 1120	**Date / Time Examined:**	3/3 1230
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Seth Hinder				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** **(No (Clear))**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **(Yes)** **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** **(No)**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **Yes** **(No)**	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? **Yes** **(No)**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? **Yes** **(No)**	Describe:
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? **Yes** **(No)**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*)
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **Yes** **(No)**	Describe:

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Seth Hinder 3/3/20

Stormwater Examiner's Signature and Date: M. A. M 3/3/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	ICC500034 ICC East PSD #1				
Quarter / Year:	2020 / Q1	**Date / Time Collected:**	3/3 1130	**Date / Time Examined:**	3/3 1210
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Seth Hinchee				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. **Color**	Does the stormwater appear to have any color? **Yes** **(No (Clear))**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. **Clarity**	Is the stormwater clear? **(Yes)** **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. **Oil Sheen**	Can you see a rainbow effect or sheen on the water surface? **Yes** **(No)**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. **Odor**	Does the sample have an odor? **(Yes)** **No**	If Yes, describe: *Chemical (Musty) Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:* organics
5. **Floating Solids**	Is there anything on the surface of the sample? **Yes** **(No)**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. **Suspended Solids**	Is there anything suspended in the sample? **(Yes)** **No**	Describe: clear silts, algae
******Leave sample undisturbed for 30 minutes.******		
7. **Settled Solids**	Is there anything settled on the bottom of the sample? **(Yes)** **No**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) organics
8. **Foam**	Does foam or material form on the top of the sample surface if you shake it? **Yes** **(No)**	Describe:

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.**

N/A

Stormwater Collector's Signature and Date: Seth Hinchee 3/3/20

Stormwater Examiner's Signature and Date: M. A. M 3/3/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	KHEMGIIZG PSD#1 (JFK2)				
Quarter / Year:	2020/Q1	**Date / Time Collected:**	2/25 952	**Date / Time Examined:**	2/25 1038
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Seth Hunter				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? (Yes) No (Clear)	If Yes, describe: *Yellow* (Brown) *Red* (Gray) *Other:*
2. Clarity	Is the stormwater clear? Yes (No)	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids* (Milky/Cloudy) *Opaque* *Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? Yes (No)	Which best describes the sheen? *Rainbow sheet* *Floating oil globules* *Other:*
4. Odor	Does the sample have an odor? Yes (No)	If Yes, describe: *Chemical* *Musty* *Rotten Eggs* *Sewage* *Sour Milk* *Oil/Petroleum* *Other:*
5. Floating Solids	Is there anything on the surface of the sample? Yes (No)	If Yes, describe: *Suds* *Oily Film* *Garbage* *Sewage* *Water Fowl Excrement* *Other:*
6. Suspended Solids	Is there anything suspended in the sample? (Yes) No	Describe: <1 mm silts, organics
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? (Yes) No	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) organics, <1 mm silts
8. Foam	Does foam or material form on the top of the sample surface if you shake it? (Yes) No	Describe: 3 mm soapy film, does not dissipate immediately

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.**

Could not identify a source

Stormwater Collector's Signature and Date: Seth Hunter 2/25

Stormwater Examiner's Signature and Date: M.M 2/25

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	HBMH/00003 OSD#11 (Hatem)				
Quarter / Year:	2020/Q1	**Date / Time Collected:**	2/25 936	**Date / Time Examined:**	2/25 1010
Qualifying Storm Event?	Yes / No		**Runoff Source:**	Rainfall / Snowmelt	
Collector's Name & Title	Seth Hinder				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** **No (Clear)**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **Yes** **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** **No**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **Yes** **No**	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? **Yes** **No**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? **Yes** **No**	Describe: Lime silts
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? **Yes** **No**	Describe: *(note type, size and material after sample is not disturbed for 30 minutes)*
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **Yes** **No**	Describe:

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Seth Hinder 2/25

Stormwater Examiner's Signature and Date: M. A. M 2/25

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	KHEH00755 PSD #2 JFK1				
Quarter / Year:	2020 / Q1	**Date / Time Collected:**	2/25 1156	**Date / Time Examined:**	2/25 1:00
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Seth Hinder				
Examiner's Name & Title	Mike Morra				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** **(No (Clear))**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **(Yes)** **(No)**	If not clear, which of the following best describes the clarity of the stormwater? *(Suspended Solids) Milky/Cloudy Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** **(No)**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **(Yes)** **No**	If Yes, describe: *Chemical (Musty) Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:* organic
5. Floating Solids	Is there anything on the surface of the sample? **Yes** **(No)**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? **(Yes)** **No**	Describe: algae
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? **(Yes)** **No**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) Algae
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **Yes** **(No)**	Describe:

