Town of Vienna, Virginia

Sediment TMDL Action Plan for Difficult Run and Accotink Creek

Submittal to DEQ – May 1, 2020

Town of Vienna
Department of Public Works
127 Center Street, South
Vienna, Virginia 22180

Prepared with assistance by:
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Chantilly, Virginia

TOWN OF VIENNA

wood.

Prepared in Compliance with Municipal Separate Storm Sewer System (MS4)
Permit No. VAR040066

CERTIFICATION

"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."

Name	Title	Date
[signature]	TOWN MANAGER	05/01/20

Town of Vienna, Virginia
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May 1, 2020

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1. Introduction

1.1 Purpose

This Sediment Total Maximum Daily Load (TMDL) Action Plan for Difficult Run and Accotink Creek demonstrates how the Town of Vienna intends to meet the "Local TMDL Special Condition" in Part II B of the General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). The Town's most recent MS4 permit (VAR040066) issued by the Virginia Department of Environmental Quality (DEQ) became effective November 1, 2018. This plan replaces the plan approved by DEQ on December 2, 2016.

The Town's MS4 permit requires the development and implementation of action plans for impaired streams where a TMDL approved by the State Water Control Board (SWCB) assigns a waste load allocation (WLA) to the Town. A TMDL establishes the maximum amount of a pollutant that can enter a water body without violating water quality standards. A WLA represents the total pollutant loading that is allocated to a specific permitted source.

The Town has been assigned two WLAs for sediment. The "Benthic TMDL for the Difficult Run Watershed" affects MS4 regulated areas of the Town draining to Difficult Run. The "Sediment TMDLs for the Accotink Creek Watershed" affects MS4 regulated areas of the Town draining to Accotink Creek. Sediment pollution is a leading cause of stream degradation and has been identified as a primary stressor associated with the decline of benthic habitats in both watersheds. While some sediment is a natural part of the water environment, too much sediment can smother bottom dwelling organism and larvae, clog or impair the organs of filter-feeding organisms, and block sunlight to underwater plants. These plants are important to aquatic life both in terms of habitat and as a food source. In addition, other pollutants such as phosphorus and PCBs may be attached to sediment particles.

This plan addresses the requirements of the MS4 permit by: describing the WLAs assigned to the Town and the corresponding reduction requirements; identifying significant sources of the pollutants of concern discharging from the Town's MS4; identifying best management practices (BMPs) to reduce the pollutants of concern in accordance with special permit requirements; calculating existing and planned pollutant reductions; developing outreach strategies to enhance the public's ability to eliminate and reduce discharges of pollutants; and, establishing an implementation schedule for the permit term.

The Town's original plan addressed the sediment WLA assigned to Difficult Run. In accordance with the 2018 MS4 permit, the Town must update previously approved plans no later than 18 months after the effective permit date (May 1, 2020). The Town must also develop plans for WLAs assigned on or after

July 1, 2013 no later than 30 months after the effective permit date (May 1, 2021). This includes the sediment WLA for Accotink Creek. This plan updates the previously approved plan and integrates new strategies to address the Accotink Creek sediment WLA.

1.2 Chesapeake Bay TMDL Action Plan

This Sediment TMDL Action Plan is designed to work in conjunction with the Town's Final Phase II Chesapeake Bay TMDL Action Plan and subsequent plans. A TMDL was developed for the Chesapeake Bay by the U.S. Environmental Protection Agency (EPA) in 2010. Pollutants of concern (POCs) for the Chesapeake Bay include nitrogen, phosphorus, and sediment. The Town's MS4 permit requires specific reductions in sediment over three five-year permit cycles in accordance with the following: 5% of the required reductions by the end of the first permit cycle (June 30, 2018); 40% of required reductions by the end of the second permit cycle (October 31, 2023); and, 100% of required reductions at the end of the third permit cycle. The Final Phase II Chesapeake Bay TMDL Action Plan includes measures designed to reduce sediment loads from the entire Town. These measures are discussed in Section 2.4.

1.3 Cooperative Approach with Fairfax County

The Town has entered into an agreement with Fairfax County and the Town of Herndon to cooperate in the development and implementation of TMDL action plans. The agreement, included in Appendix A, was originally adopted by the Town of Vienna on October 28, 2013 and by Fairfax County on April 1, 2014. The agreement was updated by all parties effective March 8, 2017.

In accordance with the agreement, the cooperating localities jointly receive credit for each stormwater management project funded through the County's Stormwater Service District Fee and brought on-line as of July 1, 2009. The Stormwater Service District Fee is assessed in the County and the Town. Credit is provided regardless of the project's location within the cooperating localities and in proportion to each locality's MS4 service area. For the larger Chesapeake Bay TMDL, Vienna is credited 3.5% of pollutant reductions (nitrogen, phosphorus, and sediment) for each eligible stormwater project. For the Difficult Run sediment TMDL, Vienna is credited 14.6% of the sediment reduction for each eligible project located within the Difficult Run watershed. For the Accotink Creek sediment TMDL, Vienna is credited 7.7% of the sediment reduction for each eligible project located within the Accotink Creek watershed. These figures may shift slightly in the future as the cooperating localities continue to refine their MS4 service areas. Any changes will be documented to DEQ in the Town's MS4 annual reports.

1.4 Permit Compliance Crosswalk

The Town's original plan was prepared in accordance with the 2013 MS4 permit and DEQ Guidance Memo 16-2006 "TMDL Action Planning for Local TMDL Maximum Daily Loads," published in April 2015. To maintain consistency, this plan largely reflects the original structure updated for new requirements in the 2018 MS4 permit. Table 1A provides an overview of the organization of this plan and how each section addresses the 2018 MS4 permit.

Table 1A – Action Plan and Permit Compliance Crosswalk

Action Plan	Plan Element	2018 MS4 Permit	
Section 1	Introduction		
Section 2.1	Overview of TMDLs	Part II B 3	a. The TMDL project name. b. The EPA approval date of the TMDL.
Section 2.2	Waste Load Allocation	Part II B 3	c. The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable.
Section 2.3	Identification of Significant Sources of Sediment	Part II B 3	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 purpose 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.
Section 2.4	Best Management Practices	Part II B 3	e. The BMPs designed to reduce the pollutants of concern in accordance with Parts II B 4, B 5, and B 6.
Section 2.5	Sediment Reduction Calculations	Part II B 3	f. Any calculations required in accordance with Part II B 4, B 5, or B 6.
		Part II B 5	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 9VAC25-870-65 or other approved BMPs found on the Virginia Stormwater BMP Clearinghouse website; (2) One or more BMPs approved by the Chesapeake Bay Program; or, (3) Land disturbance thresholds lower than Virginia's regulatory requirements for erosion and sediment control and post-development stormwater management.

Action Plan	Plan Element	2018 MS4 Permit	
			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 3 f.
Section 2.6	Outreach Strategy	Part II B 3	g. For action plans developed in accordance with Part II B 4 and B 5, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants.
Section 3	Schedule of Anticipated Actions	Part II B 3	h. A schedule of anticipated actions planned for implementation during this permit term.
Section 4	Anticipated End Date	Part II B 5	d. No later than 36 months after the effective date of this permit, the permittee shall submit to the department the anticipated end dates by which the permittee will meet each WLA for sediment, phosphorus, or nitrogen. The proposed end date may be developed in accordance with Part II B 2.
Section 5	Opportunity for Public Comment	Part II B 7	Prior to submittal of the action plan required in Part II B 1, the permittee shall provide an opportunity for public comment proposed to meet the local TMDL action plan requirements for no less than 15 days.

2. Sediment TMDL Action Plan

2.1 Overview of TMDLs

This TMDL action plan addresses two sediment WLAs assigned to the Town of Vienna. The "Benthic TMDL for the Difficult Run Watershed" was approved by the SWCB on April 27, 2009 and by the U.S. EPA on October 7, 2008. The "Sediment TMDLs for the Accotink Creek Watershed" was approved by the SWCB on April 12, 2018 and by the U.S. EPA on May 23, 2018. Map 2A and Map 2B show the Difficult Run and Accotink Creek watersheds in relation to the Town of Vienna and the surrounding area.

Difficult Run was first listed as impaired on Virginia's 303(d) TMDL Priority List in 1998 for not supporting the aquatic life use due to poor health in the benthic biological community. The TMDL identifies sediment as the primary stressor impacting biologically impaired segments of Difficult Run. Sources of the sediment identified in the TMDL include urban stormwater runoff, stream bank erosion, and sediment loss from habitat degradation associated with urbanization.

The lower mainstem of Accotink Creek was first listed as impaired in 1996 for not supporting the aquatic life use. The impairment was extended to include the entire upper mainstem in 2010. The TMDL identifies sediment and chloride as the primary stressors. A separate TMDL action plan is required for chloride. The major source of the sediment loading for the upper mainstem is identified in the TMDL as streambank erosion. Developed land and transportation infrastructure are also identified as significant sources of sediment pollution.

