

Appendix F – Countywide TMDL Stormwater Implementation Plan (Restoration Plans for TMDLs)



FISCAL YEAR 2025 COUNTYWIDE TMDL STORMWATER IMPLEMENTATION PLAN

DEPARTMENT OF PUBLIC WORKS

HARFORD COUNTY, MARYLAND

DECEMBER 2025



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DECEMBER 2025

PREPARED FOR:

DEPARTMENT OF PUBLIC WORKS

HARFORD COUNTY GOVERNMENT

WATERSHED PROTECTION AND RESTORATION

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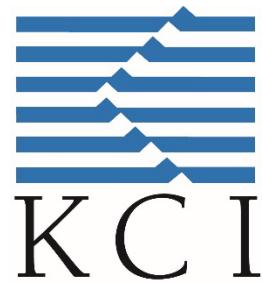


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Appendices

- Appendix A: Future Implementation Project List
- Appendix B: TIPP Excel Workbooks

Acronyms

BMP(s)	Best Management Practice(s)
BSHOH	Bush River Oligohaline
CAST	Chesapeake Assessment and Scenario Tool
CB1TF	Northern Chesapeake Bay Tidal Fresh
CB2OH	Northern Chesapeake Bay Oligohaline
CBP	Chesapeake Bay Program
CBWM	Chesapeake Bay Watershed Model
EOR	Edge of River
EOS	Edge of Stream
EOT	Edge of Tide
EPA	Environmental Protection Agency
FY	Fiscal Year
FY25	Fiscal Year 2025
GUNOH	Gunpowder River Oligohaline
MDE	Maryland Department of The Environment
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
P6	Phase 6
PCBs	Polychlorinated Biphenyls
SW-WLAs	Stormwater Wasteload Allocations
TIPP	TMDL Implementation Progress and Planning Tool
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Sediment
WIP	Watershed Implementation Plan
WM	Watershed Model

1 Background and Introduction

This Countywide Total Maximum Daily Load (TMDL) Stormwater Implementation Plan (Countywide Plan) satisfies the requirements of PART IV.F.3.a through c. of Harford County's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit 22-DP-3310 MD0068268 dated December 30, 2022, as described in further detail in Section 1.1 below. The Countywide Plan provides progress and planning updates for 15 TMDL Stormwater Wasteload Allocations (SW-WLAs), 8 of which are for the Chesapeake Bay TMDL. The TMDL SW-WLAs address impairments for total nitrogen (TN), total phosphorus (TP), total suspended sediment (TSS), *E. coli*, and polychlorinated biphenyls (PCBs). The purpose of the Countywide Plan is to continue to track and report annual and cumulative progress and present planned implementation to achieve SW-WLAs. This is the County's first Countywide TMDL Implementation Plan prepared to comply with MS4 permit requirements.

Harford County first developed and submitted to the Maryland Department of the Environment (MDE) an impervious surface assessment as part of the County Annual MS4 Report in December 2015, which satisfied the requirements of PART IV.E.2.a. of the County's previous MS4 permit (11-DP-3310 MD0068268) dated December 30, 2014. The impervious surface assessment presented the implementation of restoration efforts for twenty percent of the County's impervious surface area to address the SW-WLAs for all TMDLs approved by the Environmental Protection Agency (EPA) in Harford County. Harford County also developed and submitted Restoration Plans for several watersheds which presented long-term plans to address Harford County's portion of SW-WLAs for TMDLs approved by the EPA and for achieving impervious surface treatment goals required of the County's NPDES MS4 permit including:

- Chesapeake Bay Bush River Oligohaline (BSHOH), Northern Chesapeake Bay Tidal Fresh (CB1TF), Gunpowder River Oligohaline (GUNOH) Nutrients and Sediment in 2016;
- Northern Chesapeake Bay Oligohaline (CB2OH) Nutrients and Sediment in 2016;
- Bynum Run Sediment in 2016;
- Loch Raven Reservoir Bacteria, Mercury, Nutrients and Sediment in 2016;
- Swan Creek Sediment in 2017; and
- Bush River PCBs in 2017.

The Restoration Plans included final dates for meeting applicable SW-WLAs, schedule for implementing all structural and nonstructural water quality improvement projects for meeting applicable SW-WLAs, and identified funding needed to implement the Restoration Plans. Development of the Restoration Plans included a 30-day public review period and a comment/response document that addressed public comments as an attachment to the applicable NPDES MS4 Permit Fiscal Year (FY) Annual Report (2016 Annual MS4 Report; 2018 Annual MS4 Report). Annual updates on implementation and modeled pollutant load reductions were included in the Restoration Plan TMDL Compliance section of the County's NPDES MS4 Permit Fiscal Year Annual Report from 2016 through 2024.

Adaptive Management

The County will monitor implementation progress on an annual basis and present results in this Plan. The Plan's estimated dates and costs for completion of various projects may change over time, and projects may be substituted based on lessons learned as implementation progresses.

Additionally, if new and more efficient methods of stormwater treatment are developed, or better approaches to source control are found after development of this plan, the County's strategy may be revised. Similarly, if some elements of the previously developed Restoration Plans or the current Countywide Plan do not achieve the expected reductions in loads, adaptations and improvement may be made and reported in future updates of the Countywide Plan.

1.1 Harford County MS4 Permit

Harford County, along with other medium and large Phase I jurisdictions in Maryland, is operating its MS4 under an NPDES permit issued by MDE. The County's current MS4 permit (22-DP-3310 MD0068268; MDE 2022a), issued December 30, 2022, requires compliance with pollutant load limits from both the Chesapeake Bay TMDL and local TMDLs with approved SW-WLAs. The County is also required to meet an impervious surface treatment goal of 1,093 impervious acres that have not been treated to the Maximum Extent Practicable (MEP) by the end of the current 5-year permit term (December 29, 2027). See Section 1.3 for details.

A requirement of the MS4 permit is the development of a Countywide TMDL Stormwater Implementation Plan (Countywide Plan) that, as described by MDE, includes lists of projects and programs to meet the load reductions, describes analysis and modeling methods, and includes final dates and benchmarks, where applicable. The Countywide Plan is to be updated annually to document progress for each TMDL SW-WLA with net pollutants reduced and provide updates to projects, programs, costs, and schedules. An excerpt from the current permit PART IV.F.3. is included here:

- 3. For all TMDLs and WLAs listed in Appendix A, the County shall annually document, in one Countywide Stormwater TMDL Implementation Plan, updated progress toward meeting these TMDL WLAs. This Countywide Stormwater TMDL Implementation Plan shall include:*
 - a. A summary of all completed Best Management Practices (BMPs), programmatic initiatives, alternative control practices, or other actions implemented for each TMDL stormwater WLA;*
 - b. An analysis and table summary of the net pollutant reductions achieved annually and cumulatively for each TMDL stormwater WLA; and*
 - c. An updated list of proposed BMPs, programmatic initiatives, and alternative control practices, as necessary, to demonstrate adequate progress toward meeting the Department's approved benchmarks and final stormwater WLA implementation dates.*

Per the County's permit, PART IV.F.2., as new TMDLs with SW-WLAs applicable to the County are developed, restoration plans for those pollutants will need to be prepared within one year of EPA approval. Once the implementation plan is approved by MDE, the new TMDL will be incorporated in the Countywide Plan and the information required under PART IV.F.3. will be reported.

When a new MS4 permit is issued in the future, if there are any significant changes in TMDL analyses, methods, or pollutant reductions, the County will update all TMDL implementation plans by the new permit's one year anniversary. The County will then add the MDE approved TMDL implementation plans to the Countywide Plan for annual progress updates for the remainder of the permit term.

To ensure the County is meeting permit conditions, the Countywide Plan is organized as follows:

[Section 1](#) Background and introduction.

[Section 2](#) Presents the County's restoration tiers used to track BMP implementation and progress.

[Section 3](#) Describes the modeling used to calculate baseline loads, FY25 progress reductions, and planned reductions presented in this plan.

[Section 4](#) Presents nutrient and sediment local TMDL progress organized by watershed. This section includes summary tables of all completed BMPs, programmatic initiatives, alternative control practices, or other actions implemented for each local TMDL SW-WLA and associated load reductions, per permit requirements in **PART IV.F.3.a.**, and **PART IV.F.3.b.** A summary of proposed BMPs needed to meet final SW-WLA goals and their associated load reductions is also included, per **PART IV.F.3.c.** Progress implementation benchmark evaluations are also provided in this section.

[Section 5](#) Provides an update on the County's PCBs TMDL implementation plan, per **PART IV.F.3.**

[Section 6](#) Includes summary tables of all completed BMPs, programmatic initiatives, alternative control practices, or other actions implemented for the Chesapeake Bay TMDL SW-WLAs and associated load reductions, per permit requirements in **PART IV.F.3.a.** and **PART IV.F.3.b.** A summary of proposed BMPs and their associated load reductions is also included, per **PART IV.F.3.c.**

[1.2 TMDL Allocations](#)

Table 1-1 lists the TMDLs, watersheds, impairments, the year each TMDL was approved by the EPA, and the year each of the County's TMDL Restoration Plans were approved by MDE.

