BULL RUN BENTHIC TMDL ACTION PLAN

(2023 - 2028 MS4 General Permit)

A Plan for Achieving Sediment Load Reductions to Meet PWCS' TMDL Wasteload Allocation

Permit #: VAR040100
Prepared: May 11, 2020
Updated: April 2025

This document addresses Part II B of the General Virginia Pollution Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4). This document serves as a PWCS specific Total Maximum Daily Load (TMDL) Action Plan to identify the best management practices and other interim milestone activities to be implemented to address the sediment waste load allocation (WLA) assigned to PWCS' regulated MS4 area in the *"Benthic TMDL Development for Bull Run, Virginia"* approved by the Environmental Protection Agency on September 26, 2006. For the purposes of this Plan, the 2000 and 2010 Census Urbanized Areas were used to define PWCS' regulated MS4 area as defined in 9VAC25-890 Section 1.

Prince William County Public Schools

PWCS
PRINCE WILLIAM COUNTY PUBLIC SCHOOLS
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EXECUTIVE SUMMARY

Prince William County Public Schools (PWCS) is authorized to discharge stormwater from its municipal separate storm sewer system (MS4) under the Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Discharge of Stormwater from Small MS4s (MS4 General Permit). To maintain permit compliance, PWCS implements a MS4 Program Plan that includes best management practices (BMPs) to address the six minimum control measures (MCMs) and special conditions for the "*Benthic Total Maximum Daily Load (TMDL) Development for Bull Run, Virginia*." The Benthic TMDL for Bull Run, approved by the Environmental Protection Agency (EPA) on September 26, 2006, was required to be developed under the authority of the Clean Water Act (CWA) in response to the river's listing as impaired by the Virginia Department of Environmental Quality (DEQ) for not meeting water quality standards.

The Environmental Protection Agency (EPA) describes a TMDL as a "pollution diet" that identifies the maximum amount of a pollutant the waterway can receive and still meet water quality standards. In the case of the Bull Run TMDL, sediment was identified as a pollutant of concern and MS4s within the watershed of the impaired segment of the river were assigned a wasteload allocation (WLA). A WLA determines the required reduction in sediment loadings from the MS4s to meet water quality standards and is represented as a 77.1% reduction in sediment loads from urban, agricultural, and transitional land-based sources and instream erosion. The MS4 General Permit serves as the regulatory mechanism for addressing the load reductions described in the TMDL, predominantly through the requirement of a TMDL Action Plan.

Implementation of this Action Plan is consistent with the provisions of an iterative MS4 Program, which constitutes compliance with the MS4 General Permit requirements for reducing pollutants to the maximum extent practicable (MEP).

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ACRONYMS

BMP	Best Management Practice
CBP	Chesapeake Bay Program
CN	Curve Number
CWA	Clean Water Act
DCR	Virginia Department of Conservation and Recreation
DEQ	Virginia Department of Environmental Quality
EPA	United States Environmental Protection Agency
ESC	Erosion and Sediment Control
GIS	Geographic Information System
GP	General Permit
GPS	Global Positioning System
GWLF	Generalized Watershed Loading Function
IDDE	Illicit Discharge Detection and Elimination
IP	Implementation Plan
LA	Load Allocation
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MOS	Margin of Safety
MS4	Municipal Separate Storm Sewer System
MS4 GP	General Permit for Discharge of Stormwater from Small MS4s
NLCD	National Land Cover Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PEOP	Public Education and Outreach Plan
POC	Pollutant of Concern
PWCS	Prince William County Schools
SWCB	State Water Control Board
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Sediment
VAC	Virginia Administrative Code
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WLA	Wasteload Allocation

1.0 INTRODUCTION AND PURPOSE

Mandated by Congress under the Clean Water Act (CWA), the National Pollutant Discharge Elimination System (NPDES) storm water program includes the Municipal Separate Storm Sewer System (MS4), Construction, and Industrial General Permits. In Virginia the NPDES Program is administered by the Department of Environmental Quality (DEQ) through the Virginia Stormwater Management Program (VSMP) and the Virginia Pollutant Discharge Elimination System (VPDES) Program. Prince William County Schools (PWCS) located in Prince William County, Virginia, is authorized to discharge stormwater from its MS4 under the VPDES General Permit for Discharge of Stormwater from Small MS4s (MS4 GP). As part of the permit authorization, PWCS developed and implements an MS4 Program Plan that includes best management practices (BMPs) to address the six minimum control measures (MCMs) and special conditions for applicable total maximum daily loads (TMDLs) outlined in the MS4 GP. Implementation of these BMPs is consistent with the provisions of an iterative MS4 Program, which constitutes compliance with the standard of reducing pollutants to the "maximum extent practicable," or MEP.