2.2 Waste Load Allocation

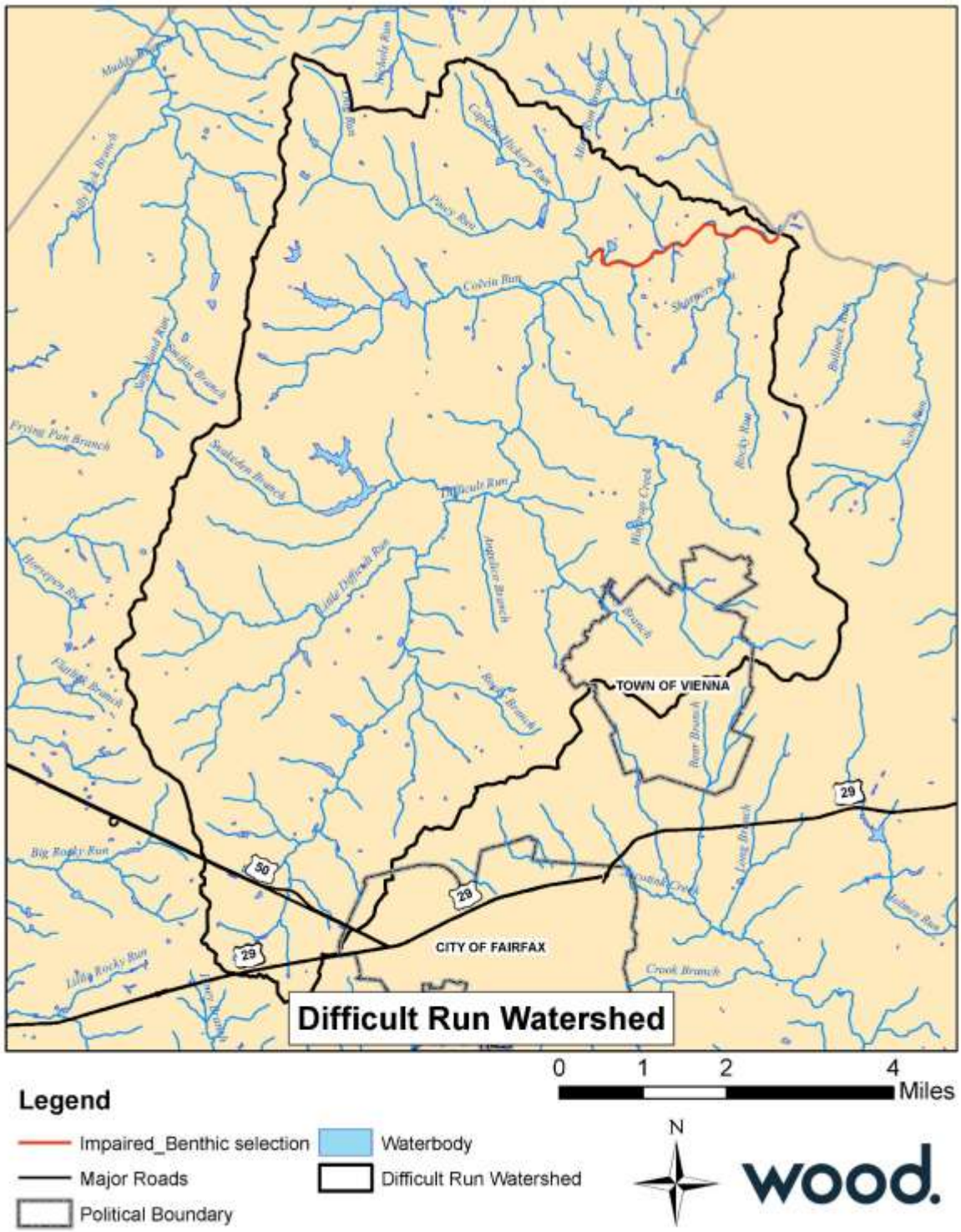
This action plan applies to those areas of the Town's regulated MS4 that drain to the Difficult Run and Accotink Creek watersheds. The MS4 regulated area is defined in the MS4 permit as a system that discharges to waters of the state that is owned or operated by the permittee. As a practical matter, the regulated MS4 area includes all of the Town with the exception of areas draining directly to a local stream without entering the Town's storm sewer system. Map 2C shows the watersheds in relation to the Town's MS4 service area.

The Difficult Run watershed drains approximately 37,260 acres of Fairfax County, the City of Fairfax, and the Town of Vienna. The Town's portion of the watershed is 1,683 acres, or approximately 4.5%. Major tributaries of Difficult Run in the Town are Wolftrap Creek and Piney Branch.

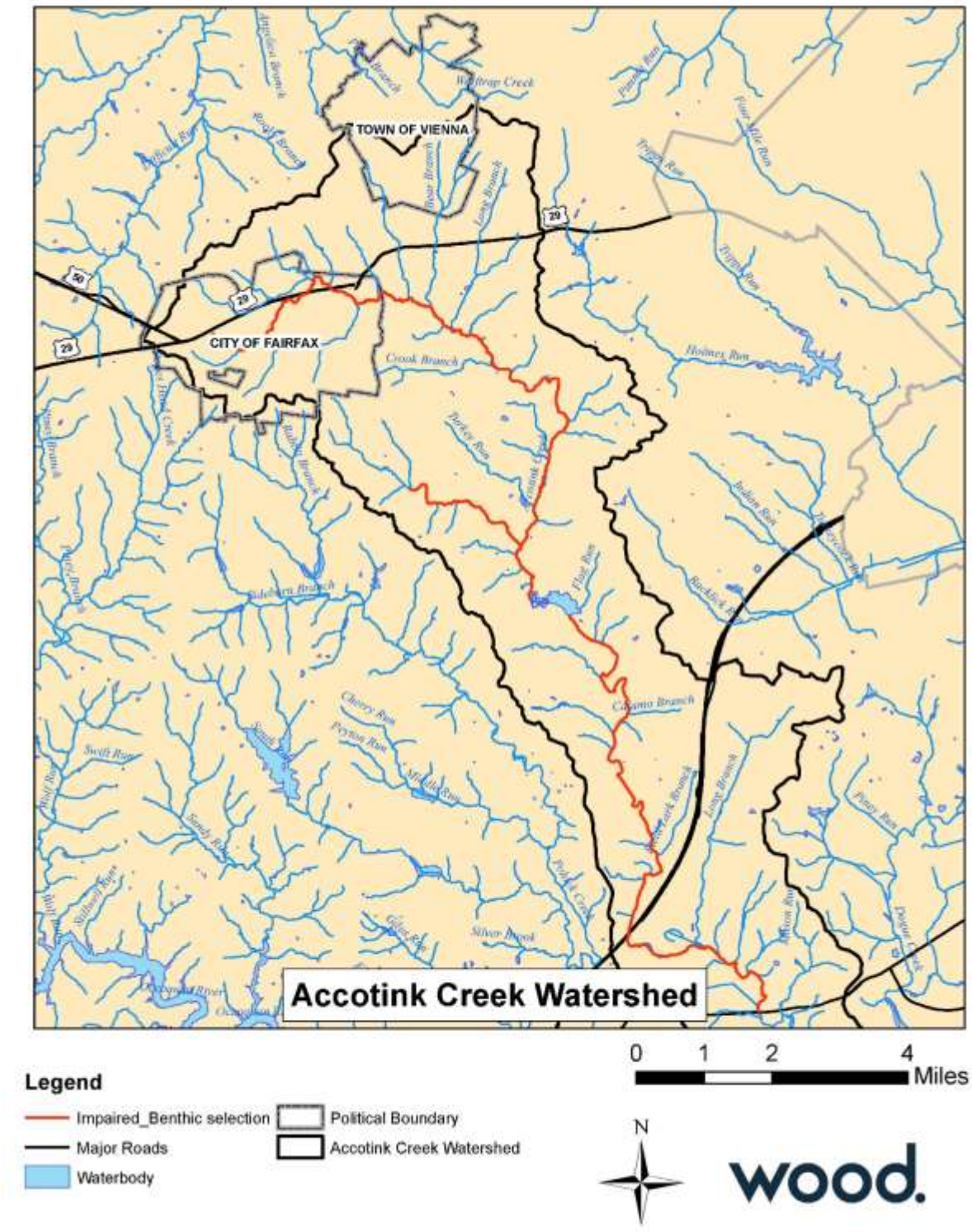
The WLA for MS4 permit holders in the Difficult Run watershed is aggregated. The existing load for MS4s is identified as 5,316.6 tons/year and the WLA is identified as 3,595.0 tons/year. This represents a 32% reduction from existing conditions. Table 2A summarizes existing and allocated sediment loads from all MS4 sources in the Difficult Run watershed.[1]

[1] Table 7-2 of the TMDL. The loading unit from the TMDL is tons/year. This has been converted to lbs/year for consistency in this action plan.

Map 2A – Difficult Run Watershed



Map 2B – Accotink Creek Watershed



Map 2C – Town of Vienna MS4 Service Area with Watersheds

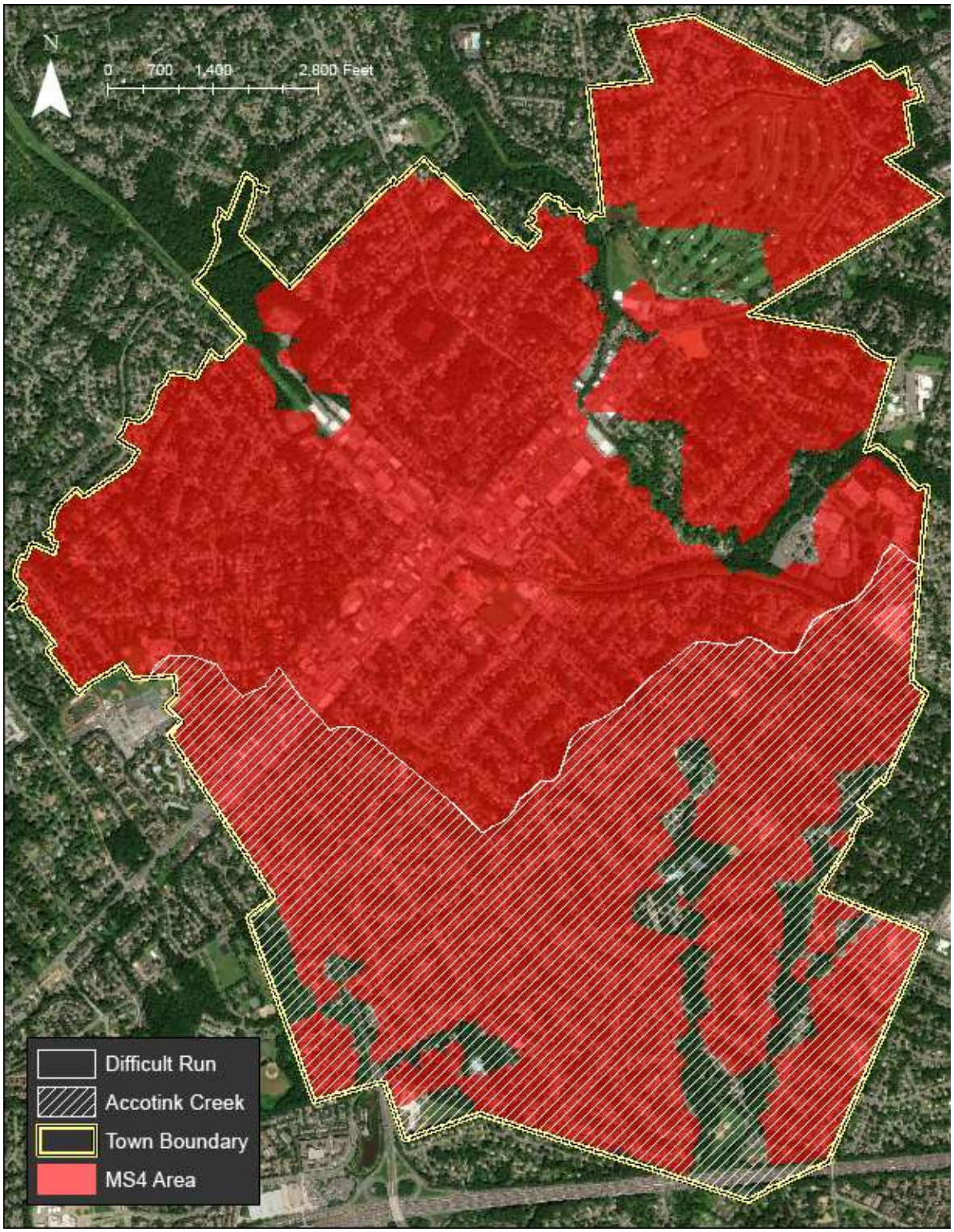


Table 2A – Difficult Run TMDL Aggregate Allocations for MS4s

Aggregated MS4s	Baseline Sediment Load	Allocated Sediment Load	% Reduction	Load Reduction
Town of Vienna City of Fairfax Fairfax County VDOT Fairfax County Public Schools George Washington Memorial Parkway	10,633,200 lbs/yr (5,316.6 tons/yr)	7,190,000 lbs/yr (3,595.0 tons/yr)	32%	3,443,200 lbs/yr (1,721.6 tons/yr)

The Accotink Creek watershed (upper and lower mainstems) drains approximately 31,112 acres of Fairfax County, Fort Belvoir, the City of Fairfax, and the Town of Vienna. The Town's portion of the watershed is 1,142 acres, or approximately 3.8%. Major tributaries of Accotink Creek in the Town are Hunter's Branch and Bear Branch.