Table 1-1: Harford County TMDLs

TMDL	Location	Impairment	Year TMDL Approved by EPA	Year Restoration Plan Approved by MDE
Bush River PCBs	Chesapeake Bay Segmentshed BSHOH / Bush River	PCBs	2016	2017
Bynum Run Sediment	8-Digit Watershed 02130704 / Bynum Run	TSS	2011	2016
Gunpowder and Bird Rivers PCBs	8-Digit Watershed 02130801 / Gunpowder River	PCBs	2016	N/A ¹
Loch Raven Reservoir Bacteria	8-Digit Watershed 02130805 / Loch Raven Reservoir	<i>E. coli</i>	2009	N/A ¹
Loch Raven Reservoir Nutrients and Sediment	8-Digit Watershed 02130805 / Loch Raven Reservoir	TP TSS	2007	Nutrients: 2016 Sediment: N/A ¹
Swan Creek Sediment	8-Digit Watershed 02130706 / Swan Creek	TSS	2016	2017
The Chesapeake Bay TMDL	Chesapeake Bay Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	TN TP TSS	2010	2016
	Chesapeake Bay Segmentshed BSHOH / Bush River Oligohaline	TN TP TSS		
	Chesapeake Bay Segmentshed CB1TF / Northern Chesapeake Bay Tidal Fresh	TN TP TSS		
	Chesapeake Bay Segmentshed GUNOH / Gunpowder River Oligohaline	TN TP TSS	2010	2016

¹Harford County Phase I MS4 requires a 0% SW-WLA reduction for these TMDLs

The TMDLs listed in Table 1-1 are also included in Appendix A of the County's current MS4 permit which lists the TMDLs and SW-WLAs applicable to Harford County. There are three TMDLs listed in Appendix A of the MS4 permit that are not included in this Countywide Plan as the County Phase I MS4 requires a 0% SW-WLA reduction: Gunpowder and Bird Rivers PCBs (TMDL approved by EPA in 2016), Loch Raven Reservoir *E. coli* (TMDL approved by EPA in 2009), and Loch Raven Reservoir TSS (TMDL approved by EPA in 2007). Additionally, for the Chesapeake Bay TMDL, if the TP target is met, it is assumed that the TSS target will be met as well; therefore, there is no assigned SW-WLA for TSS. Although County TSS targets are not quantified for the Chesapeake Bay TMDL, the County is presenting the TSS reductions associated with restoration BMPs in this Countywide Plan.

The SW-WLAs values presented in this plan do not match what is listed in Appendix A of the MS4 Permit. This variance is expected given the difference in historically available BMP data used in MDE's SW-WLA modeling at the time of permit issuance versus the currently available BMP data used in the County's SW-WLA modeling. To derive the County MS4-specific SW-WLA load reduction targets, TMDL goals were

translated using the County's current modeled baseline loads and MDE's published reduction percentages for each TMDL, which is described in the bullet list below.

The terms listed below are used throughout the plan and are presented and defined here to assist the reader in understanding the definitions of each and how they were derived:

- **Baseline Load:** Baseline pollutant load levels (i.e., land use loads with baseline BMPs) from baseline year conditions in the Harford County MS4 source sector calculated using MDE's TMDL Implementation Progress and Planning Tool (TIPP) spreadsheet tool, which is described further in Section 3.
- **EOS lbs/yr:** An Edge of Stream (EOS) load is the amount of pollutant that is transported from a source to the nearest stream, reported in pounds per year. Local TMDLs for impairments at the freshwater tributary scale are developed and modeled at the EOS scale.
- **EOR lbs/yr:** An Edge of River (EOR) load is the amount of pollutant that is transported from a small stream to a large river, reported in pounds per year. A stream-to-river delivery factor is available for each land-river segment of the Bay watershed and can be applied to the EOS loads to account for the fate and transport of nutrients and sediment from a small stream to a large river. Rather than focusing on the loads to the small tributary streams of the watershed, the EOR scale may be more appropriate when the impairment is in the downstream receiving water of the reservoirs, not in the tributary streams (e.g., Loch Raven Reservoir).
- **EOT lbs/yr:** An Edge of Tide (EOT) load is the amount of pollutant that is transported to the tidal waters of the Chesapeake Bay. EOT loads are generally less than EOS loads due to losses during transport from streams to the Bay. The Bay TMDL analysis is conducted and presented at the EOT scale.
- **Target Load (SW-WLA):** SW-WLAs are allocated loads derived using the following calculation: Baseline Load – (Baseline Load x Target % Reduction). The SW-WLA is the portion of the overall TMDL that is assigned to or 'allocated' to the responsibility of the stormwater sector.
- **Target % Reduction:** Percent reductions required in the TMDL and assigned to Harford County Phase I MS4 stormwater sector (MS4 Permit Appendix A and WLA Search tool available in MDE's TMDL Data Center; <https://wlat.mde.state.md.us/WLASearch.aspx>).
- **Target Reduction:** Target reduction calculated by multiplying the baseline load by the Target % Reduction.
- **Target Year:** For local TMDLs, the Target Year is the projected year when the local TMDL target reduction goal will be achieved through modeling. For the Chesapeake Bay TMDL, the Target Year was established by the EPA as 2025.

1.2.1 Local TMDLs

All local TMDLs with SW-WLAs assigned to Harford County are shown in Figure 1-1 and Table 1-2. The Bush River PCBs local TMDL is an aggregate watershed, inclusive of four 8-digit watersheds. The Bynum Run TSS, Loch Raven Reservoir nutrients, and Swan Creek TSS TMDLs are each a single 8-digit watershed. As stated above, Gunpowder and Bird Rivers PCBs and Loch Raven *E. coli* and TSS are not included in this Countywide Plan.

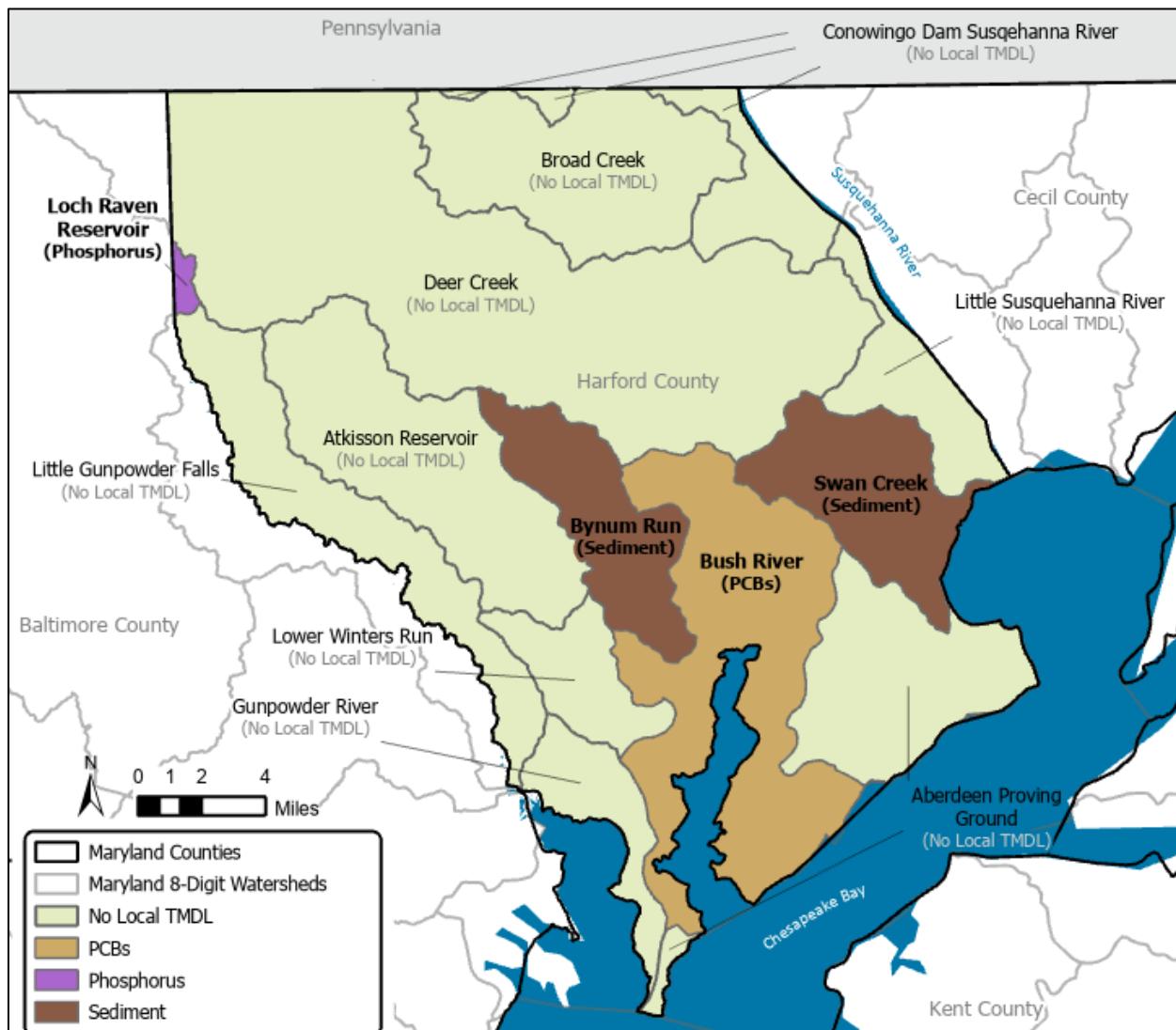


Figure 1-1: Harford County Local TMDLs

Table 1-2 provides a summary of Harford County's portions of target reductions toward the nutrient and sediment local TMDLs. The County's PCB TMDL is excluded from Table 1-2. Per guidance from MDE (2022b), unlike nutrient and sediment TMDLs, PCB baseline and progress modeling is not required of the Phase I MS4 jurisdictions. Implementation plans developed for PCB TMDLs are recommended to focus on source tracking, instead of achieving SW-WLA targets by a final target date. Section 5 of this Plan will provide progress updates on the County's PCB implementation plan.