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Seth Hinder 2/25

Stormwater Examiner's Signature and Date: N/A 2/25

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	VIIN01375 PSD #1 JFK #1				
Quarter / Year:	2026/Q1	**Date / Time Collected:**	2/25 1266	**Date / Time Examined:**	2/25 1:00
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Seth Hinder				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** **(No (Clear))**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **(Yes)** **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** **(No)**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **Yes** **(No)**	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? **Yes** **(No)**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? **Yes** **(No)**	Describe:
******Leave sample undisturbed for 30 minutes.******		
7. Settled Solids	Is there anything settled on the bottom of the sample? **Yes** **(No)**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes)*
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **Yes** **(No)**	Describe:

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Seth Hinder 2/25

Stormwater Examiner's Signature and Date: M A M 2/25

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	KHEH00155 PSD #2 W of I				
Quarter / Year:	2020/Q1	**Date / Time Collected:**	2/25 1100	**Date / Time Examined:**	2/25 1130
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Seth Hinder				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. **Color**	Does the stormwater appear to have any color? **Yes** **(No (Clear)**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. **Clarity**	Is the stormwater clear? (Yes) **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. **Oil Sheen**	Can you see a rainbow effect or sheen on the water surface? **Yes** (No)	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. **Odor**	Does the sample have an odor? (Yes) **No**	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk* (Oil/Petroleum) *Other:* Mild
5. **Floating Solids**	Is there anything on the surface of the sample? **Yes** (No)	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. **Suspended Solids**	Is there anything suspended in the sample? **Yes** (No)	Describe:
Leave sample undisturbed for 30 minutes.		
7. **Settled Solids**	Is there anything settled on the bottom of the sample? **Yes** (No)	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*)
8. **Foam**	Does foam or material form on the top of the sample surface if you shake it? **Yes** (No)	Describe:

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.**

Flows from stormwater ~~[illegible]~~ facility adj. to Maintnce Shop

Stormwater Collector's Signature and Date: Seth Hinder 2/25

Stormwater Examiner's Signature and Date: M.M. 2/25

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	KHE1+00 111	PSD #1	W+I		
Quarter / Year:	2020/Q1	**Date / Time Collected:**	2/25 1050	**Date / Time Examined:**	2/25 11:30
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Sofie Hinder				
Examiner's Name & Title	Mike Marra				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? (Yes) **No (Clear)**	If Yes, describe: *Yellow* (Brown) *Red Gray Other:*
2. Clarity	Is the stormwater clear? **Yes** (No)	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy* (Opaque) *Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** (No)	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? (Yes) **No**	If Yes, describe: *Chemical* (Musty) *Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:* organics / Musty
5. Floating Solids	Is there anything on the surface of the sample? **Yes** (No)	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? (Yes) **No**	Describe: organics & silts
******Leave sample undisturbed for 30 minutes.******		
7. Settled Solids	Is there anything settled on the bottom of the sample? (Yes) **No**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) organics & silts
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **Yes** (No)	Describe:

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Sofie Hinder 2/25

Stormwater Examiner's Signature and Date: M A. M 2/25

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	BHT HTE00119 PSD#1				
Quarter / Year:	1 / 2020	**Date / Time Collected:**	2/25/9:55	**Date / Time Examined:**	2/25/10:20
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Amanda Hudak				
Examiner's Name & Title	Jordan Sparks				