The WLA for MS4 permit holders in the Accotink Creek watershed is aggregated in the TMDL report. However, it is noted that VDOT does not own roads within the Town of Vienna. The practical effect is that the entire WLA is the Town's responsibility. The existing load for the Town's MS4 is identified as 733 tons/year and the WLA is identified as 174 tons/year. This represents a 76% reduction from existing conditions. Table 2B summarizes existing and allocated sediment loads from the Town's WLA in the Accotink Creek watershed.[2]

Table 2B – Accotink Creek TMDL Aggregate Allocations for MS4s

Aggregated MS4s	Baseline Sediment Load	Allocated Sediment Load	% Reduction	Load Reduction
Town of Vienna VDOT	1,466,000 lbs/yr (733 tons/yr)	348,000 lbs/yr (174 tons/yr)	76%	1,118,000 lbs/yr (559 tons/yr)

2.3 Identification of Significant Sources of Sediment

Both the Difficult Run and Accotink Creek TMDLs describe significant sources of controllable sediment as being associated with streambank erosion and stormwater runoff from developed land. Sediment from developed land enters the MS4 when stormwater mixes with exposed or poorly stabilized soils. In urban areas, soils are often subject to compaction or frequent disturbance (such as vehicle wheel ruts, pedestrian traffic, sports activities, etc.) where stabilization with vegetation is difficult. Soil stockpiles that are not protected from precipitation can also be a source of sediment. Finally, land disturbing activities (development, utility installation, roadwork, etc.) can be a source of sediment if not properly controlled. It is noted that construction activities one acre and greater are considered separate from the MS4 allocation since they are subject to separate VPDES construction general permits.

[2] Table 4-5 of the TMDL. The loading unit from the TMDL is tons/year. This has been converted to lbs/year for consistency in this action plan.

Stream bank erosion is caused by the volume and velocity of the flow within the stream, which may be increased during storm events as a result of runoff from impervious areas such as parking lots, roadways, and rooftops.

As required in the MS4 permit, a review of Town owned or operated properties was conducted in 2016 to identify any significant sources of sediment in the Difficult Run watershed. This review has been updated and expanded to include the Accotink Creek watershed portion of the Town. A source is considered significant if the pollutant loading is expected to be greater than the average pollutant loading for the land use identified in the TMDL. For the purpose of this investigation, the Town considered the following risk factors: the existence of soil stockpiles; playing fields where high intensity use may lead to exposed soil; property with large areas of exposed soil (≥2,500 square feet); and, property with large (≥1 acre) uncontrolled impervious surfaces. The threshold of ≥2,500 square feet was chosen for exposed soil since that is the threshold at which land disturbing activities are subject to the Town's erosion and sediment control program. The threshold of ≥1 acre was chosen for impervious surface area since that is the threshold at which land disturbing activities are required to obtain a state stormwater management permit. Table 2C shows the results of this evaluation. Elevated risk factors are indicated in orange.

Table 2C – Evaluation of Potential Significant Sediment Sources from Town Property

Property	Watershed	Soil Stockpiles?	High Intensity Fields?	Exposed Soil (≥2,500 SF)?	Impervious Area (≥1 Acre)
Glyndon Park	Difficult	No	No	No	No
Northside Property Yard	Difficult	Yes	No	No	Yes
Salisbury Spring Park	Difficult	No	No	No	No
Town Hall	Difficult	No	No	No	Yes
Vienna Community Center	Difficult	No	No	No	Yes
Vienna Town Green	Difficult	No	No	No	No
Waters and Caffi Fields[3]	Difficult	No	Yes	Yes	No
Petersen Lane Park	Difficult	No	No	No	No
Beulah Road Lot	Difficult	Yes	No	No	Yes
Meadow Lane Park	Accotink	No	Yes	Yes	No
Southside Park	Accotink	No	Yes	Yes	No
Sarah Walker Mercer Park	Accotink	No	No	No	No
Nutley Street Maintenance Yard	Accotink	Yes	No	No	No

Risk factors associated with private properties are generally the same as those associated with Town owned or operated properties. The Town has adopted Town Code, Chapter 23 "Environmental Controls" to minimize soil erosion during construction and to reduce sediment pollution and water quantity from impervious surfaces as a result of new development and redevelopment. The Town is fully compliant

[3] Owned by Fairfax County Public Schools. Fields maintained by Town of Vienna.

with the Virginia Erosion and Sediment Control Regulations and the Virginia Stormwater Management Program Regulations. There are no known private playing fields or soil stockpiles (other than small, intermittent stockpiles such as those associated with landscaping). There are also no known private properties with large amounts of exposed soil. However, if a stockpile or bare area became a source of pollution, Chapter 23 of the Town Code allows the Town to require the property owner to establish mitigation measures. The provisions of Chapter 23 are further discussed in Section 2.4.

2.4 Best Management Practices

The Town has in place a rigorous program aimed at preventing new sources of sediment and reducing the discharge of existing sources of sediment from the MS4. This program includes provisions of the Town Code prohibiting illicit discharges and implementing stormwater quality and quantity control requirements, the MS4 Program Plan, and the Final Phase II Chesapeake Bay TMDL Action Plan. The following provides an overview of these programs as well as a description of actions to address potential sources of sediment from Town property identified in Section 2.3.

Town Code – Illicit Discharges and Stormwater Controls

The Town prohibits illicit discharges to the storm sewer system, which includes sediment, in Section 16.2.2 of the Town Code. This section provides: "It shall be unlawful for any person to deposit, or cause to be deposited, in any public storm drainage facility, including gutters, ditches and watercourses, any substance including, but not limited to, trash, accumulations of grass clippings, petroleum products, petroleum waste, or other noxious or flammable substances; provided, however, that leaves may be piled at curbs during such seasons and in such areas as may not or in the future be furnished mechanical leaf collection service."

The Town Council has adopted stormwater quality and quantity requirements (Town Code Chapter 23, "Environmental Controls") that meet or exceed the requirements of the Virginia Stormwater Management Act (§62.1-44.15:24 et seq, Code of Virginia) and the Erosion and Sediment Control Act (§62.1-44.15:51 et seq, Code of Virginia), and their attendant regulations. While phosphorus is the regulated pollutant, the regulations are designed to also control for nitrogen and sediment. The Town's ordinance applies to any land-disturbing activity 2,500 square feet and greater, which is the threshold required under the Virginia Stormwater Management Regulations (9VAC25-870) for localities subject to the Chesapeake Bay Preservation Act. However, the Town's requirements are more stringent than the minimum standards since it could have exempted single family residential development under one acre. All new development must meet a standard of 0.41 pounds of phosphorus per acre per year. All redevelopment must reduce the phosphorus load by 20% if the land disturbance is one acre or greater or by 10% if the land disturbance is less than one acre (not to exceed the 0.41 standard for new development). The standard of 0.41 pounds of phosphorus per acre per year is mandated by the Virginia Stormwater Management Program Regulations, and according to DEQ's guidance, meets the requirement for no-net-increase from phosphorus, nitrogen, and sediment.

While the Town Code generally applies to new development or redevelopment, the Town is authorized in Section 23-5 to require a property owner to develop and implement an erosion and sediment control plan in an "erosion impact area." An erosion impact area is defined as "an area of land not associated with current land disturbing activity but subject to persistent soil erosion resulting in the delivery of sediment onto neighboring properties or into state waters. This definition shall not apply to any lot or parcel of land of 10,000 square feet or less used for residential purposes or to shorelines where erosion results from wave action of other coastal processes."

MS4 Program Plan

The Town of Vienna has adopted an MS4 Program Plan that documents implementation of all MS4 permit requirements, including the programmatic and legal authorities required to meet the "Local TMDL Special Condition." The full MS4 Program Plan can be found at https://www.viennava.gov/DocumentCenter/View/5003. Table 2D provides a summary of elements of the six minimum control measures (MCMs) implemented by the Town under the MS4 that relate to meeting the sediment TMDL.