Table 1-2: Harford County Local Nutrient and Sediment TMDL Baseline and Target Loads

Watershed Name	8-Digit Watershed Number	TMDL Pollutant and Delivery	Baseline Year	Baseline Load (lbs/yr)	Target Reduction (%)	Target Reduction (lbs/yr)	Target Load / SW-WLA (lbs/yr)	Target Year
Bynum Run	02130704	TSS EOS	2005	19,998,916	19.7	3,939,787	16,059,130	2032
Loch Raven Reservoir	02130805	TP EOR	1995	62	15.0	9	52	2029
Swan Creek	02130706	TSS EOS	2009	7,494,731	13.0	974,315	6,520,416	2029

Note: Due to rounding, sum of Target Reduction and Target Load may not equal Baseline Load.

1.2.2 Chesapeake Bay TMDL

The Chesapeake Bay TMDL, established by the EPA (EPA, 2010), sets pollution limits for TN, TP, and TSS in the Chesapeake Bay watershed. Compliance with the Chesapeake Bay TMDL is regulated in the MS4 permit using the impervious surface treatment strategy as described in Section 1.3 below. The Chesapeake Bay TMDL is listed in Appendix A of the MS4 permit with SW-WLAs for TN and TP presented at the Bay segmentshed scale for informational purposes. Unlike TN and TP, there is no required percent reduction for TSS in the Chesapeake Bay TMDL; rather, it is assumed in the overall Bay TMDL framework that the TSS target will be met if the TP target is met. Although a TSS target reduction is not included for the Chesapeake Bay TMDL, the County is presenting the TSS reductions associated with restoration BMPs in this Countywide Plan for reference. Table 1-3 provides a summary of Harford County's portions of target reductions toward the Bay TMDL.

Table 1-3: Harford County Chesapeake Bay TMDL Baseline and Target Loads

TMDL Pollutant and Delivery	2009 Baseline Load (lbs/yr)	Target Reduction (%)	Target Reduction (lbs/yr)	Target Load / SW-WLA (lbs/yr)	EPA's Established Target Year
TN EOT	423,219	30.3	128,320	294,899	2025
TP EOT	71,172	49.2	34,995	36,177	2025
TSS EOT	128,597,935	n/a	n/a	n/a	n/a

Note: Due to rounding, sum of Target Reduction and Target Load may not equal Baseline Load.

1.3 Impervious Restoration

Under the County's current MS4 permit, PART IV.E. Stormwater Restoration, MDE requires the County to meet an impervious surface treatment goal of 1,093 impervious acres that have not been treated to the MEP by the end of the current 5-year permit term (December 29, 2027) utilizing the annual restoration benchmarking Table 1 in its MS4 Permit (PART IV.E.7.) as a guiding implementation timeline. The County will commence and complete the restoration requirement in the County's MS4 Permit through implementing stormwater BMPs, programmatic initiatives, or alternative control practices in accordance with MDE's *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* (MDE 2021 Guidance; MDE, 2021).

The County's reporting regarding impervious acre treated to the MEP will be provided in its yearly Annual Report submittal. Per the County's permit, the impervious acre restoration requirements and associated pollutant reductions are consistent with Maryland's Phase III Watershed Implementation Plan (WIP) for

the Bay TMDL and 2025 nutrient load targets and for local TMDL implementation targets. The County forecasted the timeline for restoration project completion and their associated nutrient and sediment reductions to meet the Permit's impervious restoration requirement and SW-WLAs reductions.

2 Restoration Tiers

The Countywide Plan will use restoration tiers to categorize the status of each restoration project.



Figure 2-1: Restoration Tiers

- **Baseline:** Projects in this scenario were completed before the year each respective TMDL goal was established (baseline year) and do not get applied as pollutant reductions in any restoration scenario. The **Baseline** scenario reflects pollutant loading at the time the TMDL goal was established (1995 for the Loch Raven TP TMDL; 2005 for the Bynum Run TSS TMDL; and 2009 for the Swan Creek TSS TMDL and for the Chesapeake Bay nutrient TMDLs).
- **Completed:** Restoration projects in this scenario were completed between the baseline year for each respective TMDL and June 30, 2025, the end of the reporting period for this Countywide Plan (currently the end of fiscal year 2025). These projects have been inspected and verified to ensure that they are functional and meet MDE's requirements. **Completed** projects reflect current restoration pollutant reductions applied toward the TMDL goal.
- **Programmed:** Restoration projects in this scenario are currently in planning, design, or construction phases with a proposed completion date on or after July 1, 2025, and align with the County's impervious restoration benchmarks defined in the MS4 permit. A subset of **Programmed** projects include BMPs identified as significant failures in FY25 which will be remediated in the future. Note that projects in this scenario are not static and may shift each year based on the year being reported as complete and updates to the County's planning. **Programmed** projects reflect future pollutant reductions the County plans on applying toward the TMDL goal in the near future. A project list for the **Programmed** scenario is included in Appendix A.
- **Identified:** Restoration projects in this scenario are identified but not yet in planning or design phases. These projects generally have some engineering estimates such as acres or length treated. **Identified** projects reflect future pollutant reductions the County anticipates applying toward the TMDL goal once planning has progressed. A project list for the **Identified** scenario is included in Appendix A.
- **Potential:** Hypothetical restoration projects in this scenario were generated using best available information on costs per BMP type, available land, and implementation level. In general, the most cost-effective BMP types implemented by the County (Stream Restoration, Urban Tree Canopy, and Riparian Forest Buffers) were selected to achieve reduction targets. **Potential** projects reflect remaining pollutant reductions needed to achieve the TMDL goal. **Potential** project information is given in Appendix A.

3 Modeling Approach

MDE's TIPP spreadsheet tool (Version: 01/25/2024; MDE, 2024) was used to assess nutrient and sediment local TMDL FY25 progress and whether goals were met and to estimate load reduction applied toward the Chesapeake Bay TMDL. The tool calculates pollutant load reductions based on the data of **Completed**, **Programmed**, **Identified**, and **Potential** MDE approved BMPs that are maintained in the County's NPDES geodatabase. The TIPP was developed by MDE for use by MS4 jurisdictions for local TMDL modeling and planning. The TIPP uses methods associated with Phase 6 of the CBP (Chesapeake Bay Program) WM (watershed model), which is consistent with the MDE 2021 Guidance (MDE, 2021). Additional information on the TIPP, including frequently asked questions and live walkthrough and demo, can be found on MDE's website at:

<https://mde.maryland.gov/programs/water/TMDL/DataCenter/Pages/TMDLStormwaterToolkit.aspx>.

Per guidance from MDE (MDE, 2022b), unlike nutrient and sediment TMDLs, baseline and progress modeling are not required for PCB TMDLs. This is because the implementation plans developed for PCB TMDLs are focused on source identification instead of achieving SW-WLA targets by a final target date. An update on this plan is provided in Section 5.

4 Nutrient and Sediment Local TMDLs

Completed BMP implementation and loads for FY25 annual restoration and FY25 cumulative progress are presented in the sections below by TMDL watershed. Progress is assessed by comparing the calculated percent reduction achieved for each TMDL against the MDE published target percent reduction assigned to Harford County. Planned BMP implementation and loads required to meet all nutrient and sediment SW-WLAs are also summarized in the tables below. A list of planned BMPs is provided in Appendix A.

The terms listed below are used throughout this section and Section 6 - Chesapeake Bay TMDL, and are presented and defined here to assist the reader in understanding the definitions of each:

BMP Implementation

- **FY25:** Restoration BMPs implemented during the FY25 reporting period with built dates between July 1, 2024, and June 30, 2025, the end of the reporting period for this Countywide Plan.
- **Total:** Sum of the BMP implementation included in the following restoration tiers: This represents all restoration BMPs needed to achieve the local TMDL targets.
- **Count:** Total number of projects.
- **Treated:** Amount (area or length) that is treated by the BMP. Unit is specified by BMP type.

Load Reductions

- **FY25 Annual Restoration Reduction:** Annual pollutant reduction associated with the BMP implementation **Completed** in only the FY25 reporting period with built dates between July 1, 2024, and June 30, 2025.
- **FY25 Cumulative Progress Reduction:** Cumulative pollutant reduction associated with all **Completed** BMPs with built dates between the TMDL baseline date and June 30, 2025. The percent reduction is compared against the Target % Reduction to assess progress.

- **Planned Restoration Reduction:** Pollutant reduction associated with BMP implementation in only the planning restoration tiers (**Programmed**, **Identified**, and **Potential**).
- **Total Implementation Reduction:** Sum of pollutant reduction from FY25 Cumulative Progress and Planned Restoration. The percent reduction is assessed against the Target % Reduction. The Total Implementation % Reduction should match or exceed the Target % Reduction.