Parameter	Parameter Description	Parameter Characteristics
1. **Color**	Does the stormwater appear to have any color? (Yes) No (Clear)	If Yes, describe: *Yellow* (Brown) *Red Gray Other:*
2. **Clarity**	Is the stormwater clear? Yes (No)	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids* (Milky/Cloudy) *Opaque Other:*
3. **Oil Sheen**	Can you see a rainbow effect or sheen on the water surface? Yes (No)	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. **Odor**	Does the sample have an odor? (Yes) No	If Yes, describe: *Chemical Musty* (Rotten Eggs) *Sewage Sour Milk Oil/Petroleum Other:*
5. **Floating Solids**	Is there anything on the surface of the sample? (Yes) (No)	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. **Suspended Solids**	Is there anything suspended in the sample? (Yes) No	Describe: Very fine particles
	Leave sample undisturbed for 30 minutes.	
7. **Settled Solids**	Is there anything settled on the bottom of the sample? (Yes) No	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) Silt, Sand, Small particles/Film.
8. **Foam**	Does foam or material form on the top of the sample surface if you shake it? (Yes) No	Describe: Small bubbles that form on surface for 5-6 seconds

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.**

Yes, Oil film on water surface, Maintenance/Parking lot runoff

Stormwater Collector's Signature and Date: [signature] 2/25/2020

Stormwater Examiner's Signature and Date: [signature] 2/25/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	FSK #1 KBEH00083 PSD #11				
Quarter / Year:	1/2020	**Date / Time Collected:**	2/25/2020 / 8:55a	**Date / Time Examined:**	2/25/2020 / 9:25a
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Jordan Sparks				
Examiner's Name & Title	Amanda Hudak				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? (Yes) No (Clear)	If Yes, describe: *Yellow Brown Red* (Gray) *Other:*
2. Clarity	Is the stormwater clear? Yes (No)	If not clear, which of the following best describes the clarity of the stormwater? (*Suspended Solids*) *Milky/Cloudy* (*Opaque*) *Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? Yes (No)	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? (Yes) No	If Yes, describe: *Chemical* (*Musty*) *Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? Yes (No)	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? (Yes) No	Describe: Very fine particles
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? (Yes) No	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) Very fine + small particles
8. Foam	Does foam or material form on the top of the sample surface if you shake it? (Yes) No	Describe: small bubbles that appear for 7-8 seconds that eventually disperse.

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken. Oil was visible on pavement, but unable to identify its source from parking lot + Road.

Pipe Invert appears to be eroding

Stormwater Collector's Signature and Date: Jordan Sparks 2/25/2020

Stormwater Examiner's Signature and Date: Amanda Hudak 2/25/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	FSK#2 KBIN00172 PSD#2				
Quarter / Year:	1/2020	**Date / Time Collected:**	2/25/2020 / 9:04a	**Date / Time Examined:**	2/25/2020 / 9:26a
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Jordan Sparks				
Examiner's Name & Title	Amanda Hudak				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? Yes (No (Clear))	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? Yes (No)	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy* (Opaque) *Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? Yes (No)	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? Yes (No)	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? Yes (No)	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? (Yes) No	Describe: very fine particles / Silt
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? (Yes) No	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) very fine particles
8. Foam	Does foam or material form on the top of the sample surface if you shake it? Yes (No)	Describe:

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.** Oil was visible on pavement but unable to identify its source from Parking lot + Road.

Stormwater Collector's Signature and Date: Jordan Sparks 2/25/2020

Stormwater Examiner's Signature and Date: Amanda Hudak 2/25/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	FMT FTIN00337 PSD #1				
Quarter / Year:	1 / 2020	**Date / Time Collected:**	2/25/10:30	**Date / Time Examined:**	2/25/11:30
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Amanda Hudak				
Examiner's Name & Title	Jordan Sparks				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** **(No (Clear))**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **Yes** **(No)**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids (Milky/Cloudy) Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** **(No)**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **(Yes)** **No**	If Yes, describe: *Chemical (Musty) Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:* STRONG Musty SMELL
5. Floating Solids	Is there anything on the surface of the sample? **Yes** **(No)**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? **Yes** **(No)**	Describe:
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? **(Yes)** **No**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) Very Small Particles
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **(Yes)** **No**	Describe: Very Minor Foam on Surface

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Amanda Hudak 2/25/2020

Stormwater Examiner's Signature and Date: Jordan Sparks 2/25/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	FMT - FTIN00459 PSD#2				
Quarter / Year:	1/2020	**Date / Time Collected:**	2/25/10:46	**Date / Time Examined:**	2/25/11:39
Qualifying Storm Event?	(Yes) No		**Runoff Source:**	(Rainfall) Snowmelt	
Collector's Name & Title	Amanda Hudak				
Examiner's Name & Title	Jordan Sparks				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** **(No (Clear))**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **(Yes)** **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** **(No)**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **(Yes)** **No**	If Yes, describe: *Chemical (Musty) Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? **(Yes)** **No**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:* ORGANIC Debris
6. Suspended Solids	Is there anything suspended in the sample? **Yes** **(No)**	Describe:
******Leave sample undisturbed for 30 minutes.******		
7. Settled Solids	Is there anything settled on the bottom of the sample? **(Yes)** **No**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) Very Fine Particles
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **(Yes)** **No**	Describe: Very Minor Foam Appearing