Table 2D – MS4 Program Plan Components Related to the Sediment TMDL

Source Document	Description	Implementation and Schedule
MS4 Program Plan BMP 1.4 "Sediment and Other Illicit Discharges"	The objective of this BMP is to reduce illicit discharges, with a particular focus on sediment pollution, by educating residents on how to recognize and report a suspected illicit discharge.	The Town has identified all residents as the target audience for sediment and illicit-discharge education. The following actions are contained in the MS4 Program Plan: • At least once annually, promote the means by which the public can report a suspected illicit discharge using one of the following: (1) press release; (2) article in the Vienna Voice newsletter; (3) message in the Town Calendar; or, (4) message in the quarterly residential water bill. • At least once annually, include a message about how the public can report a suspected illicit discharge using a social media platform.
MS4 Program Plan BMP 2.2	The objective of this BMP is to promote the ability of the public to report illicit discharges, including complaints about land disturbing activities.	• Provide information on how to report a potential illicit discharge or illegal dumping (including phone, email, and online forms) on the stormwater webpage.
MS4 Program Plan BMP 3.2 "Prohibition of Illicit Discharges"	The objective of this BMP is to prohibit illicit discharges in general and to provide the Town with adequate enforcement authority.	Town Code Section 16-2.2. Ongoing implementation.
MS4 Program Plan BMP 3.3 "Written Procedures for Illicit Discharges and Dumping"	The objective of this BMP is to establish procedures to identify and address unauthorized discharges and illegal dumping. The Town adopted an Illicit Discharge Detection and Elimination (IDDE) Manual that contains information about sediment pollution.	The following actions are contained in the MS4 Program Plan: • Implement the IDDE plan. • Incorporate relevant portions of the IDDE plan into field personnel training.
MS4 Program Plan BMP 3.4 "Dry	The objective of this BMP is to identify and eliminate illicit discharges as soon as possible through a dry weather	The following actions are contained in the MS4 Program Plan:

Source Document	Description	Implementation and Schedule
Weather Outfall Screening"	outfall screening program. The program includes sediment pollution.	• Perform dry weather outfall screening for at least 50 outfalls annually such that no more than 50% are screened in the previous 12-month period.
MCM #4: "Construction Site Stormwater Runoff Control"	The Town implements a consistent erosion and sediment control program designed to prevent sediment from leaving a construction site during the development process.	Town Code Chapter 23, Article 2 "Erosion and Sediment Control." Ongoing implementation.
MCM #5: "Post Construction Stormwater Management"	The Town implements a consistent stormwater management program designed to prevent sediment from leaving a site after development.	Town Code Chapter 23, Article 3 "Stormwater Management." Ongoing implementation.
MS4 Program Plan BMP 6.1 "Good Housekeeping Standard Operating Procedures for Daily Operations"	The Town has developed a series of standard operating procedures (SOPs) designed to ensure that employees minimize or prevent the discharge of pollution, including sediment, from daily operations.	The following actions are contained in the MS4 Program Plan: • Implement the Operation and Maintenance Pollution Prevention SOPs. • Annually review, and if necessary update, the Operation and Maintenance Pollution Prevention SOPs to comply with MS4 permit requirements. • Incorporate Operation and Maintenance Pollution Prevention SOPs into staff training.
MS4 Program Plan BMP 6.2 "Stormwater Pollution Prevention Plans for High-Priority Facilities"	The Town has developed a stormwater pollution prevention plan (SWPPP) for the Northside Property Yard. The SWPPP specifically addresses and establishes BMPs for soil stockpiles and other sources of sediment typical of a property yard.	The SWPPP was adopted June 2015 with implementation ongoing. The Town conducts quarterly site visits to ascertain implementation of the SWPPP. The SWPPP will be reviewed and updated during FY2021.
MS4 Program Plan BMP 6.3 "Employee Training"	The objective of this BMP is to ensure that employees are aware of pollution prevention goals and trained to recognize and correct potential sources of pollution. Prevention of sediment pollution is an element of the Town's training.	Department of Public Works and Parks Maintenance staff are trained in general pollution prevention, including sediment, every other year in accordance with the MS4 Program Plan.
MS4 Program Plan BMP 6.5 "Proper State Certification for Erosion and Sediment Control"	The objective of this BMP is to ensure that all responsible staff are properly trained in erosion and sediment control.	Ongoing implementation.
MS4 Program Plan BMP 6.7 "Street Sweeping"	The Town's street sweeping plays a significant role in pollution prevention by keeping trash, particulates, and organic matter from entering the storm system.	In accordance with the MS4 Program Plan, the Town conducts Town-wide street sweeping operations at least once a year, and sweep after major outdoor special events.

Chesapeake Bay TMDL Action Plan

The Town's Final Phase II Chesapeake Bay TMDL Action Plan contains several sediment reduction strategies that are directly applicable to the Difficult Run and Accotink Creek TMDLs. These are generally discussed in Table 2E. Specific projects and calculations are contained in Section 2.5.

Table 2E – Chesapeake Bay TMDL Action Plan Components Related to the Sediment TMDL

Strategy	Description
Redevelopment	Sediment loads in the Town will continue to be reduced through improved stormwater management controls as a result of redevelopment. Town Code Chapter 23, Article 3 "Stormwater Management" requires a reduction in total phosphorus for any redevelopment project. This reduction also results in a reduction in sediment. Starting July 1, 2014 redevelopment over one acre or more must achieve a 20% reduction. Redevelopment under one acre must achieve a 10% reduction (except for exempted activities per the Code of Virginia).
Street Sweeping	The Town implements a Town-wide street sweeping program, which reduces the amount of sediment and other particulates that are washed into the storm drain system. Based on new guidance from DEQ, the Town no longer meets the minimum sweeping frequency to take specific pollutant reduction credit. However, the Town plans to continue its program and will report on its efforts in the Town's MS4 annual reports.
Shared Credit Projects with Fairfax County	In accordance with the agreement with Fairfax County (see Section 1.3), the Town will continue to take its share of sediment reduction credit for stormwater management and stream restoration projects implemented in the Difficult Run and Accotink Creek watersheds. The Town receives 14.6% of the credit for the Difficult Run TMDL and 7.7% of the credit for the Accotink Creek TMDL. While the Town only receives a percentage of the credit, it is worth noting that several stream restoration projects have been implemented in the Town itself. These include Wolftrap Creek Phase I (completed 2013), Hunters Branch (completed 2016), Wolftrap Creek Phase II (completed 2018), and Piney Branch (construction planned 2020).

Town Owned or Operated Properties

The assessment in Section 2.3 identifies several Town properties with risk factors for sediment pollution. This includes the Northside Property Yard (high impervious area and soil stockpiles), Vienna Community Center (high impervious area), Town Hall (high impervious area), multiple parks containing high intensity fields, Nutley Street Maintenance Yard (soil stockpiles), and Beulah Road Lot (high impervious area and temporary mulch stockpiles for distribution).

As noted previously, the Town has adopted a SWPPP for the Northside Property Yard that includes BMPs for sediment reduction. This SWPPP is continuously implemented and includes quarterly site walk-throughs and annual training. The Town has also developed a Northside Property Yard Stormwater Design Improvements Conceptual Report. The report contains recommendations for stormwater management

improvements at the property, including enhanced stockpile containment and cover. The recommendations are included for funding in 2022 as part of the Town's Capital Improvement Plan (CIP).

The Vienna Community Center underwent a major renovation in FY2018. As part of the renovation, the Town installed stormwater quality and quantity controls, including two StormTech manufactured stormwater treatment devices and porous pavement. Sediment reductions are described in Section 2.5.

In FY2019, the Town installed bioretention and grass swales as part of an upgrade to the Town Hall parking area (see front cover). Sediment reductions are described in Section 2.5.

Permeable Pavement at the Vienna Community Center

The Town maintains a number of high-intensity sports fields. Waters and Caffi Fields are located in the Difficult Run watershed. They are owned by Fairfax County Public Schools but managed by the Town's Department of Parks and Recreation. Beginning in FY2017, the Town began conducting an annual walk-through of the fields to monitor for any signs of erosion and to take corrective action if necessary. Two additional parks with high-intensity sports fields have been identified in the Accotink Creek watershed. These are Meadow Lane Park and Southside Park. Beginning in FY2021, these parks will be added to the Town's annual walk-through schedule.

The Nutley Street Maintenance Yard consists of a water tower, several small equipment maintenance buildings, vehicle storage areas, and stockpiles associated with park maintenance activities (soil, mulch, gravel, etc.). While the impervious area is less than one acre, soil stockpiles and activities associated with park maintenance could represent an increased risk of sediment pollution if not properly managed. In accordance with Part I E 6 e of the MS4 permit, the Town will develop a separate SWPPP for the Nutley Street Maintenance Yard no later than December 31, 2020. The Beulah Road Lot has an impervious area of slightly over one acre and is used for seasonal stockpiling and distribution of mulch to Town residents. The Town will incorporate the Beulah Road Lot into the Northside Property Yard SWPPP when it is updated in FY2021 per the MS4 Program Plan.

The Town will continue to assess additional opportunities to implement sediment reductions at Town owned or operated properties during the current permit cycle and will update this action plan in accordance with MS4 permit requirements if necessary.

2.5 Sediment Reduction Calculations

In accordance with Part II B 5 of the MS4 permit, the Town has calculated the following actual and planned sediment reductions for the Difficult Run and Accotink Creek watersheds. Calculations for Town-specific reductions are located in Appendix B. Calculations for shared-project reductions with Fairfax County are located in Appendix C.

Table 2F – Summary of Sediment Reductions for Difficult Run

Project	Reduction Type	Year	Total Reduction	Reduction Minus Baseline	% Town Share	Town Share Reduction
Vienna Community Center	Redevelop	2018	1,271.28	1,271.28	100%	1,271.28
135 Center Street S	Redevelop	2018	86.32	86.32	100%	86.32
1008 Electric Avenue	Redevelop	2018	3,402.89	3,402.89	100%	3,402.89
Vienna Town Hall	Retrofit	2019	32.84	32.84	100%	32.84
Vienna Town Hall	Imperv. Reduction	2019	186.02	186.02	100%	186.02
Subtotal			***4,979.35***	***4,979.35***		***4,979.35***
Shared-Projects with Fairfax County	Retrofit	Appx. C	161,114.68	148,439.05	14.6%	21,672.10
Shared-Projects with Fairfax County	Stream Restoration	Appx. C	1,866,238.46	1,693,009.40	14.6%	247,179.37
Subtotal			***2,027,353.14***	***1,841,448.45***		***268,851.47***
Total			**2,032,332.49**	**1,846,427.80**		**273,830.82**

Table 2G – Summary of Sediment Reductions for Accotink Creek

Project	Reduction Type	Year	Total Reduction	Reduction Minus Baseline	% Town Share	Town Share Reduction
Shared-Projects with Fairfax County	Retrofit	Appx. C	80,705.42	62,244.07	7.7%	4,792.79
Shared-Projects with Fairfax County	Stream Restoration	Appx. C	6,768,450.13	4,600,960.59	7.7%	354,273.97
Total			**6,849,155.55**	**4,663,204.66**		**359,066.76**

2.6 Outreach Strategy

The Town's Stormwater Pollution Prevention Public Education and Outreach Plan serves as the primary vehicle for meeting the MS4 permit requirement to develop an outreach strategy to enhance the public's education on methods to eliminate and reduce the discharge of sediment pollution. The original plan was adopted in 2015 and was comprehensively updated in 2019 to meet new MS4 permit requirements. The plan identifies sediment as a high-priority water quality issue and then outlines target audiences, education and outreach tools, and pollution prevention messages. The plan then establishes sediment-specific outreach strategies. The plan has been fully integrated into the Town's MS4 Program Plan. The Town's outreach strategy is described Table 2D (BMP 1.4 and BMP 2.2).