1.1 Total Maximum Daily Load

A TMDL is the amount of pollutant a water body can assimilate and still meet water quality standards for its designated use. Typically, TMDLs are represented numerically in three main components:

- WLA for point source contributions and MS4 Permit operators.
- Load Allocations (LA) for non-point source contributions and natural background sources.
- Margin of Safety (MOS)

Point source pollution is any single identifiable source from which pollutants are discharged. If point source discharges, including a permitted MS4, are present in the TMDL watershed, then any allocations assigned to that permittee must be in the form of a WLA. PWCS' MS4 outfalls are defined as point source discharges; and therefore, fall under this category in the TMDL. Pollution that is not from an identifiable source, such as a pipe or a ditch, but rather originates from multiple sources over a relatively large area, are considered to be non-point source pollution. These sources are typically categorized into agricultural, atmospheric, and non-regulated areas, with Load Allocations (LAs) assigned for each. The Margin of Safety (MOS) is a required component that accounts for the modeling uncertainty in the response of the waterbody to loading reductions and is implicitly incorporated into a TMDL computation. The TMDL is expressed in the following equation:

$$TMDL = \sum WLA + \sum LA + MOS$$

1.2 Bull Run TMDL

A TMDL is defined as the total amount of a given pollutant that a waterbody can assimilate and still meet water quality standards. Typically, TMDLs are represented numerically in three main components: Wasteload Allocations (WLAs), a Load Allocation (LA), and a Margin of Safety (MOS). A WLA is the allocated amount of pollutant from areas discharging through a pipe or other conveyance considered a point source. Point sources include sewage treatment plants, industrial facilities and storm sewer systems. In contrast, an LA is the amount of pollutant from existing non-point sources and natural background sources such as farmland runoff and atmospheric deposition. In this context, MS4 permittees are assigned a WLA representing the annual loading of the pollutant of concern (POC) that can be discharged from its regulated MS4 area.

The Virginia DEQ listed segments of Bull Run on their biennial 303(d) list in 1998 due to benthic impairments. Subsequent to the initial listing, a TMDL for Bull Run, entitled Benthic TMDL Development for Bull Run, Virginia was developed. The TMDL identifies sediment as the primary stressor of concern for the watershed, therefore the focus of this TMDL is on reducing sediment loading from stormwater. As part of the approved TMDL, PWCS' permitted MS4 (VAR040100) was assigned a WLA for sediment discharge to Bull Run.

1.3 TMDL Special Conditions

The special conditions of the MS4 GP are triggered where a permittee has been assigned a WLA under the TMDL. Since the Bull Run TMDL assigned a WLA to PWCS' MS4, PWCS is required to develop a local TMDL action plan designed to reduce loadings for pollutants of concern and to complete implementation of the TMDL action plans as soon as practicable. TMDL action plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is achieved in the implementation of BMPs designed to reduce pollutant discharges in a manner that is consistent with the assumptions and requirements of the applicable TMDL" (Part II.B.3).

Per Part II.B.4 of the MS4 GP, each local TMDL action plan developed by the permittee shall include the following:

a. The TMDL project name;
b. The EPA approval date of the TMDL;
c. The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable;
d. Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 and that are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL;

e. The BMPs designed to reduce the pollutants of concern in accordance with Part II B 5, B 6, B 7, and B 8;
f. Any calculations required in accordance with Part II B 5, B 6, B 7, or B 8;
g. For action plans developed in accordance with Part II B 5, B 6, and B 8, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants; and
h. A schedule of anticipated actions planned for implementation during this permit term.