4.1 Bynum Run

Bynum Run watershed is the most urban watershed in Harford County (Figure 4-1). The watershed is in the southeastern portion of the County, beginning at the intersection of Rock Spring Road and East Jarrettsville Road in Forest Hill and extending southeast to the confluence with James Run at Bush Declaration Natural Resources Management Area, north of Pulaski Highway (Figure 4-2). These streams converge and drain to Bush River. Approximately 50% of the Town of Bel Air, the portion of the town east of Main Street, is in the Bynum Run watershed. There is one impoundment in the watershed, Bynum Run Community Lake, located in Bynum Run Park.



Figure 4-1: Location of Bynum Run Watershed in Harford County

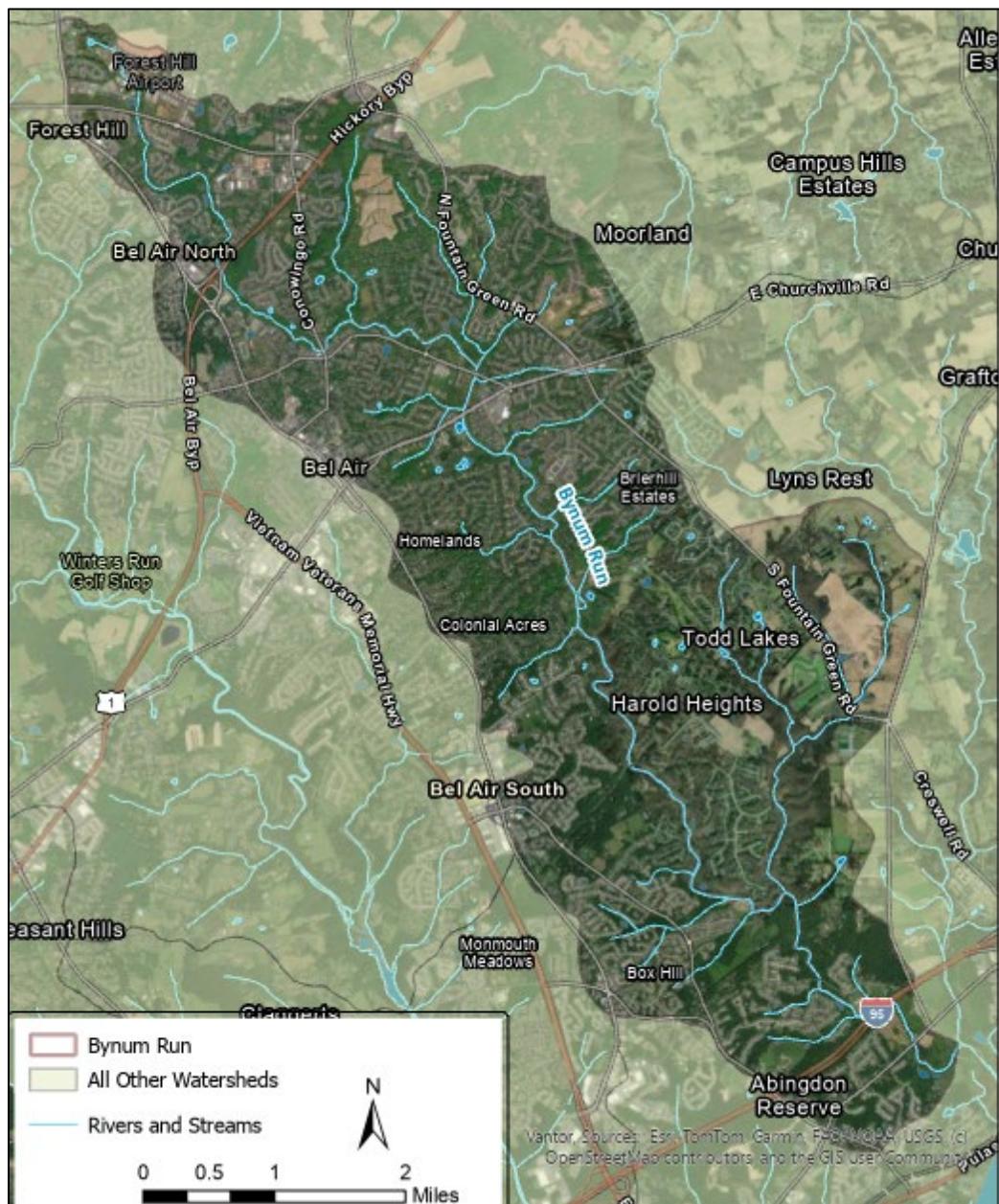


Figure 4-2: Aerial photography of Bynum Run Watershed

Harford County is responsible for one TMDL within the Bynum Run watershed: TSS. BMP implementation and progress for this pollutant is addressed in the section below.

4.1.1 BMP Implementation

Table 4-1 presents BMP implementation needed to achieve the reduction target for the TSS local TMDL in the Bynum Run watershed. BMP implementation in the current reporting fiscal year is shown individually in Table 4-1 and is also included in the cumulative **Completed** Count and Treated columns. A list of planning restoration tier BMPs is provided in Appendix A.

Table 4-1: BMP Implementation for Sediment Local TMDL in the Bynum Run Watershed

BMP Category	Unit Treated	FY25		Completed		Programmed		Identified		Potential		Total	
		Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated
Stormwater Retrofit	Drainage Area (acres)	0	0	1	7.8	3	20.6	0	0	0	0	4	28.4
Stream Restoration	Linear feet	0	0	3	5,449	6	14,720	0	0	0	0	9	20,169
Outfall Stabilization	Linear feet	0	0	0	0	1	1,500	0	0	0	0	1	1,500
Forest Planting	Acres Planted	0	0	1	1.2	0	0	0	0	0	0	1	1.2
Urban Tree Planting	Acres Planted	0	0	2	3.3	0	0	0	0	0	0	2	3.3

4.1.2 Load Reductions

Table 4-2 presents the TIPP modeling results for pollutant reductions achieved annually for the FY25 reporting year, cumulative reductions for FY25 progress, reductions from planned BMPs, and projected total reductions (sum of reductions associated with FY25 progress and planned BMPs) for the TSS local TMDL SW-WLA in the Bynum Run watershed. Results indicate the TSS target % reduction of 19.7% will be achieved by planned projects.

Table 4-2: Progress and Planned Reductions for Sediment Local TMDL in the Bynum Run Watershed

Implementation Tier	TSS (EOS lbs/yr)		
	Reduction (%)	Reduction (lbs/yr)	Load (lbs/yr)
Target Reduction by Target Year (2032)	19.7	3,939,787	16,059,130
Baseline Load	--	--	19,998,916
FY25 Annual Restoration Reduction	0.0	0	--
FY25 Cumulative Progress Reduction	2.8	559,028	19,439,888
Planned Restoration Reduction	18.3	3,659,452	--
Projected Total Implementation Reduction	23.2	4,637,803	15,361,113

Note: Due to rounding, the sum of Target Reduction and Target Load may not equal Baseline Load.

4.1.3 Progress Implementation Evaluation

Table 4-3 presents 2025 progress assessments for the TSS local TMDL in the Bynum Run watershed. Harford County has achieved 14.2% of the TSS goal (2.8% progress reduction vs. 19.7% target reduction). The forecasted target year for restoration project completion and required sediment reduction achievement is 2032.

The County is expected to complete six **Programmed** BMPs between 2026 and 2028 to help reach the TSS reduction target and four **Programmed** BMPs between 2028 and 2032 beyond the required TSS reduction target. As the required reduction is projected to be met by **Programmed** BMPs, there is no need for **Identified** or **Potential** BMPs in the Bynum Run watershed.

Table 4-3: Progress Assessment for the Bynum Run Watershed

Watershed Name	Pollutant	Target % Reduction	Progress % Reduction	% Reduction Remaining	Target Year	% of Goal Achieved
Bynum Run	TSS	19.7	2.8	16.9	2032	14.2

Planned BMP implementation costs are presented in Table 4-4 by project type and planning tier. The current **Programmed** projects cost for the Bynum Run watershed is approximately \$16,516,500 with three stormwater BMP retrofit projects, six stream restoration projects, and one outfall stabilization project.

Table 4-4: Planned Restoration Cost by Project Type for the Bynum Run Watershed

Project Type	Programmed Cost	Identified Cost	Potential Cost	Total Planned Cost
BMP Conversion	\$1,676,000	--	--	\$1,676,000
Stream Restoration	\$14,358,000	--	--	\$14,358,000
Outfall Stabilization	\$482,500	--	--	\$482,500
Total	\$16,516,500	--	--	\$16,516,500

4.2 Loch Raven Reservoir

The Loch Raven Reservoir watershed is primarily located in Maryland, with a small contribution from Pennsylvania. The Maryland portion of the watershed is located almost entirely within the northern section of Baltimore County (Figure 4-3). Only 800 acres of agriculture and forest drain from Harford County into the 194,000 acres of the Loch Raven Reservoir watershed (Figure 4-4).