In addition, the Town has adopted standard operating procedures (SOPs) for Town staff that address sediment reduction. These include: Road, Street, Parking Lot, and Sidewalk Maintenance; Outdoor Material Storage; and, Utility Construction. The Northside Property Yard SWPPP also contains actions to address sediment in general and outdoor material stockpiles specifically. The SOPs and SWPPP have been incorporated into annual staff training requirements as provided for in the MS4 Program Plan and described in Table 2D (BMP 6.3).

The Town will continue to assess whether additional enhancement to education, outreach, and training would be beneficial to reducing sediment loads within the Town.

3. Schedule of Anticipated Actions

Table 3A presents a schedule of anticipated actions planned for implementation during this permit cycle to address the Difficult Run and Accotink Creek TMDLs.

Table 3A – Schedule of Anticipated Actions

Implementation Item	Description	Schedule and Milestones
MS4 Program Plan	The Town will continue to implement the MS4 Program Plan, including elements related to sediment. The MS4 Program Plan will be updated to reflect the actions of the Sediment TMDL Action Plan.	See MS4 Program Plan for implementation schedule. MS4 Program Plan update by October 1, 2020.
Chesapeake Bay TMDL Action Plan	The Town will continue to implement the Final Phase II Chesapeake Bay TMDL Action Plan, including actions to reduce sediment pollution.	See Chesapeake Bay TMDL Action Plan for implementation schedule. Document additional sediment reductions in MS4 annual reports.
Town Owned Property: Northside Property Yard SWPPP	The Town will continue to implement the Northside Property Yard SWPPP and will implement the recommendations of the Northside Property Yard Stormwater Design	Review and update the SWPPP in FY2021 in accordance with the MS4 Program Plan. Provide updates on CIP improvements in MS4 annual reports.

Implementation Item	Description	Schedule and Milestones
	Improvements Conceptual Report through the CIP.	
Town Owned Property: Sports Fields	The Town will continue to annually assess the condition of Waters and Caffi fields and take corrective action, if necessary, to ensure that they are not a source of sediment pollution. Beginning FY2021, Meadows Lane Park and Southside Park will be added to the annual assessment schedule.	Include the expansion of fields to be assessed in the MS4 Program Plan by October 1, 2020. Submit assessment results in MS4 annual reports.
Town Owned Property: Nutley Street Maintenance Yard	The Town will develop a SWPPP for the Nutley Street Maintenance Yard.	Complete no later than December 31, 2020 and include in the subsequent MS4 annual report.
Town Owned Property: Beulah Road Lot	The Town will incorporate the Beulah Road Lot into the Northside Property Yard SWPPP.	Complete with the scheduled review and update of the SWPPP in FY2021in accordance with the MS4 Program Plan.
Stormwater Pollution Prevention Public Education and Outreach Plan	The Town will continue to implement the Stormwater Pollution Prevention Public Education Plan, including elements related to sediment. The implementation schedule has been integrated into the MS4 Program Plan.	See MS4 Program Plan for implementation schedule.

4. Anticipated End Date

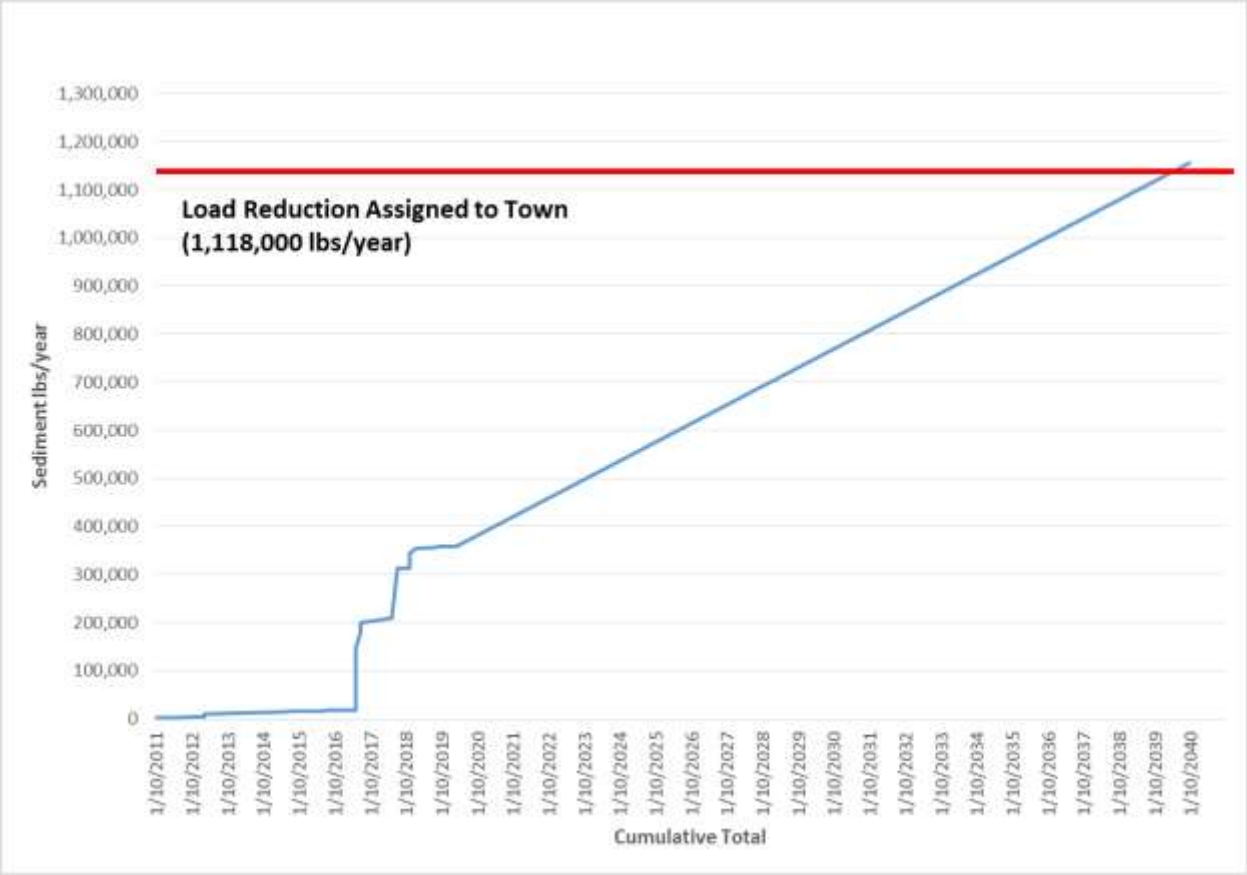
The MS4 permit requires the Town to submit the anticipated end date by which it will meet the WLAs for sediment. The Difficult Run TMDL establishes a target of reducing sediment loads from all MS4 sources by 3,443,200 lbs/year. Since the WLA is aggregated, the Town has approached this task by comparing actual and planned reductions by both the Town (Town-specific projects) and Fairfax County (shared-credit projects) to the TMDL reduction target. As shown in Table 2F, the total actual reductions to-date for both localities equals 1,846,427.80 lbs/year, or approximately 54% of the total required reduction. In addition, Fairfax County has one project under-construction – a stream restoration at Brittenford Drive. The project will be completed within the next two to three years. According to Fairfax County, the project is anticipated to achieve an additional reduction of 3,487,240 lbs/year.[4] Together, the actual and planned reductions will equal 5,333,667.80 lbs/year, or approximately 155% of the total required reduction. As a result, the anticipated end date for meeting the Difficult Run TMDL is 2022 or 2023.

Unlike Difficult Run, the TMDL for Accotink Creek establishes a Town-specific sediment reduction target of 1,118,000 lbs/year. While the WLA technically aggregates the Town and VDOT, VDOT does not own or operate roadways within the Town corporate limits. As shown in Table 2G, the total actual

[4] Since the project is under construction, the total sediment reduction is subject to change. Calculations will be submitted with the appropriate MS4 annual report after construction is completed.

reduction to-date for the Town (based on shared-projects with Fairfax County) equals 359,066.76 lbs/year, or approximately 32% of the total required reduction. These projects were implemented over a nine year period. Assuming a similar pace of investment (approximately 39,896.31 lbs/year) and mix of projects, it will take approximately 20 years to achieve the full target reduction. As a result, the anticipated end date for meeting the Accotink Creek TMDL is 2040, plus or minus a few years depending on actual project implementation.

Figure 4A – Accotink Creek Sediment Reduction Projection



5. Opportunity for Public Comment

This plan was made available for public comment in accordance with Part II B 7 of the MS4 permit. No comments were received before the May 1, 2020 deadline to submit the plan to DEQ. A snapshot of the Town's stormwater webpage inviting public comment is on the following page.

Stormwater and Streams

Stormwater Management

Interested in the town's current progress and goals towards protecting the Chesapeake Bay? Check out our updated Action Plans for the Difficult Run and Accotink Creek Watersheds:

Sediment TMDL Action Plan

Bacteria TMDL Action Plan

PCB TMDL Action Plan

Northern Virginia Clean Water Partners

These drafts have been prepared and are ready for review and public comment. The town will be submitting the draft plans and any public comments to the Virginia Department of Environmental Quality on May 1, 2020. For additional information or to submit comments, please email or call the town's Water Quality Engineer, Christine Horner. She can be reached at Christine.Horner@viennava.gov or 703-319-8630.

Appendix A

Cooperative Agreement with Fairfax County and the Town of Herndon

COOPERATIVE AGREEMENT BETWEEN THE FAIRFAX COU7.NTY BOARD OF SUPERVISORS, THE TOWN OF VIENNA, and TOWN OF HERNDON TO SHARE CERTAIN STORMWATER SERVICE DISTRICT FEES AND RESPONSIBILITY FOR RELATED SERVICES

This Agreement ("Agreement") is entered into on this 8TH day of MARCH, 2017, by and between the BOARD OF SUPERVISORS OF FAIRFAX COUNTY, VIRGINIA ("FAIRFAX"), the TOWN COUNCIL OF VIENNA, VIRGINIA ("VIENNA"), and the TOWN COUNCIL OF HERNDON, VIRGINIA ("HERNDON") (referenced collectively as the "Parties" or "the Governing Bodies", and individually as the "Party").