Additionally, per Part II.B.6 of the MS4 GP, the following items specific to local sediment, phosphorus, and/or nitrogen TMDLs apply:

a. The permittee shall reduce the loads associated with sediment, phosphorus, or nitrogen through implementation of one or more of the following:
   (1) One or more of the BMPs from the Virginia Stormwater BMP Clearinghouse listed in 9VAC25-875-590 or other approved BMPs found on the Virginia Stormwater BMP Clearinghouse website;
   (2) One or more BMPs approved by the Chesapeake Bay Program. Pollutant load reductions generated by annual practices, such as street and storm drain cleaning, shall only be applied to the compliance year in which the annual practice was implemented; or
   (3) Land disturbance thresholds lower than Virginia's regulatory requirements for erosion and sediment control and post development stormwater management.
b. The permittee may meet the local TMDL requirements for sediment, phosphorus, or nitrogen through BMPs implemented to meet the requirements of the Chesapeake Bay TMDL in Part II A as long as the BMPs are implemented in the watershed for which local water quality is impaired.
c. The permittee shall calculate the anticipated load reduction achieved from each BMP and include the calculations in the action plan required in Part II B 4 f.
d. No later than 36 months after the effective date of this permit, the permittee shall submit to the department an update on the progress made toward achieving local TMDL action plan goals and the anticipated end dates by which the permittee will meet each wasteload allocation for sediment, phosphorus, or nitrogen. The proposed end date may be developed in accordance with Part II B 3.

PWCS submits reporting on the implementation of the MS4 program annually to DEQ. The TMDL Action Plan was submitted by May 1, 2020, updated by May 1, 2025, and will continue to be updated in subsequent years when any significant modifications occur. Implementation will be reported annually as described in Section 5.3.

2.0 BULL RUN TMDL WLA

The Bull Run TMDL wasteload allocation for MS4s is land used based and applies to all MS4s in the TMDL watershed, including Prince William County Public Schools, Prince William County, and Virginia Department of Transportation. The TMDL directs that the WLA is achieved with a "Percent Reduction Method" that compares water quality data to applicable water quality criteria.

2.1 TMDL Model Approach

The Bull Run TMDL describes a modeling approach that used biological monitoring stations at 18 locations in the Bull Run Watershed including 4 locations along the biologically impaired segment of Bull Run. Based on the resulting data, the stressor identification analysis identified sediment as the primary stressor. It was determined that reducing sediment loadings through stormwater control would improve the benthic community in the impaired Bull Run Watershed.

The Bull Run Benthic TMDL states "*Bank erosion resulting from MS4 stormwater runoff and bank erosion resulting from overland runoff were also separated using an area weighted approach, in which the percentage of sediment loading from bank erosion attributed to the MS4 was proportional to the percentage of the Bull Run impaired watershed covered by the MS4 permits. Since 65,456 acres of the 118,951 total acres in the Bull Run impaired watershed are covered by MS4 permits, 55% percent of the sediment load from instream erosion was attributed to the MS4s. Sediment from other land sources in the watershed and the remainder of the bank erosion sediment load were attributed to the land-based load."* The model simulation period was run for rainfall and properties present from 1994 through 2004 to develop the loading rate. An area-weighted sediment load for land-based sources was determined for the MS4s and WLAs for MS4s were based on an equal percent reduction (including a 10% margin of safety) across the applicable land use types.

2.2 Quantification of Required Reductions

The Bull Run TMDL assigns a WLA for permitted MS4s within the watershed, which represents an annual sediment load resulting from a percent reduction of the existing and projected future load from the MS4 to meet water quality standards for the watershed. The wasteload allocation and required sediment reduction for PWCS was determined based on an area weighted approach. This is an appropriate method of calculating reductions, which is consistent with the TMDL.

The schools in Table 1 are within the watershed of the Bull Run TMDL, census urbanized area, and were built before 2005 (TMDL model simulation period).