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: 2/25/2020

Stormwater Examiner's Signature and Date: 2/25/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	FMT - FTEH00069 PSD#3				
Quarter / Year:	1/2020	**Date / Time Collected:**	2/25/11:20	**Date / Time Examined:**	2/25/12:24
Qualifying Storm Event?	(Yes) No	**Runoff Source:**	(Rainfall) Snowmelt		
Collector's Name & Title	Amanda Hudak				
Examiner's Name & Title	Jordan Sparks				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? (Yes) No (Clear)	If Yes, describe: *Yellow* (*Brown*) *Red* *Gray* *Other:* + ORANGE
2. Clarity	Is the stormwater clear? Yes (No)	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids* *Milky/Cloudy* (*Opaque*) *Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? Yes (No)	Which best describes the sheen? *Rainbow sheet* *Floating oil globules* *Other:*
4. Odor	Does the sample have an odor? (Yes) No	If Yes, describe: *Chemical* (*Musty*) *Rotten Eggs* *Sewage* *Sour Milk* *Oil/Petroleum* *Other:* STRONG
5. Floating Solids	Is there anything on the surface of the sample? Yes (No)	If Yes, describe: *Suds* *Oily Film* *Garbage* *Sewage* *Water Fowl Excrement* *Other:*
6. Suspended Solids	Is there anything suspended in the sample? (Yes) No	Describe: SMALL Amount of Fine Particles
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? (Yes) No	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) ORGANIC Debris + Fine Sediment
8. Foam	Does foam or material form on the top of the sample surface if you shake it? (Yes) No	Describe: SMALL bubbles that appear for 6-7 seconds that eventually disperse.

9. **If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.** Construction site upstream of outfall SMALL Appears to have Sediment.

Stormwater Collector's Signature and Date: [signature] 2/25/2020

Stormwater Examiner's Signature and Date: [signature] 2/25/2020

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Quarterly Visual Monitoring Form

Fill out a separate form for each outfall sampled.

Sample Location	NBIN00006 PSD #1				
Quarter / Year:	2020/Q1	**Date / Time Collected:**	6:45 3/13	**Date / Time Examined:**	730 3/13
Qualifying Storm Event?	Yes / No		**Runoff Source:**	Rainfall / Snowmelt	
Collector's Name & Title	Seth Hinder				
Examiner's Name & Title	Matt Wikerle				

Parameter	Parameter Description	Parameter Characteristics
1. Color	Does the stormwater appear to have any color? **Yes** / **No (Clear)**	If Yes, describe: *Yellow Brown Red Gray Other:*
2. Clarity	Is the stormwater clear? **Yes** / **No**	If not clear, which of the following best describes the clarity of the stormwater? *Suspended Solids Milky/Cloudy Opaque Other:*
3. Oil Sheen	Can you see a rainbow effect or sheen on the water surface? **Yes** / **No**	Which best describes the sheen? *Rainbow sheet Floating oil globules Other:*
4. Odor	Does the sample have an odor? **Yes** / **No**	If Yes, describe: *Chemical Musty Rotten Eggs Sewage Sour Milk Oil/Petroleum Other:*
5. Floating Solids	Is there anything on the surface of the sample? **Yes** / **No**	If Yes, describe: *Suds Oily Film Garbage Sewage Water Fowl Excrement Other:*
6. Suspended Solids	Is there anything suspended in the sample? **Yes** / **No**	Describe: <1 mm silts, small grass pieces
Leave sample undisturbed for 30 minutes.		
7. Settled Solids	Is there anything settled on the bottom of the sample? **Yes** / **No**	Describe: (*note type, size and material after sample is not disturbed for 30 minutes*) <1 mm silts
8. Foam	Does foam or material form on the top of the sample surface if you shake it? **Yes** / **No**	Describe:

9. If there are any visible indicators of pollution identify (1) where the pollution may come from and (2) any corrective actions taken.