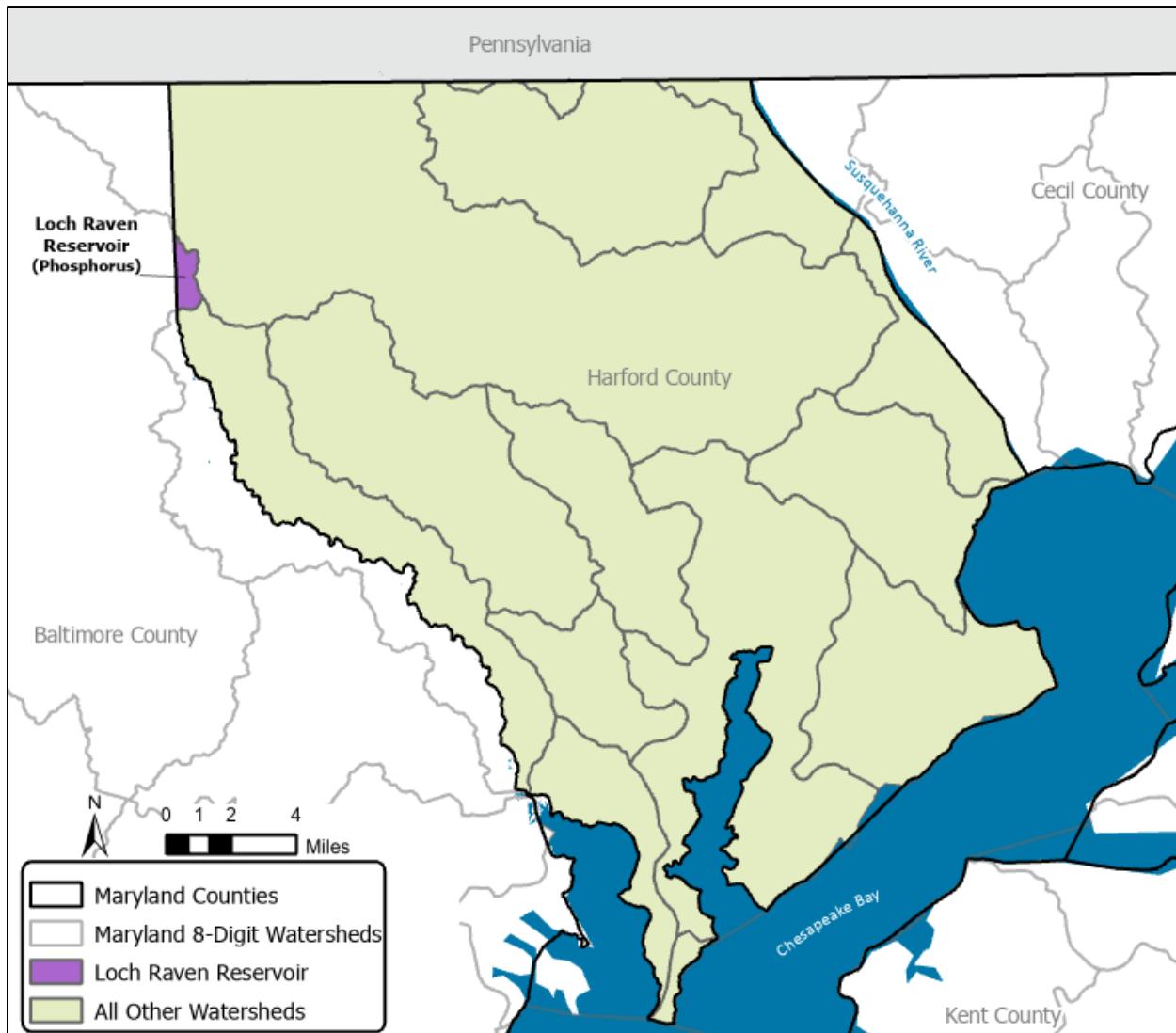


Figure 4-3: Location of Loch Raven Reservoir Watershed in Harford County

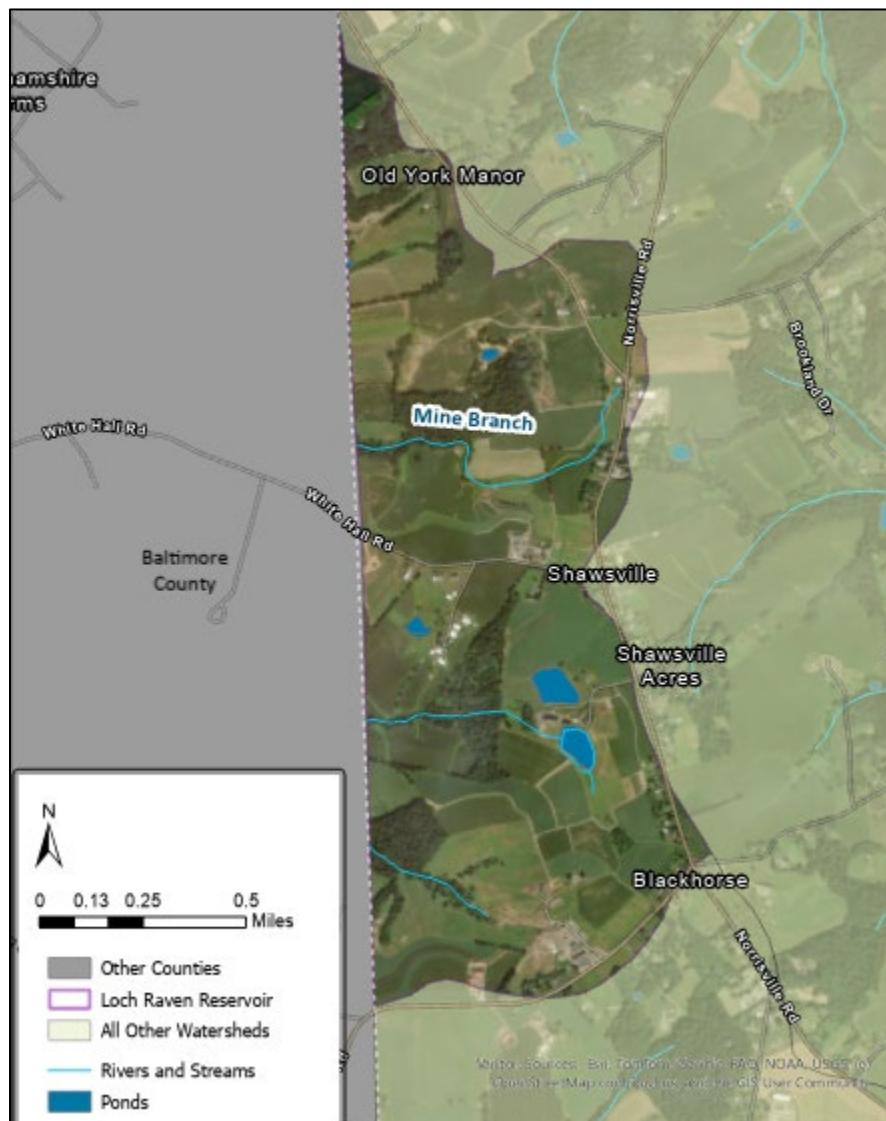


Figure 4-4: Aerial photography of the Harford County extent of Loch Raven Reservoir Watershed

Due to limited property options, the County may coordinate with Baltimore County to identify additional restoration and partnering opportunities within the Loch Raven Reservoir watershed, as needed.

Harford County is responsible for three TMDLs in the Loch Raven Reservoir watershed: *E. coli*, TP, and TSS. According to MDE's TMDL Data Center, there is no SW-WLA assigned to Harford County for the Loch Raven Reservoir *E. coli* or TSS TMDLs. BMP implementation and progress for the TP TMDL are addressed in the section below.

4.2.1 BMP Implementation

Table 4-5 presents BMP implementation needed to achieve the reduction target for the TP local TMDL in the Loch Raven Reservoir watershed. BMP implementation in the current reporting fiscal year is shown individually in Table 4-5 and is also included in the cumulative **Completed** Count and Treated columns. A list of planning restoration tier BMPs is provided in Appendix A.

Table 4-5: BMP Implementation for Phosphorous Local TMDL in the Loch Raven Reservoir Watershed

BMP Category	Unit Treated	FY25		Completed		Programmed		Identified		Potential		Total	
		Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated
New Stormwater	Drainage Area (acres)	0	0	0	0	0	0	1	8.6	0	0	1	8.6
Urban Tree Planting	Acres Planted	0	0	0	0	0	0	0	0	1	42.0	1	42.0
Urban Nutrient Management ¹	Turf Acres	2	42.2	2	42.2	0	0	0	0	0	0	2	42.2

¹Urban Nutrient Management data comes from a statewide number of acres provided to MDE by Maryland Department of Agriculture. These acres are distributed by the CBP WM P6 to County/watershed implementation levels (2024 Progress Chesapeake Assessment Scenario Tool [CAST] scenario).

4.2.2 Load Reductions

Table 4-6 presents the TIPP modeling results for pollutant reductions achieved annually for the FY25 reporting year, cumulative reductions for FY25 progress, reductions from planned BMPs, and projected total reductions (sum of reductions associated with FY25 progress and planned BMPs) for the TP local TMDL SW-WLA in the Loch Raven Reservoir watershed. Results indicate the TP target % reduction of 15.0% will be achieved by planned projects.