Table 1: PWCS Properties in Direct Drainage and CUA

School	Acreage
Alvey ES	20.14
Battlefield HS	77.67
Bull Run MS	39.2
Loch Lomond ES	10.7
McCuin Transportation Center	10.68
Mountain View ES	28.13
Osbourn Park HS	59.92
Parkside MS	29.58
Sinclair ES	26.26
Sudley ES	13.69
Tyler ES & Pace West	38.73
Unity Braxton MS	32.39
Unity Reed HS & Ellis ES	66.94
West Gate ES	12.06
Yorkshire ES	13.26
Total Acreage	479.35

Prince William County, PWCS, and VDOT Urban Area MS4 permit holders own a total of 6,214.2 acres in the Bull Run watershed (Benthic TMDL Development for Bull Run, Virginia), and PWCS operates 479.35 of these acres within the MS4 regulated area (7.7% of the overall acreage).

In the Bull Run TMDL Table 7-4: Wasteload Allocation by MS4 Areas Excluding General Stormwater Permits of the Benthic TMDL Development for Bull Run, Virginia, the existing load (2,324.9 tons/year) and allocated load (508.9 tons/year) is provided for PWCS, Prince William County, and VDOT. These loads have been disaggregated to calculate the resulting required reduction in sediment for PWCS, computed as follows:

$$Required\ Load\ Reduction\ from\ Aggregate's\ MS4 = Existing\ Load - Allocated\ Load$$

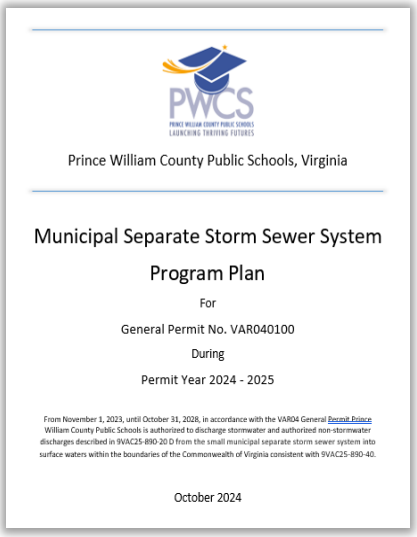
$$Required\ Load\ Reduction\ from\ PWCS'MS4 = Existing\ Load - Allocated\ Load * PWCS'Percent\ Land\ Area$$

$$Required\ Load\ Reduction\ from\ PWCS'MS4 = 2{,}324.9\ \frac{tons}{year} - 508.9\ \frac{tons}{year} = 1{,}816 * 0.077 = 139.83\ \frac{tons}{year}$$

Therefore, PWCS is required to reduce 139.83 tons/year of sediment.

3.0 MS4 PROGRAM ASSESSMENT

PWCS maintains compliance with the MS4 GP through implementation of BMPs defined in the *Prince William County Schools MS4 Program Plan*. The majority of the BMPs in the Program Plan are nonstructural rather than structural BMPs. Structural BMPs such as retention ponds capture pollutants after they have washed off the ground surface and been conveyed to the pond through stormwater runoff. Nonstructural BMPs can be considered as "source controls" where the pollutant is either prevented from accumulating or collected from the ground surface prior to exposure to precipitation that would convey the pollutant downstream. Source controls are typically performed at some defined frequency to minimize pollutant build-up and downstream wash-off during a rainfall event. Examples of nonstructural BMPs include community education programs, staff training, good housekeeping and pollution prevention procedures, catch basin cleanout, and street sweeping. There is limited data available for quantifying the pollutant removal efficiencies of nonstructural BMPs. However, the limited research indicates significant reductions are achieved with a higher degree of cost effectiveness than with structural practices. Removal estimates for total suspended solids (TSS) are estimated to range from 30 – 70%.


Prince William County Public Schools, Virginia

Municipal Separate Storm Sewer System

Program Plan

For

General Permit No. VAR040100

During

Permit Year 2024 - 2025

From November 1, 2023, until October 31, 2028, in accordance with the VAR04 General Permit Prince William County Public Schools is authorized to discharge stormwater and authorized non-stormwater discharges described in 9VAC25-890-20 D from the small municipal separate storm sewer system into surface waters within the boundaries of the Commonwealth of Virginia consistent with 9VAC25-890-40.