N/A

Stormwater Collector's Signature and Date: Seth Hinder 3/13/20

Stormwater Examiner's Signature and Date: Matthew A. Wikerle 3/13/20

Note – Sample should be collected and analyzed in a colorless glass or plastic bottle.

Baltimore Harbor Tunnel (BHT) Maintenance Facility
Stormwater Pollution Prevention Plan (SWPPP)
Quarterly Inspection Form

Instructions: Complete the quarterly stormwater pollution prevention (SWPP) inspection and non-stormwater discharge assessment. Notify the Environmental Manager immediately if any deficiencies are identified that could affect stormwater quality. Attach any additional field notes of the inspection and assessment as necessary.

Codes:
NA - Not Applicable
CAR - Corrective Action Request required. Describe each CAR in the 'Additional Notes' section.
CAT – Corrective Action Taken. Note date on which each corrective action item is completed.

Facility: Baltimore Harbor Tunnel Maintenance Facility Baltimore, MD	**Inspector(s)/Agency:** K. Byers / MDTA
Date: 3-19-19	**Weather Conditions:** 39° Sunny

	Yes	No	NA	CAR	CAT	Comments
Review SWPP Plan						
Are the stormwater control measures to reduce pollutants adequate and being implemented? (Section 3.3)	X					
Does the SWPPP require any modification0000000s or updates, including list of potential pollutants (Section 2.1)?		X				
Oil/Water Separator Inspection						
Area free of spills or stains?	X					
Review Significant Material Storage and Handling Areas						
Surrounding pavement surface free of leaks or stains?	X					
Are any drums corroded, missing plugs, caps, etc.?		X				
Are (Above-ground Storage Tanks) ASTs or piping corroded, damaged or leaking?		X				
Are there leaking pumps and/or hose connections associated with the tank system?		X				
Are there improperly maintained or overloaded dry chemicals/materials in the storage areas?		X				
Are waste materials and trash properly disposed & stored?	X					
Are spill kits stocked and adequate?	X					

	Yes	No	NA	CAR	CAT	Comments
AST Tank Conditions (MgCl)						
Is tank free of stains, spills, or other evidence of leakage?	X					
Is the tank in good condition?	X					
Is the surrounding surface intact and tanks supports in good condition?	X					
Are the valves operable and in closed and/or locked position?	X					
Review Stormwater Outfalls and Point Source Discharges						
Point Source Discharge # 1						**Outfall into MPA pond; or can be checked at grate near salt dome.**
Are the Discharge Structures in good condition?	X					
Are all pipes/grates clear of debris/sediment?	X					
Is there visible flow from the Point Source Discharge?		X				
Are there stains on area soil?		X				
Is there standing water at the outfall or point source discharge location?	X					
Is there a sheen on the standing water, odor or other abnormal conditions?		X				
Is there any sign of erosion at the outfall?		X				
Inspection of Stormwater Management Structures/Facilities (Ponds, Infiltration Trenches,)						**Bioretention facility and forebay behind storage building.**
Is there noticeable debris/sediment within the forebay or its structures?	X					full of Phragmites and sediment
Is there standing water within the forebay?	X					
Forebay: Is there a sheen on the standing water, odor or other abnormal conditions?		X				
Is there any noticeable erosion around the forebay?		X				
Are all inflow/outflow pipes or grates clear of debris/sediment?		X				
Are the Discharge Structures in good condition?	X					
Is there noticeable debris/sediment within the bioretention area?		X				
Is there standing water within the bioretention area?	X					
Bioretention: Is there a sheen on the standing water, odor, or other abnormal conditions?		X				it recently rained 2 days ago
Is there noticeable erosion around the bioretention area?		X				
Is there any potential for public hazard (e.g. broken fence, missing safety grates, etc.)?		X				

Additional Notes:

Certification:

Name: Jeff Alter — Title: CFMO, Baltimore Harbor Tunnel Maintenance Facility

Signature: Jeff S. Alter — Date: 4/22/19

Name: Joyce Rebar, E.I.T. — Title: SWPPP Manager COMPLIANCE LEAD

Signature: Joyce Rebar — Date: 4/22/19

Name: Peter Mattejat, P.E. — Title: Environmental Manager

Signature: Peter Mattejat — Date: 4/22/19