WITNESSETH:

WHEREAS the Towns of Vienna and Herndon (also referenced herein as "the Towns") are located within Fairfax County (also referenced herein as "the County"); and

WHEREAS Fairfax County, the Town of Vienna, and the Town of Herndon each maintain, operate, and improve stormwater systems that affect one another; and

WHEREAS Fairfax County and the Towns are each subject to a Municipal Separate Storm Sewer System ("MS4") permit issued by the Virginia Department of Environmental Quality ("DEQ"); and

WHEREAS FAIRFAX has cooperated with VIENNA and HERNDON to maintain, operate, and improve their respective stormwater systems and wish to continue such cooperation in the future in the best interests of their residents; and

WHEREAS pursuant to Va. Code Ann. § 15.2-2400 (2012), FAIRFAX has established a Stormwater Service District ("Service District"), and is authorized, pursuant to Va. Code Ann. § 15.2403(6) (Supp. 2016) to levy and collect an annual fee upon any property located within such Service District ("the Service District Fee"); and

WHEREAS the Towns of Vienna and Herndon are located within Fairfax County's Service District; and

WHEREAS, pursuant to Va. Code Ann. § 15.2-2403(6), Fairfax County collects revenues from properties located within the Towns of Vienna and Herndon; and

WHEREAS, pursuant to Va. Code Ann. § 15.2-2403.3 (Supp. 2016), by virtue of the Towns' maintenance of separate MS4 permits and their location within the Service District, the Towns are entitled to the Service District Fee revenues collected by Fairfax County within their respective jurisdictions; and

WHEREAS, the actual amount of revenues collected from the Service District Fee will vary from year to year; and

WHEREAS, each MS4 permit, among other things, assigns jurisdiction-specific, pollutant load reduction requirements for nitrogen, phosphorus, and sediment to address the Chesapeake Bay Total Maximum Daily Load (referred to herein as "TMDL"), and requires each MS4-permit jurisdiction to develop a Chesapeake Bay TMDL Action Plan that identifies the practices, means, and methods that are to be implemented by the permittee to achieve the required pollutant reductions; and

WHEREAS, the Commonwealth's Chesapeake Bay TMDL Watershed Implementation Plan (referred to herein as "the WIP") establishes the total pollutant reduction loads required to achieve the Chesapeake Bay TMDL and the timeframe for MS4-permit jurisdictions to achieve their assigned pollutant reductions; and

WHEREAS, each MS4 permit also requires the development of action plans for other pollutants where a TMDL assigns a wasteload allocation ("WLA") to the permittee; and

WHEREAS, pursuant to their respective MS4 permits, the Towns submitted their initial Chesapeake Bay TMDL Action Plans to DEQ prior to the deadline of October 1, 2015 while the County's initial Chesapeake Bay TMDL Action Plan will be submitted to DEQ prior to the deadline of April 1, 2017. Action plans for other TMDLs are submitted in accordance with the schedule contained in each MS4 permit; and

WHEREAS, while each MS4-permit jurisdiction is ultimately responsible for compliance with its MS4 permit, MS4 permits allow and encourage cooperation and coordination among permit holders, and such cooperation and coordination can mutually benefit MS4-permit jurisdictions through more effective and cost-efficient protection of water resources in each jurisdiction; and

WHEREAS, the purpose this Agreement, in part, is for the Parties to work cooperatively to satisfy the pollutant load reduction requirements of their current and future MS4 permits by implementing stormwater management practices within the Parties' jurisdiction that reduce the discharge of pollutants; and

WHEREAS, FAIRFAX, VIENNA, or HERNDON may terminate this Agreement as set forth by the terms herein if, pursuant to applicable law, either locality chooses not to participate under this Agreement or chooses not to share the Stormwater Service District Fees; and

WHEREAS FAIRFAX, VIENNA, and HERNDON have determined and agreed that the best interests of each locality's residents are fulfilled if FAIRFAX utilizes a portion of the Service District Fees collected by FAIRFAX from properties within the Towns to assist the Towns in maintaining, operating, and improving their respective stormwater systems to achieve the goals of effective regional water quality improvement and local initiatives in these localities and to satisfy certain MS4 permit requirements;

NOW, THEREFORE, in consideration of the mutual obligations set forth herein and other good and valuable consideration, so long as FAIRFAX continues to administer the Service District in FAIRFAX that encompasses VIENNA and HERNDON, and so long as VIENNA and HERNDON qualify to receive the Service District Fees collected by FAIRFAX from properties within the Towns, FAIRFAX, VIENNA, and HERNDON agree as follows:

1. FAIRFAX will continue to engage in a coordinated approach with VIENNA, and HERNDON to maintain and operate their respective stormwater systems throughout the incorporated and unincorporated parts of FAIRFAX. Moreover, FAIRFAX, VIENNA, and HERNDON will engage in a coordinated approach for future improvements to their respective stormwater systems.

2. This Agreement's duration shall be for one fiscal year and shall renew at the beginning of each fiscal year thereafter unless terminated pursuant to the terms set forth herein below. For the purposes of this Agreement, "fiscal year" shall mean Fairfax County's fiscal year, which, at the time of the execution of this agreement, ends on June 30.

3. This Agreement's purpose is to set forth how the Parties shall share revenues to be collected pursuant to the Service District Fee, including revenues collected from properties within VIENNA and HERNDON, and the respective obligations of the Parties with respect to the stormwater management services described herein.

STORMWATER FEE REVENUE SHARING

4. FAIRFAX shall collect all revenues to be collected pursuant to the Service District Fee, including revenues collected from properties within the Towns.

5. Revenues actually collected throughout the Service District are referred to herein as "STORMWATER FEE REVENUES."

6. At the end of each fiscal year, FAIRFAX shall calculate separately the total amount of stormwater fee revenues that were actually collected from properties within VIENNA and HERNDON from the amount of stormwater fee revenues collected elsewhere in FAIRFAX (the "VIENNA STORMWATER FEE" and "HERNDON STORMWATER FEE").

7. On or before October 30th of each fiscal year, FAIRFAX shall estimate the anticipated VIENNA STORMWATER FEE and HERNDON STORMWATER FEE for that year, and shall pay to VIENNA and HERNDON an amount equal to twenty-five percent (25%) of the estimated VIENNA STORMWATER FEE and HERNDON STORMWATER FEE, respectively, for that fiscal year, rounded to the nearest penny (the "PAID VIENNA REVENUES" and "PAID HERNDON REVENUES").

8. The Parties acknowledge and agree that PAID VIENNA REVENUES and/or PAID HERNDON REVENUES may be more or less than the amount that is actually due and owing to either or both of the Towns, and which amount is calculated at the end of each fiscal year.

9. If the PAID VIENNA REVENUES for a particular fiscal year are determined to have been less than 25% of the actual VIENNA STORMWATER FEE actually collected for that fiscal year, then FAIRFAX shall pay VIENNA the difference between the PAID VIENNA REVENUES and 25% of the VIENNA STORMWATER FEE actually collected for that fiscal year. FAIRFAX shall pay this difference at the same time as it pays the next fiscal year's PAID VIENNA REVENUES.

10. If the PAID HERNDON REVENUES for a particular fiscal year are determined to have been less than 25% of the actual stormwater fee actually collected for that fiscal year in HERNDON, then FAIRFAX shall pay HERNDON the difference between the PAID

HERNDON REVENUES and 25% of the HERNDON STORMWATER FEE actually collected for that fiscal year in HERNDON. FAIRFAX shall pay this difference at the same time as it pays the next fiscal year's PAID HERNDON REVENUES.

11. If the PAID VIENNA REVENUES for a particular fiscal year are determined to have been more than 25% of the actual VIENNA STORMWATER FEE actually collected for that fiscal year, then FAIRFAX shall deduct the difference between the PAID VIENNA REVENUES and 25% of the VIENNA STORMWATER FEE actually collected for that fiscal year from the amount that FAIRFAX pays for the next fiscal year's PAID VIENNA REVENUES.

12. If the PAID HERNDON REVENUES for a particular fiscal year are determined to have been more than 25% of the actual HERNDON STORMWATER FEE actually collected for that fiscal year, then FAIRFAX shall deduct the difference between the PAID HERNDON REVENUES and 25% of the HERNDON STORMWATER FEE actually collected for that fiscal year from the amount that FAIRFAX pays for the next fiscal year's PAID HERNDON REVENUES.

13. Once FAIRFAX has determined the amount of the actual VIENNA STORMWATER FEE and HERNDON STORMWATER FEE, which shall occur within 90 days of the fiscal year end, FAIRFAX shall forward the respective amounts to the Towns' Mayors in writing ("FINAL ACCOUNTING"). If VIENNA and/or HERNDON disputes the amount of the FINAL ACCOUNTING, then within 30 days of the Mayors' receipt of this FINAL ACCOUNTING, VIENNA and/or HERNDON, shall state the complete factual basis for any such dispute in writing to the Fairfax County Executive, and the Parties shall endeavor in good faith to resolve any such dispute. Upon the resolution of any such dispute, or if VIENNA and/or

HERNDON fails to dispute the amount of the FINAL ACCOUNTING within 30 days of either Mayor's receipt thereof, then VIENNA and/or HERNDON shall be deemed to have accepted payment of the respective fiscal year's PAID VIENNA REVENUES or PAID HERNDON REVENUES, which shall result in the waiver of any right to request from FAIRFAX any additional amount of the collected STORMWATER FEE REVENUES. VIENNA's and/or HERNDON's waiver of any such balance, however, is conditioned upon FAIRFAX's obligations to VIENNA and/or HERNDON pursuant to this Agreement.

14. Pursuant to Va. Code Ann. § 15.2-2403.3 VIENNA and HERNDON shall expend the PAID VIENNA REVENUES and PAID HERNDON REVENUES, respectively, only for costs directly related to the Towns' stormwater systems and not for non-stormwater-system costs, such as public safety, schools, or road maintenance.

15. Under this Agreement, neither VIENNA nor HERNDON is required to expend any of the paid revenues within any specific amount of time. This Agreement does not affect any other authority that VIENNA or HERNDON might have to carry over revenues from year-to-year or to expend revenues in one fiscal year when the revenues were collected in a previous fiscal year.

16. If, at any time in the future, either VIENNA or HERNDON becomes unincorporated or ceases to qualify to receive paid revenues for any reason or terminates its stormwater program or ceases to maintain its stormwater systems, none of the previously paid revenues shall be expended for anything other than the maintenance, operation, and improvement of such Town's stormwater systems. If any such amounts are returned to FAIRFAX they may be used for other qualified uses in the Service District as FAIRFAX, or its designee, in its or his sole discretion, deems appropriate.

TMDL COMPLIANCE AND THE TMDL ADVISORY COMMITTEE

17. Fairfax, Vienna, and Herndon agree that Fairfax will implement stormwater management practices throughout the County and in the Towns sufficient to achieve the TMDL pollutant load reduction requirements that are incorporated into each Party's respective current and future MS4 permit.

18. A TMDL Compliance Advisory Committee (hereinafter referred to as the "Advisory Committee") shall be established and shall be comprised of one or more representatives from each governing body.

19. Regardless of the number of representatives appointed by each governing body, each locality will have one vote on the Advisory Committee.