October 2024

Consistent with the special conditions described in Section 1.2, the following sub-sections characterize PWCS existing MS4 program in context of the Bull Run TMDL pollutant of concern, sediment.

3.1 Minimum Control Measures

The General Permit requires the Program Plan to include BMPs to address the requirements of six MCMs described in Part I E of the General Permit. The following summary of PWCS' MS4 Program Plan MCMs list laws, programs, and other regulatory mechanisms relied upon by PWCS that are applicable to reducing Sediment.

3.1.1 MCM 1 Public Education and Outreach on Stormwater Impacts

PWCS' MS4 Program includes, by reference, a Public Education and Outreach Program that incorporates educational information about TMDL pollutants of concern. PWCS incorporates education of the effects of human activity on water quality and how we as humans affect it into public science education courses at multiple grade levels. Through the Virginia Standards of Learning (SOLs), students learn the importance of protecting and maintaining our water resources and how it affects their watershed. PWCS implements all SOLs and specifically incorporates water quality issues into grade 4 and 6 earth science courses.

Information concerning sediment sources of contamination have been incorporated into annual employee training programs through Custodial Advisory Training Sessions (CATS). This training addresses identification, risk factors, abatement, and significant sources within the PWCS system. In addition, PWCS provides biennial pollution prevention, illicit discharge identification and prevention, and good housekeeping training to custodial, maintenance, and operations employees.

3.1.2 MCM 2 Public Involvement and Participation

PWCS will post this Action Plan on their stormwater pollution prevention webpage at: https://www.pwcs.edu/departments/facilities/environmental_services/stormwater_management. Availability of the Action Plan will increase awareness of the TMDL with web page visitors.

3.1.3 MCM 3 Illicit Discharge Detection and Elimination

PWCS' MS4 Program includes an IDDE Program with written procedures to detect, identify, and address non-stormwater discharges, including illegal dumping, to the small MS4 with policies and procedures for when and how to use legal authorities. PWCS prohibits non-stormwater discharges into the storm sewer system through language provided within the Prince William County Illicit Discharge Ordinance. PWCS' IDDE Program includes a proactive approach to reduce illicit discharges with annual outfall screenings to detect and eliminate non-stormwater discharges into the MS4. Additionally, annual inspection forms and internal work order system have been updated to include visual detection of suspended solids when prioritizing inspections and repairs. IDDE BMPs are described in MCM 3 of PWCS' MS4 Program Plan.

3.1.4 MCM 4 Construction Site Stormwater Runoff Control

PWCS' Construction Program utilizes Prince William County's ordinance to ensure compliance and enforcement on regulated construction sites that are enforced through the PWC stormwater management (SWM) and Erosion and Sediment Control (ESC) Ordinances that are consistent with the Virginia Erosion and Sediment Control and SWM Laws and Regulations (Prince William County Code of Ordinance Chapter 23.2 Article 2). This ordinance includes:

- Required plan approval prior to commencement of a regulated land disturbance activity;
- Construction site inspections and enforcement; and
- Certification of post-construction SWM facilities

3.1.5 MCM 5 Post Construction

PWCS ensures that stormwater management facilities are designed appropriately and maintained. These facilities could include detention basins, bioretention basins, permeable pavements, and vegetated swales. Their primary function is to capture, treat, and slowly release stormwater, thereby reducing the quantity and quality of runoff that can pollute nearby water bodies. Sediment, often carried by stormwater runoff, can degrade water quality, and harm aquatic habitats. One of the key benefits of post-construction stormwater management facilities is their ability to reduce sediment discharges into waterways.