Table 4-6: Progress and Planned Reductions for Phosphorous Local TMDL in Loch Raven Watershed

Implementation Tier	TSS (EOS lbs/yr)		
	Reduction (%)	Reduction (lbs/yr)	Load (lbs/yr)
Target Reduction by Target Year (2029)	15.0	9	52
Baseline Load	--	--	62
FY25 Annual Restoration Reduction	2.0	1	--
FY25 Cumulative Progress Reduction	2.0	1	60
Planned Restoration Reduction	13.0	8	--
Projected Total Implementation Reduction	15.0	9	52

Note: Due to rounding, the sum of Target Reduction and Target Load may not equal Baseline Load.

4.2.3 Progress Implementation Evaluation

Table 4-7 presents 2025 progress assessments for the TP local TMDL in the Loch Raven Reservoir watershed. Harford County has achieved 13.6% of the TP goal (2.0% progress reduction vs. 15.0% target reduction). The forecasted target year for restoration project completion and required phosphorus reduction achievement is 2029.

Currently, the County does not have any **Programmed** BMPs to help reach the TP reduction target. Harford County has one **Identified** new stormwater restoration BMP in the Loch Raven Reservoir watershed. Approximately 42 acres of **Potential** urban tree canopy planting could be implemented to achieve the remainder of the required TP reduction.

Table 4-7: Progress Assessment for the Loch Raven Reservoir Watershed

Watershed Name	Pollutant	Target % Reduction	Progress % Reduction	% Reduction Remaining	Target Year	% of Goal Achieved
Loch Raven	TP	15.0	2.0	13.0	2029	13.6

Planned BMP implementation costs are presented in Table 4-8 by project type and planning tier. The **Identified** cost for one new stormwater BMP is \$722,241 and **Potential** cost for one urban tree canopy planting is \$588,000. In total, the projected cost to implement projects described in this Plan to achieve the TP TMDL required reduction in the Loch Raven Reservoir watershed is approximately \$1,310,241.

Table 4-8: Planned Restoration Cost by Project Type for the Loch Raven Reservoir Watershed

Project Type	Programmed Cost	Identified Cost	Potential BMP	Total Planned Cost
New Stormwater BMP	--	\$722,241	--	\$722,241
Urban Tree Canopy Planting	--	--	\$588,000	\$588,000
Total	--	\$722,241	\$588,000	\$1,310,241

4.3 Swan Creek

Swan Creek watershed is in the southeastern portion of Harford County (Figure 4-5). The watershed's approximate borders include Route 155 to the north, Canvasback Drive to the northeast, Chesapeake Bay to the southeast, and Bel Air Avenue to the southwest (Figure 4-6). Approximately 60% of the City of Aberdeen and 45% of the City of Havre de Grace are in the Swan Creek watershed. Swan Creek headwaters are located just east of the Harford County Airport. The watershed extends southeast to the confluence with Gashey's Creek south of Pulaski Highway.



Figure 4-5: Location of Swan Creek Watershed in Harford County

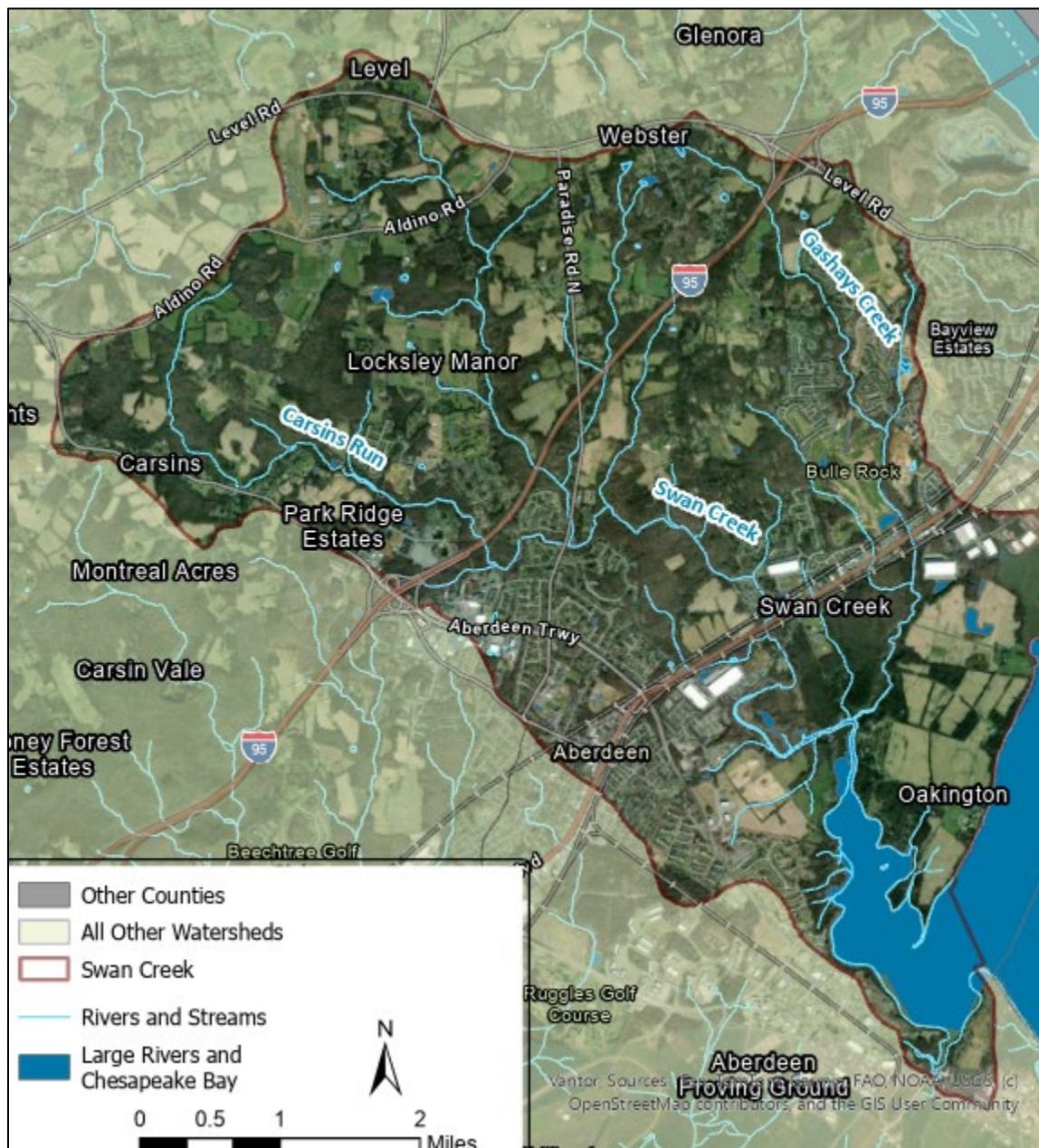


Figure 4-6: Aerial photography of Swan Creek Watershed

Harford County is responsible for one TMDL in the Swan Creek watershed: TSS. BMP implementation and progress for the TSS TMDL are addressed in the section below.

4.3.1 BMP Implementation

Table 4-9 presents BMP implementation needed to achieve the reduction target for the TSS local TMDL in the Swan Creek watershed. BMP implementation in the current reporting fiscal year is shown individually in Table 4-9 and is also included in the cumulative **Completed** Count and Treated columns. A list of planning restoration tier BMPs is provided in Appendix A.

Table 4-9: BMP Implementation for Sediment Local TMDL in the Swan Creek Watershed

BMP Category	Unit Treated	FY25		Completed		Programmed		Identified		Potential		Total	
		Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated
Stream Restoration	Linear feet	0	0	0	0	0	0	3	5,133	0	0	3	5,133
Forest Planting	Acres Planted	2	3.6	3	4.5	0	0	0	0	0	0	3	4.5
Riparian Forest Planting	Acres Planted	1	0.2	1	0.2	0	0	0	0	0	0	1	0.2
Urban Tree Planting	Acres Planted	0	0	2	3.3	1	16.4	0	0	0	0	3	19.7

4.3.2 Load Reductions

Table 4-10 presents the TIPP modeling results for pollutant reductions achieved annually for the FY25 reporting year, cumulative reductions for FY25 progress, reductions from planned BMPs, and projected total reduction (sum of reductions associated with FY25 progress and planned BMPs) for the TSS local TMDL SW-WLA in the Swan Creek watershed. Results indicate the TSS target % reduction of 13.0% will be achieved by planned projects.

Table 4-10: Progress and Planned Reductions for Sediment Local TMDL in the Swan Creek Watershed

Implementation Tier	TSS (EOS lbs/yr)		
	Reduction (%)	Reduction (lbs/yr)	Load (lbs/yr)
Target Reduction by Target Year (2029)	13.0	974,315	6,520,416
Baseline Load	--	--	7,494,731
FY25 Annual Restoration Reduction	0.1	5,822	--
FY25 Cumulative Progress Reduction	0.1	7,522	7,487,209
Planned Restoration Reduction	17.0	1,274,780	--
Projected Total Implementation Reduction	17.1	1,282,302	6,212,429

Note: Due to rounding, the sum of Target Reduction and Target Load may not equal Baseline Load.