20. The Advisory Committee shall:

a. establish, pursuant to each Party's respective MS4 permit, the nitrogen, phosphorus, and sediment (referred to as "pollutants of concern" or "POCs") load reductions necessary for each individual Party to achieve full compliance with the Chesapeake Bay TMDL and the WIP (referred to herein as "the Chesapeake Bay TMDL Endpoint").

b. establish the "TOTAL POLLUTANT REDUCTION," which is the total amount of each POC that the Parties must reduce in order to reach the Chesapeake Bay TMDL Endpoint.

c. establish the percentage of the TOTAL POLLUTANT REDUCTION for which each locality is responsible. That percentage assigned to each Party shall hereinafter be referred to, respectively, as the "FAIRFAX PERCENTAGE," "VIENNA PERCENTAGE," and "HERNDON PERCENTAGE."

d. as determined by the Advisory Committee, the FAIRFAX PERCENTAGE, VIENNA PERCENTAGE, and the HERNDON PERCENTAGE may be established for each POC, an average of POCs, or by another mutually agreed upon methodology that will allocate pollutant reduction credits for projects completed under this Agreement as provided for in paragraph 27 below, in a manner necessary to meet the Chesapeake Bay TMDL Endpoint.

e. establish a watershed-specific FAIRFAX PERCENTAGE, VIENNA PERCENTAGE, and HERNDON PERCENTAGE to allocate pollutant reduction credits for projects implemented within a watershed to meet a non-Chesapeake Bay TMDL Endpoint.

21. VIENNA and HERNDON may at any time provide FAIRFAX with a list of stormwater management projects to be considered for implementation. Before submitting any such project, the submitting Town must thoroughly investigate and analyze each project to ensure that any such project is feasible. Any project submitted before June 30 of each year will be considered by FAIRFAX for implementation during the following fiscal year. If a project is not implemented, it will continue to be considered for implementation in subsequent fiscal years until such time that the project is determined to be infeasible. Selection of projects for implementation and determination of final feasibility are at the sole discretion of the Director of the Fairfax County Department of Public Works and Environmental Services ("Director").

22. By April 1 of each year, the Director will send to the Towns of VIENNA and HERNDON and/or their designees a proposed list of projects within their jurisdiction.

23. Within 30 days after each Mayors' receipt of this list, the Towns shall provide comments and suggestions regarding each project, its timing, and its costs for implementation,

lifetime maintenance, and replacement. If the Towns provide any comments or suggestions, the Director shall fully consider any such comments, and may, but shall not be obligated to implement or adhere to them. In the event that a dispute exists regarding implementation of any project on the list sent by the Director, the Director and the disputing Town shall endeavor in good faith to resolve any such dispute, but final authority for the implementation of any such projects rests solely with Fairfax County and the Director.

24. FAIRFAX will pay for the development of the updated Chesapeake Bay TMDL Action Plan for each Town that is due at the beginning of each new MS4 permit cycle. Each Town will be responsible for routine annual updates as required in the MS4 permits. FAIRFAX will also pay for the initial development of other TMDL action plans necessary for compliance with each Town's MS4 permit and any substantial updates to these action plans required in future permit cycles. The action plans will include all information necessary to demonstrate compliance with MS4 permit requirements. Changes or additions to projects identified in the action plans will be reported to each Town annually in accordance with paragraph 31.

25. FAIRFAX shall be solely responsible for implementing projects under this Agreement, excluding the acquisition of any permanent or temporary land rights necessary to construct and maintain a project located within a Town. The Parties may, as necessary, have agreements that are separate from this Agreement that address the Parties' responsibilities over specific projects, facilities, and other funding.

26. A project is subject to this Agreement if it is funded in whole or in part by the Service District Fee and substantially completed on or after July 1, 2009.

27. For each project substantially completed under this Agreement on or after July 1, 2009, whether the project or facility is located within VIENNA, HERNDON, or elsewhere

within Fairfax County, the Parties will receive a pollutant reduction credit for each POC. The reduction credit is determined by applying the VIENNA PERCENTAGE and the HERNDON PERCENTAGE to the estimated total POC load reductions for each project that is substantially completed pursuant to this Agreement (the "VIENNA CREDIT," "HERNDON CREDIT," "FAIRFAX CREDIT," and collectively "REDUCTION CREDITS"). For completed projects and facilities, the REDUCTION CREDITS shall survive any termination of this Agreement unless otherwise agreed to by the Parties or in the event that a constructed facility or improvement is not maintained in accordance with paragraph 28 of this Agreement.

28. The Party in whose jurisdiction any stormwater management facility or improvement is constructed under this Agreement shall ensure that the long-term maintenance of such facility or improvement is performed as necessary to maintain the functionality and performance thereof. Each party shall ensure long-term maintenance in accordance with Va. Code Ann. § 62.1-44.15.15:27(E)(2) and 9 Va. Admin. Code §§ 25-870-58 and 112. In the event that a Party's failure to maintain a project completed under this Agreement results in a decrease in the amount of POCs removed therefrom, as determined by DEQ, then that Party shall, at its sole cost, maintain or improve the facility to restore the facility to its original functionality.

29. In the event that a Party is unable to meet its load reduction requirement for a specific reporting period, and another Party has exceeded its load reduction requirement, the Director may, with written notification to the Parties, transfer credit from shared credit projects among Parties in a manner to ensure that each Party is able to meet its load reduction requirement. Any such transfer shall be temporary and last only as long as it is needed to address the immediate shortfall. Further, no transfer will occur or stay in force that would result in a donating Party being in non-compliance with an MS4 permit condition.

30. Any Party that completes a stormwater management project from funds not generated by or transferred through Fairfax County shall be entitled to claim all resulting load reduction credits for purposes of satisfying its MS4 permit requirements.

31. FAIRFAX will prepare an annual report that details the activities performed under this Agreement. The report will provide sufficient detail so that each locality may use it to meet their respective MS4 permit reporting obligations to DEQ. Fairfax will provide the report annually no later than one month before the date the annual report is due to DEQ.

STAFF TRAINING

32. Without any additional invitation or payment, VIENNA's and/or HERNDON's staff may attend MS4 permit-related training programs that are conducted or hosted by FAIRFAX. FAIRFAX will provide VIENNA and HERNDON with at least one-month's advance notice of such training opportunities.

TERMINATION

33. Any Party may terminate this Agreement by resolution of that Party's governing body. Any such resolution shall be at a public meeting with notice in writing to the non-terminating Parties. Notice shall be made at least three weeks in advance of any such meeting to the Mayor(s) or, as applicable, the County Executive, of Fairfax County. After adoption of any such resolution, the terminating Party shall notify the remaining Parties. The termination shall be effective no earlier than the end of the fiscal year in which the governing body's vote for the resolution for the termination occurs.

34. If this Agreement is terminated by any party other than FAIRFAX, the Agreement shall remain in force as to the remaining parties. The terminating Town shall have responsibility to maintain and replace, as necessary, any facility constructed under this Agreement that is

located within its boundaries and shall assume all liability for such facility. Unless otherwise agreed to by the Parties, neither Town shall have any liability or responsibility for any facility that is located outside of its jurisdictional boundaries and was developed and implemented under this Agreement.

ADDITIONAL PROVISIONS

35. This Agreement is integrated and contains all provisions of the Agreement between the Parties.

36. In the event of a conflict between any term(s) of this Agreement and either of the Parties' MS4 permits or other permit requirements, either Party's respective permit provision(s), shall control.

37. Any provision or term of this Agreement may be modified only by a writing that is approved by resolution at a public meeting of each of the localities' respective governing bodies.

38. This Agreement shall be binding on the Parties' respective agencies, employees, agents, and successors-in-interests.

39. This Agreement shall not be assigned by either of the Parties unless both of the Parties agree to such an assignment in writing.

40. Nothing in this Agreement otherwise limits the respective regulatory and police powers of the Parties.

41. The Parties agree that nothing in this Agreement creates a third-party beneficiary. The Parties also agree that this Agreement does not confer any standing or right to sue or to enforce any provision of this Agreement or any other right or benefit to any person who is not a

party to this Agreement, including but not limited to a citizen, resident, private entity, or local, state, or federal governmental or public body.

42. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one in the same Agreement.

43. This Agreement shall be governed by Virginia law, and any litigation relating to this Agreement shall be brought and/or maintained only in the Circuit Court of Fairfax County, Virginia.

IN WITNESS WHEREOF, the Parties have executed this Agreement, as verified by their signatures below.

[Signatures appear on the following pages.]

TOWN OF VIENNA

By: Laurie A DiRocco
Laurie A. DiRocco
Mayor
Town of Vienna, VA

STATE OF VIRGINIA :
: to-wit
COUNTY OF FAIRFAX :

The foregoing Agreement was acknowledged before me by Laurie A. DiRocco of the Town of VIENNA, this 21st day of February 2017 on behalf of the Town of VIENNA.

MELANIE J. CLARK
NOTARY PUBLIC
REGISTRATION # 7290978
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES
JUNE 30, 2017

Melanie J Clark
Notary Public

My commission expires: June 30, 2017
Notary Registration Number: 7290978

TOWN OF HERNDON

By:_____
(Name and Title)
Lisa C. Merkel
Mayor

STATE OF VIRGINIA :
: to-wit
COUNTY OF FAIRFAX :

The foregoing Agreement was acknowledged before me by Lisa C. Merkel of the Town of HERNDON, this 2nd day of March 2017 on behalf of the Town of HERNDON.

Cynthia M. Yurewicz
Notary Public

My commission expires: 11/30/2018
Notary Registration Number: 325308

CYNTHIA M. YUREWICZ
NOTARY PUBLIC
REGISTRATION # 325308
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES
NOVEMBER 30, 2018

APPROVED AS TO FORM:

Lesa J. Yeatts
Town Attorney

BOARD OF SUPERVISORS OF
FAIRFAX COUNTY, VIRGINIA

By: Edward L Long Jr.
Edward L. Long Jr.
County Executive
Fairfax County, Virginia

STATE OF VIRGINIA :
: to-wit
COUNTY OF FAIRFAX :

The foregoing Agreement was acknowledged before me by Edward L. Long Jr., ~~of the~~ County Executive, on behalf of the Board of Supervisors of Fairfax County, Virginia this 9th day of March ~~2016~~. 2017

SUSAN STANNERS ROBINSON
Registration # 7646782
My Commission Expires
March 31, 2019

Susan Stanners Robinson
Notary Public

My commission expires: March 31, 2019

Notary Registration Number: 7642019

Approved as to form: _____
Office of the County Attorney
Fairfax, Virginia

Appendix B

Town-Specific Sediment Reduction Calculations

Appendix B provides calculations for Town-specific sediment reductions. These are separate from the shared-credit projects with Fairfax County. For any portion of a project that resulted in a direct impervious surface reduction, Table 4 from the MS4 permit was used to determine the equivalent credit for TSS associated with the TP reduction. For the portion of a project that resulted in a reduction as a result of a stormwater management facility, credit was determined using the methodology described in Appendix V.E of DEQ's Chesapeake Bay TMDL Special Condition Guidance (Guidance Memo No 15-2005).