3.1.6 MCM 6 Good Housekeeping

PWCS' MS4 Program includes a Good Housekeeping and Pollution Prevention Program that includes policies and procedures to ensure that day-to-day operations minimize the exposure of pollutants to rainfall on PWCS-owned and operated properties to the maximum extent practicable. The program is supported with PWCS' Good Housekeeping and Pollution Prevention Manual and training for applicable staff. MCM 6 in the PWCS MS4 Program Plan describes good housekeeping and pollution prevention BMPs. PWCS has also developed site-specific SWPPPs for all high-priority facilities. These facilities are considered to have a high potential to discharge pollutants and site-specific Stormwater Pollution Prevention Plans (SWPPPs) has been developed to minimize pollutant discharges. The following site is considered a high priority facility within the Bull Run watershed:

Table 2: High Priority Facilities

High Priority Facility	Address	Location of SWPPP
McCuin Transportation Center	7900 Piney Branch Lane Bristow, VA 20136	14800 Joplin Rd. in Building 52 in the Environmental shop

No new policies and procedures or modifications to existing policies and procedures were identified as necessary to meet the requirements of the special conditions.

4.0 POTENTIAL STRATEGIES TO REDUCE SEDIMENT

PWCS has served as an active participant in efforts to address the impairments described in the Bull Run TMDL through maintained compliance with the MS4 General Permit. The below represents methodologies that have been evaluated and are proposed as potential options for achieving the TMDL reductions to MEP. TMDL reductions can be taken from any PWCS within the TMDL boundary.

4.1 Land Conversion Efforts

PWCS' has identified land areas that can be converted from managed turf to other landcover types throughout their properties. These projects have included no mow zones (managed turf to open space) as well as reforestation projects (managed turf to forested). Guidance Memo GM20-2003 provides quantification of sediment reductions based on land cover conversion type. In addition, PWCS has utilized land conversion locations to educate faculty and students as to the benefits of non-managed areas and their environmental benefits. Moving forward PWCS plans to continue land conversion efforts for the benefit of sediment reductions to meet the Bull Run TMDL.

4.2 Street Sweeping

PWCS has historically taken significant credit toward its street sweeping efforts, particularly under the "mass loading approach." This approach allowed PWCS to account for the effectiveness of its street sweeping program in reducing stormwater pollution by tracking the mass of debris and contaminants collected during each sweeping operation. By using this method, PWCS was able to demonstrate a commitment to improving stormwater quality and fulfilling regulatory requirements related to pollution prevention. This credit was important in meeting environmental goals and showcasing PWCS' dedication to maintaining clean streets and reducing the potential for contaminants entering the stormwater system.

However, with the shift in methodology from the "mass loading approach" to the "lane mile approach," which emphasizes the length of streets swept rather than the mass of debris removed, PWCS has not formalized a structured street sweeping program that aligns with the new requirements. The change in approach has prompted the need for a reevaluation of how the PWCS measures and tracks its street sweeping efforts, as the lane mile approach involves more specific metrics related to the area covered by street sweeping operations. While PWCS has continued its street sweeping activities, the transition to the new methodology has highlighted the need for PWCS to develop a more organized and structured program that aligns with the updated standards.

Due to these challenges, PWCS has elected to discontinue the use of Street Sweeping to meet the WLA.

4.3 Resilience Plan

A Resilience Plan has been identified as a potential sediment removal technique that could be developed. A Resilience Plan could include a thorough evaluation and field assessment of potential resilience projects that have the co-benefit of sediment reduction to help meet the TMDL waste load allocation and reducing flooding within the properties. The plan, once completed, will identify resilience projects which may include outfall stabilization, stream restoration, stormwater system upgrades/repair and dredging projects. Upon completion of the Resilience Plan, PWCS could apply for grants to obtain the necessary funding to implement these projects.

4.4 Outfall Stabilization and Stream Restoration Feasibility Study

Similarly, an Outfall Stabilization and Stream Restoration Feasibility Study could be developed to assist in meeting the sediment TMDL removal rates. This document would be used to identify the extent of stream bank erosion within critical watersheds. The primary goal would be to develop a prioritization plan for future restoration activities based on observed conditions.

The assessment would include a comprehensive background investigation, including a review of historical studies focusing on stream stability and health within the school district's jurisdiction. Additionally, during field investigations, streams can be categorized into sections with similar geomorphic and hydraulic characteristics. The Bank Assessment for Non-Point Source Consequences of Sediment Index (BANCS) method would be employed to quantify the potential for stream bank scour. Visual assessments will also be conducted to evaluate accessibility, impact on adjacent properties and natural resources, and proximity to utilities. Upon completion of assessments, BANCS scores can be aggregated and mapped to reveal areas with a high potential for bank degradation. These results, along with data on costs, potential functional improvements, and public education opportunities, will inform a prioritization analysis.