4.3.3 Progress Implementation Evaluation

Table 4-11 presents 2025 progress assessments for the TSS local TMDL in the Swan Creek watershed. Harford County has achieved 0.8% of the TSS goal (0.1% progress reduction vs. 13% target reduction). The forecasted target year for restoration project completion and required sediment reduction achievement is 2029.

The County is expected to complete one **Programmed** urban tree canopy BMP in 2026 to help reach the TSS reduction target. Harford County has three **Identified** stream restoration BMPs in the Swan Creek watershed which could be implemented to achieve the remainder of the required TSS reduction. As the required reduction is projected to be met by **Programmed** and **Identified** BMPs, there is no need for **Potential** BMPs in the Swan Creek watershed.

Table 4-11: Progress Assessment for the Swan Creek Watershed

Watershed Name	Pollutant	Target % Reduction	Progress % Reduction	% Reduction Remaining	Target Year	% of Goal Achieved
Swan Creek	TSS	13.0	0.1	12.9	2029	0.8

Planned BMP implementation costs are presented in Table 4-12 by project type and planning tier. The current **Programmed** project cost for the one urban tree canopy planting project in the Swan Creek watershed is approximately \$201,250. The **Identified** project cost for the three stream restoration projects in the Swan Creek watershed is approximately \$1,368,832. In total, the projected cost to implement the projects described in this Plan to achieve the required reduction for the TSS TMDL in the Swan Creek watershed is approximately \$1,570,082.

Table 4-12: Planned Restoration Cost by Project Type for the Swan Creek Watershed

Project Type	Programmed Cost	Identified Cost	Potential BMP	Total Planned Cost
Stream Restoration	--	\$1,368,832	--	\$1,368,832
Urban Tree Canopy Planting	\$201,250	--	--	\$201,250
Total	\$201,250	\$1,368,832	--	\$1,570,082

5 PCBs Local TMDLs

Harford County is responsible for one PCB TMDL in the Bush River Oligohaline (BSHOH) segmentshed. Four 8-digit basins drain into the Bush River segmentshed including Atkisson Reservoir (02130703), Lower Winters Run (02130702), Bynum Run (02130704), and Bush River (02130701).

The County prepared a PCB TMDL restoration plan focused on an assessment of potential PCB sources within the segmentshed through average water column PCB concentrations, a stormwater waste load allocation, and identification of locations for further investigation as potential PCB sources. The PCB restoration plan provides a sampling plan overview to better quantify the extent of the PCB loads prior to investing large quantities of funding for capital improvement projects. A summary of the PCB TMDL restoration plan is provided here.

The County completed a desktop source assessment, compiling spatial data relevant to potential watershed PCB sources from the data package provided by MDE as well as open-source databases linked in MDE's *Guidance for Developing Local PCB Total Maximum Daily Load (TMDL) Stormwater Wasteload Allocations (SW-WLA) Watershed Implementation Plans (WIPs)* (MDE, 2022b.) Datasets include both potential sources such as EPA PCB transformer and PCB activities databases, hazardous waste sites, and EPA toxic release inventories, and locations of potential exposure such as public angler access sites. The County then entered the source records located in each 12-digit subwatershed into the TMDL subwatershed risk assessment template spreadsheet provided by MDE to calculate a risk score for each subwatershed resulting in a subwatershed prioritization.

Harford County identified potential monitoring sites in the Bush River watershed including reference sites away from potential PCB sources to serve as control samples for Phase I Source Trackdown investigation in FY23. Potential sampling locations were selected based on their proximity to and inclusion of potential sources and physical and legal accessibility. The PCB implementation plan source tracking and monitoring process will continue as an adaptive approach based on monitoring results following each phase of monitoring. The plans submitted include a Sampling and Analysis Plan (SAP) detailing the Phase I PCB sampling study design, field and laboratory methods, and data analysis procedures and a Quality Assurance Project Plan (QAPP) describing the monitoring methods and quality assurance elements of the program.

The County deployed subwatershed samplers at monitoring sites in the Bush River watershed for Phase I Source Trackdown Subwatershed PCB Screening in FY24. Results were detailed in a Phase 1 Source Trackdown Monitoring Data and Data Assessment report and submitted to MDE in February 2025 (Tetra Tech, Inc., 2025). Sampling results were assessed for the presence of PCBs at the subwatershed level. Total dissolved PCB values ranged from 9.6 to 379.4 picograms per liter. Thirteen subwatersheds had insignificant levels of PCBs and do not require additional investigations. Eight subwatersheds with PCB

levels exceeding the reference threshold or TMDL endpoint will proceed with further analysis to determine if Phase II Source Trackdown Subwatershed PCB Characterization is needed. The County will continue to coordinate with MDE on data analysis and development of next steps.

6 Chesapeake Bay TMDL

Countywide **Completed** BMP implementation and loads for FY25 annual restoration, and FY25 cumulative progress are presented in the sections below. Progress is assessed by comparing the calculated percent reduction achieved for TN and TP against the MDE published percent reductions assigned for Harford County's portion of the Chesapeake Bay TMDL. As stated in Section 1.2.2., unlike TN and TP, there is no required percent reduction for TSS in the Chesapeake Bay TMDL; rather, it is assumed that the TSS target will be met if the TP target is met. Although a TSS target reduction is not included for the Chesapeake Bay TMDL, the County is presenting the TSS reductions associated with restoration BMPs in this Countywide Plan for reference.

The Chesapeake Bay TMDL target year of 2025 is this year's Current Progress Year (FY25). Therefore, the Bay TMDL target year will not be included as a planned scenario in this year's Plan. Planned BMP implementation and loads are summarized in the tables below and include all **Programmed** BMPs, as well as those **Identified** and **Potential** BMPs associated with achieving all local TMDL SW-WLA targets.

Refer to Section 4 for definitions used throughout Sections 6.1 and 6.2.

6.1 BMP Implementation

Table 6-1 presents Countywide BMP implementation for the Bay TMDL achieved during FY25, as well as cumulative progress, planning restoration tiers, and projected total implementation. BMP implementation in the current reporting fiscal year is shown individually in Table 6-1 and is also included in the cumulative **Completed** Count and Treated columns. A list of planning restoration tier BMPs is provided in Appendix A.

Table 6-1: BMP Implementation for the Chesapeake Bay TMDL

BMP Category	Unit Treated	FY25		Completed		Programmed		Identified ²		Potential ²		Total	
		Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated	Count	Treated
New Stormwater	Drainage Area (acres)	5	33.3	30	180.1	34	350.0	1	8.6	0	0	65	538.7
Stormwater Retrofit	Drainage Area (acres)	0	0	10	62.2	4	28.4	0	0	0	0	14	90.6
Shoreline Stabilization	Linear feet	0	0	1	1,450	1	1,450	0	0	0	0	2	2,900
Stream Restoration	Linear feet	1	5,734	18	38,268	18	43,057	3	5,133	0	0	39	86,458
Outfall Stabilization	Linear feet	0	0	1	84	1	1,500	0	0	0	0	2	1,584
Forest Planting	Acres Planted	11	23.9	103	196.1	0	0	0	0	0	0	103	196.1
Riparian Forest Planting	Acres Planted	1	0.2	6	5.3	0	0	0	0	0	0	6	5.3
Urban Tree Planting	Acres Planted	20	4.4	79	59.7	5	43.3	0	0	1	42	85	145.0
Conservation Landscaping	Acres Planted	0	0	7	2.9	0	0	0	0	0	0	7	2.9
Urban Nutrient Management ¹	Turf Acres	8	27,983	8	27,983	0	0	0	0	0	0	8	27,983

¹Urban Nutrient Management data comes from a statewide number of acres provided to MDE by Maryland Department of Agriculture. These acres are distributed by the CBP WM P6 to County/watershed implementation levels (2024 CAST scenario).

²BMPs associated with achieving all local TMDL SW-WLA targets only.

6.2 Load Reductions

Table 6-2 presents the TIPP modeling results for pollutant reductions achieved annually for the FY25 reporting year, cumulative reductions for FY25 progress, reduction from planned BMPs, and projected total reductions (sum of reductions associated with FY25 progress and planned BMPs) for the nutrient TMDL SW-WLAs in the Harford County portion of the Chesapeake Bay TMDL. Although a TSS target reduction is not included for the Bay TMDL, the County is presenting the TSS reductions associated with the restoration BMPs in this Countywide Plan for reference. Planned BMP reductions and the total implementation are presented through 2032 when all local TMDL targets are projected to be met.

The values shown in Table 6-2 represent load reductions associated with meeting all local TMDL SW-WLA targets. By 2032, Harford County is projected to achieve 5.3% of the Chesapeake Bay TMDL TN reduction goal and 8.4% of the TP reduction goal. Additional planning will be required to identify the types and quantities of BMPs that could be implemented throughout the County's watersheds to meet the full Chesapeake Bay TMDL targets.