5.0 IMPLEMENTATION OF STRATEGIES TO REDUCE SEDIMENT

The following section outlines current strategies that have been identified to address sediment reduction, improve water quality, and support the long-term resilience of the PWCS' stormwater management system. These initiatives are designed to be adaptive, ensuring the PWCS' approach remains effective and responsive to changing conditions and regulatory requirements.

5.1 Evaluation of the Results Achieved by the 2018 - 2023 Action Plan

PWCS has implemented land use conversions to partially achieve sediment reductions. Within the Bull Run watershed the following land use load reductions have occurred. The load reductions presented in Table 3 are calculated based on Table V.H.1 of GM20-2003. Maps depicting the locations of the land use changes are provided in the Chesapeake Bay TMDL Action Plan.

Table 3: Land Use Changes within Bull Run TMDL Watershed

Property	Land Use From	Land Use To	Acres Converted	Reduction (Table V.H.1) TSS (lbs./ac/yr)
Unity Braxton - Reforestation 1	Turf	Forest	2.8	1559.6
Unity Braxton - Reforestation 2	Turf	Forest	1.39	774.23
Mountain View E.S. – No Mow Zone	Turf	Mixed Open	2.25	0
Total Sediment Reductions (lbs./acre/yr)				**2,333.83**

As demonstrated in Table 3, the reductions demonstrated in the 2018 - 2023 permit year were 1.17 tons per year.

5.2 Adaptive Management Strategies for the 2023 – 2028 Action Plan

By continuously assessing and refining strategies based on monitoring results and evolving environmental conditions, PWCS can adjust its approach as needed to ensure ongoing progress toward meeting sediment reduction goals. This adaptive management framework allows for flexibility in responding to unforeseen challenges or changes, ensuring that PWCS remains responsive to new data, technological advancements, and regulatory updates. Through this iterative process, PWCS is committed to achieving and maintaining the WLA while continuously improving its stormwater management practices for long-term environmental protection and resilience. The following are proposed strategies from Section 4.0 to be evaluated in the 2023 - 2028 MS4 GP.

(1) Resilience plan development and sourcing funding for projects
(2) Land use conversions focusing on reforestation
(3) Analysis of potential stream restoration or outfall stabilization projects

5.3 Progress Reporting

Progress will be reported through explicit accounting of sediment reductions for the strategies proposed in Section 4.0. PWCS will track the effectiveness of these strategies by documenting sediment removal and reductions achieved through various initiatives outlined in the plan. PWCS' Annual Report will serve as the primary documentation for tracking and communicating progress, providing a comprehensive review of the activities and outcomes related to sediment reduction efforts.

6.0 SCHEDULE

Table 4 summarizes the schedule for the implementation of the strategies in Section 4.0. This table outlines the specific milestones and timelines for each phase of the program, detailing when key actions will be taken. This schedule ensures that PWCS stays on track to complete each step in a timely manner and can effectively monitor and adjust as needed.

Table 4: Schedule of Anticipated Actions Planned for Implementation of Sediment Reductions

Step	General Description	Measurable Goal	Completion Date
1	Programmatic Planning of Reductions	Evaluate funding for Resilience Plan Development. Continue evaluation and implementation of land use conversions. Continue education efforts as to the benefit of non-managed areas.	June 30, 2026
2	Implementation and planning of Strategies	Prepare a Resilience Plan to identify potential projects. Outfall Stabilization and Stream Restoration Feasibility Study. Assess the numerical progress toward meeting the WLA. Consider implementation of additional strategies. Continue evaluation and implementation of land use conversions. Continue education efforts as to the benefit of non-managed areas.	June 30, 2028
3	Continued Implementation and planning of Strategies. Program Evaluation.	Continue evaluation of strategies from Section 5.0. Continue evaluation and implementation of land use conversions. Continue education efforts as to the benefit of non-managed areas. Annual evaluation of practices and assessment of future efforts to meet the WLA.	June 30, 2029 – June 30, 2040