Table 6-2: Progress and Planned Reductions for the Chesapeake Bay TMDL

Implementation Tier	TN (EOT lbs/yr)			TP (EOT lbs/yr)			TSS (EOT lbs/yr)	
	Reduction (%)	Reduction (lbs/yr)	Load (lbs/yr)	Reduction (%)	Reduction (lbs/yr)	Load (lbs/yr)	Reduction (lbs/yr)	Load (lbs/yr)
Target Reduction	30.3	128,320	294,899	49.2	34,995	36,177	--	--
Baseline Load	--	--	423,219	--	--	71,172	--	128,597,935
FY25 Annual Restoration Reduction	3.6	15,075	--	2.7	1,944	--	308,969	--
FY25 Cumulative Progress Reduction	4.6	19,401	403,818	5.1	3,657	67,515	2,710,289	125,887,646
Planned Restoration Reduction	0.7	2,874	--	3.3	2,352	--	6,406,165	--
Projected Total Implementation Reduction Through 2032	5.3	22,275	400,944	8.4	6,009	65,163	9,116,455	119,481,480

Note: Due to rounding, the sum of Target Reduction and Target Load may not equal Baseline Load.

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Appendix A: Future Implementation Project List

8-DIGIT WATERSHED	CONSTRUCTION PURPOSE	BMP TYPE	UNIT	TREATMENT ¹	RESTORATION TIER	PROJECTED IMPL. YEAR
Atkisson Reservoir	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Atkisson Reservoir	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Atkisson Reservoir	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Atkisson Reservoir	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Atkisson Reservoir	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Atkisson Reservoir	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Atkisson Reservoir	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Atkisson Reservoir	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Atkisson Reservoir	Restoration	Stream	Length (ft)	1,711.0	Programmed	TBD
Atkisson Reservoir	Restoration	Stream	Length (ft)	2,800.0	Programmed	2028
Atkisson Reservoir	Restoration	Urban Tree	Planted area (ac)	7.1	Programmed	2026
Atkisson Reservoir	Restoration	WetPondWetland	Drainage area (ac)	7.1	Programmed	TBD
Atkisson Reservoir	Restoration	WetPondWetland	Drainage area (ac)	7.1	Programmed	TBD
Atkisson Reservoir	Restoration	WetPondWetland	Drainage area (ac)	7.1	Programmed	TBD
Atkisson Reservoir	Restoration	WetPondWetland	Drainage area (ac)	89.6	Programmed	2028
Broad Creek	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Broad Creek	Restoration	Urban Tree	Planted area (ac)	3.6	Programmed	2026
Bush River	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Bush River	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Bush River	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Bush River	Restoration	Shoreline	Length (ft)	1,450.0	Programmed	2027
Bush River	Restoration	Stream	Length (ft)	615.0	Programmed	2026
Bush River	Restoration	Stream	Length (ft)	3,467.0	Programmed	2026
Bush River	Restoration	Urban Tree	Planted area (ac)	11.8	Programmed	2026
Bush River	Restoration	WetPondWetland	Drainage area (ac)	7.1	Programmed	TBD
Bush River	Restoration	WetPondWetland	Drainage area (ac)	20.4	Programmed	TBD
Bush River	Restoration	WetPondWetland	Drainage area (ac)	6.4	Programmed	TBD
Bush River	Restoration	WetPondWetland	Drainage area (ac)	7.1	Programmed	TBD

8-DIGIT WATERSHED	CONSTRUCTION PURPOSE	BMP TYPE	UNIT	TREATMENT ¹	RESTORATION TIER	PROJECTED IMPL. YEAR
Bynum Run	Conversion	BioRetUDAB	Drainage area (ac)	3.4	Programmed	2032
Bynum Run	Conversion	Filter	Drainage area (ac)	2.9	Programmed	2026
Bynum Run	Conversion	Filter	Drainage area (ac)	14.4	Programmed	2032
Bynum Run	Restoration	Outfall	Length (ft)	1,500.0	Programmed	2026
Bynum Run	Restoration	Stream	Length (ft)	3,352.0	Programmed	2028
Bynum Run	Restoration	Stream	Length (ft)	500.0	Programmed	2028
Bynum Run	Restoration	Stream	Length (ft)	4,800.0	Programmed	2028
Bynum Run	Restoration	Stream	Length (ft)	3,118.0	Programmed	2028
Bynum Run	Restoration	Stream	Length (ft)	1,000.0	Programmed	2030
Bynum Run	Restoration	Stream	Length (ft)	1,950.0	Programmed	2027
Deer Creek	Restoration	BioRetUDAB	Drainage area (ac)	1.6	Programmed	TBD
Deer Creek	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Deer Creek	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Deer Creek	Restoration	Stream	Length (ft)	1,711.0	Programmed	TBD
Deer Creek	Restoration	Stream	Length (ft)	1,711.0	Programmed	TBD
Deer Creek	Restoration	Stream	Length (ft)	2,600.0	Programmed	2027
Deer Creek	Restoration	Urban Tree	Planted area (ac)	4.5	Programmed	2026
Deer Creek	Conversion	WetPondWetland	Drainage area (ac)	7.8	Programmed	2028
Gunpowder River	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Gunpowder River	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Gunpowder River	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Gunpowder River	Restoration	Stream	Length (ft)	2,227.0	Programmed	2027
Gunpowder River	Restoration	Stream	Length (ft)	3,550.0	Programmed	2027
Gunpowder River	Restoration	WetPondWetland	Drainage area (ac)	7.1	Programmed	TBD
Little Gunpowder Falls	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Little Gunpowder Falls	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Little Gunpowder Falls	Restoration	WetPondWetland	Drainage area (ac)	4.6	Programmed	TBD
Loch Raven Reservoir	Restoration	Dryponds	Drainage area (ac)	8.6	Identified	TBD
Loch Raven Reservoir	Restoration	Urban Tree	Planted area (ac)	42.0	Potential	TBD
Lower Winters Run	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD

8-DIGIT WATERSHED	CONSTRUCTION PURPOSE	BMP TYPE	UNIT	TREATMENT ¹	RESTORATION TIER	PROJECTED IMPL. YEAR
Lower Winters Run	Restoration	Dryponds	Drainage area (ac)	8.6	Programmed	TBD
Lower Winters Run	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Lower Winters Run	Restoration	ExtDryPonds	Drainage area (ac)	6.6	Programmed	TBD
Lower Winters Run	Restoration	Filter	Drainage area (ac)	1.0	Programmed	TBD
Lower Winters Run	Restoration	InfiltWithSV	Drainage area (ac)	1.6	Programmed	TBD
Lower Winters Run	Restoration	Stream	Length (ft)	5,235.0	Programmed	2028
Lower Winters Run	Restoration	Stream	Length (ft)	640.0	Programmed	2027
Lower Winters Run	Restoration	Stream	Length (ft)	2,070.0	Programmed	2026
Swan Creek	Restoration	Urban Tree	Planted area (ac)	16.4	Programmed	2026
Swan Creek	Restoration	Stream	Length (ft)	1,711.0	Identified	TBD
Swan Creek	Restoration	Stream	Length (ft)	1,711.0	Identified	TBD
Swan Creek	Restoration	Stream	Length (ft)	1,711.0	Identified	TBD

¹The County estimated treatment quantities (i.e., drainage area, length, and planted area) for projects in early planning stages. Treatment quantities will be updated as planning progresses.

Appendix B: TIPP Excel Workbooks

Excel Files Included:

- MDE_TIPP-BynumRn_TSS_2025.11.17_PlannedScenario.xlsx
- MDE_TIPP-LochRavenRs_TP_2025.11.05_PlannedScenario.xlsx
- MDE_TIPP-SwanCk_TSS_2025.11.05_PlannedScenario.xlsx
- MDE_TIPP-BSHOH_TN_TP_TSS_2025.11.17_PlannedScenario.xlsx
- MDE_TIPP-CB1TF_TN_TP_TSS_2025.11.06_PlannedScenario.xlsx
- MDE_TIPP-CB2OH_TN_TP_TSS_2025.10.28.xlsx
- MDE_TIPP-GUNOH_TN_TP_TSS_2025.11.06_PlannedScenario.xlsx



Maryland

Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

June 27, 2024

Mr. Steven A. Walsh, P.E.
Deputy Director of Public Works
Harford County
212 South Bond Street, Room 301
Bel Air, MD 21014

Dear Mr. Walsh:

The Maryland Department of the Environment (Department) has reviewed Harford County's (County) Fiscal Year (FY) 2023 Annual Report submitted on December 28, 2023, for its National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permit 22-DP-3310 (MD0068268). This review is provided in the enclosed Attachment. Below is a summary of findings that the Department would like to bring to your attention:

- A supplemental geodatabase delineating industrial and commercial land uses and sites must be submitted annually as part of the new permit requirements.
- Continue updating and populating the MS4 Geodatabase in accordance with the newest *MS4 Geodatabase Design and User's Guide*.
- The Department has not received a Countywide TMDL Implementation Plan. As part of the new permit, the County is required to submit this plan annually.
- The Department has not received a WPRP Annual Report for FY2023. As discussed in separate correspondence, the County is required to submit this annually alongside the MS4 Annual Report.

The Department recognizes the effort required to implement a successful stormwater management program. This effort is essential in our mutual goal of restoring urban streams and Chesapeake Bay, and the County is commended for its commitment and accomplishments toward this objective. If you have any questions regarding this review, please contact me at 410-537-3550 or stewart.comstock@maryland.gov, or Gillian Adkins at 410-537-3338 or gillian.adkins@maryland.gov.

Sincerely,

Stewart R. Comstock, P.E., Chief
Program Review Division
Stormwater, Dam Safety, and Flood Management Program

Attachments

cc: Michele Dobson, Harford County Department of Public Works