Redevelopment Project	TN Credit	TP Credit	TSS Credit	Year	Accotink	Difficult
Vienna Community Center	12.04	2.15	1,271.28	2018	N	Y
135 Center Street S	0.63	0.18	86.32	2018	N	Y
1008 Electric Ave	7.52	48.64	3,402.89	2018	N	Y
Vienna Town Hall - IA Reduction	0.48	0.07	32.84	2019	N	Y
Vienna Town Hall - BMP Retrofits	2.97	0.37	186.02	2019	N	Y

Vienna Community Center		
Information	**Input**	**As Developed**
Date Completed	Under Development	
Rainfall		
Site Area (SF)	211701.6	
Site Area (AC)		4.86
Watershed I %		
Pre-I Area (SF)	121968	
Pre-I Area (AC)		2.80
Pre-I Area (%)		
Pre C Value		
Pre-TP Load (VRRM)		**7.86**
Post-I Area (SF)	163350	
Post-I Area (AC)		3.75
Post-I Area (%)		
Post C Value		
Post-TP Load (VRRM)		**9.38**
Increase/Decrease		1.52
Stormwater Controls		
BMP 1	StormTech(2)	
Efficiency	0.411	
I Area (AC)	1.83	
TP Removed		1.88
BMP 2	Permeable Pavers	
Efficiency	0.59	
I Area (AC)	1.21	
TP Removed		1.79
BMP 3	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**3.67**
Net Change in TP		**(2.15)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.59		(2.15)
Total Creditable TP Decrease			**(2.15)**
Total Associated TN Load	6.9		64.72
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.488	(8.24)
BMP 2	0.59	0.322666667	(12.32)
BMP 3	0	0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL)			-12.04063158
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(12.04)**
Total Associated TSS Loa	469.2		4,401.10
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.488	(1,123.27)
BMP 2	0.738	0.322666667	(1,048.02)
BMP 3	0	0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDL)			(1,271.28)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(1,271.28)**

BMP Efficiency Methodology Description:
Pre-TP Load and Post-TP Load taken from Virginia Runoff Reduction Method Redevelopment Worksheet revised 3/16/2015. Methodology confirmed by email from Kelsey Brooks at DEQ received 5/18/2016. StormTech: TP, TN, and TSS efficiencies calculated using Chesapeake Bay Program Retrofit Equations based on Runoff Depth Treated of 0.5 per email from Kelsey Brooks received 8/7/2015. Permeable Pavers: TP and TN efficiency taken from Virginia BMP Clearinghouse for Permeable Pavement Design #1; TSS efficiency calculated using Chesapeake Bay Program Retrofit Equations based on Runoff Storage of 0.09579904 AF, 1.21 AC IA, and Runoff Treatment Depth of 0.95.

135 Center Street S		
Information	**Input**	**As Developed**
Date Completed	2018	
Rainfall		
Site Area (SF)	44866.8	
Site Area (AC)		1.03
Watershed I %		
Pre-I Area (SF)	16117.2	
Pre-I Area (AC)		0.37
Pre-I Area (%)		
Pre C Value		
Pre-TP Load (VRRM)		**1.06**
Post-I Area (SF)	29620.8	
Post-I Area (AC)		0.68
Post-I Area (%)		
Post C Value		
Post-TP Load (VRRM)		**1.67**
Increase/Decrease		0.61
Stormwater Controls		
BMP 1	Manufactured Treatment Device - Filtering	
Efficiency	0.5	
I Area (AC)	0.64	
TP Removed		0.79
BMP 2	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**0.79**
Net Change in TP		**(0.18)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.22		(0.18)
Total Creditable TP Decrease			**(0.18)**
Total Associated TN Loac	6.9		11.52
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.941176471	(2.83)
BMP 2	0	0	-
BMP 3	0	0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL)			-0.633493059
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(0.63)**
Total Associated TSS Loa	469.2		783.56
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.941176471	(385.70)
BMP 2	0	0	-
BMP 3	0	0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDL)			(86.32)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(86.32)**

BMP Efficiency Methodology Description:

Pre-TP Load and Post-TP Load taken from Virginia Runoff Reduction Method Redevelopment Worksheet revised 3/16/2015. Methodology confirmed by email from Kelsey Brooks at DEQ received 5/18/2016. "Listed" Pre-Redevelopment TP Load used per email from Jaime Bauer recevied 9/27/2016. Manufactured Treatment Device: TP from Virginia BMP Clearninghouse and site calculation spreadsheet; TN and TSS efficiencies calculated using Chesapeake Bay Program Retrofit Equations based on Runoff Depth Treated of 0.5 per email from Kelsey Brooks received 8/7/2015.

1008 Electric Avenue		
Information	**Input**	**As Developed**
Date Completed	2018	
Rainfall		
Site Area (SF)	473061.6	
Site Area (AC)		10.86
Watershed I %		
Pre-I Area (SF)	346737.6	
Pre-I Area (AC)		7.96
Pre-I Area (%)		
Pre C Value		
Pre-TP Load (VRRM)		**18.85**
Post-I Area (SF)	266151.6	
Post-I Area (AC)		6.11
Post-I Area (%)		
Post C Value		
Post-TP Load (VRRM)		**13.24**
Increase/Decrease		(5.61)
Stormwater Controls		
BMP 1	Bioretention #2 (Spec #9)	
Efficiency	0.9	
I Area (AC)	0.19	
TP Removed		0.37
BMP 2	Dry Swale #2 (Spec #10)	
Efficiency	0.76	
I Area (AC)	0.49	
TP Removed		0.81
BMP 3	Manufactured TD - Jellyfish	
Efficiency	0.5	
I Area (AC)	0.68	
TP Removed		0.74
Total BMP TP Removed		**1.91**
Net Change in TP		**(7.52)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(5.61)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(1.91)
Total Creditable TP Decrease			**(7.52)**
Total Associated TN Load	6.9		91.36
TN Decrease from Impervious Reduction			(38.71)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.9	0.031096563	(2.56)
BMP 2	0.74	0.080196399	(5.42)
BMP 3	0.261	0.081833061	(1.95)
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL)			-9.929544943
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(48.64)**
Total Associated TSS Loa	469.2		6,212.21
TSS Decrease from Impervious Reduction			(2,632.21)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.55	0.031096563	(106.25)
BMP 2	0.8	0.080196399	(398.56)
BMP 3	0.523	0.081833061	(265.87)
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDL)			(770.68)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(3,402.89)**

BMP Efficiency Methodology Description:

Pre-TP Load and Post-TP Load taken from Virginia Runoff Reduction Method Redevelopment Worksheet revised 3/16/2015. Methodology confirmed by email from Kelsey Brooks at DEQ received 5/18/2016. "Listed" Pre-Redevelopment TP Load used per email from Jaime Bauer recevied 9/27/2016. Bioretention and Dry Swale TP and TN efficiencies from Virginia BMP Clearninghouse; TSS efficiencies from Bay Program Established Efficiencies. Manufactured Treatment Device: TP from Virginia BMP Clearninghouse and site calculation spreadsheet; TN and TSS efficiencies calculated using Chesapeake Bay Program Retrofit Equations based on Runoff Depth Treated of 0.5 per email from Kelsey Brooks received 8/7/2015.

Vienna Town Hall - IA Reduction		
Information	**Input**	**As Developed**
Date Completed	2019	
Rainfall		
Site Area (SF)	3920.4	
Site Area (AC)		0.09
Watershed I %		
Pre-I Area (SF)	2613.6	
Pre-I Area (AC)		0.06
Pre-I Area (%)		
Pre C Value		
Pre-TP Load (VRRM)		**0.15**
Post-I Area (SF)	871.2	
Post-I Area (AC)		0.02
Post-I Area (%)		
Post C Value		
Post-TP Load (VRRM)		**0.08**
Increase/Decrease		(0.07)
Stormwater Controls		
BMP 1		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**0.00**
Net Change in TP		**(0.07)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.07)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.00		0.00
Total Creditable TP Decrease			**(0.07)**
Total Associated TN Load	6.9		0.55
TN Decrease from Impervious Reduction			(0.48)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0	0	-
BMP 2	0	0	-
BMP 3	0	0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL)			0
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(0.48)**
Total Associated TSS Loa	469.2		37.54
TSS Decrease from Impervious Reduction			(32.84)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0	0	-
BMP 2	0	0	-
BMP 3	0	0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDL)			-
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(32.84)**

BMP Efficiency Methodology Description:

This worksheet reflects impervious area reductions at the Town Hall, which were calculated separatedly from BMP reductions. Pre-TP Load and Post-TP Load taken from Virginia Runoff Reduction Method Redevelopment Worksheet revised 3/16/2015. Methodology confirmed by email from Kelsey Brooks at DEQ received 5/18/2016.

Vienna Town Hall - BMPs		
Information	**Input**	**As Developed**
Date Completed	2019	
Rainfall		
Site Area (SF)	20473.2	
Site Area (AC)		0.47
Watershed I %		
Pre-I Area (SF)	12632.4	
Pre-I Area (AC)		0.29
Pre-I Area (%)		
Pre C Value		
Pre-TP Load (VRRM)		**0.73**
Post-I Area (SF)	12632.4	
Post-I Area (AC)		0.29
Post-I Area (%)		
Post C Value		
Post-TP Load (VRRM)		**0.73**
Increase/Decrease		-
Stormwater Controls		
BMP 1	Bioretention #1	
Efficiency	0.55	
I Area (AC)	0.25	
TP Removed		0.35
BMP 2	Grass Channel	
Efficiency	0.23	
I Area (AC)	0.04	
TP Removed		0.02
BMP 3		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**0.37**
Net Change in TP		**(0.37)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(0.37)
Total Creditable TP Decrease			**(0.37)**
Total Associated TN Load	6.9		5.04
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.64	0.862068966	(2.78)
BMP 2	0.28	0.137931034	(0.19)
BMP 3	0	0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL)			-2.973566897
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(2.97)**
Total Associated TSS Loa	469.2		342.52
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.55	0.862068966	(162.40)
BMP 2	0.5	0.137931034	(23.62)
BMP 3	0	0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDL)			(186.02)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(186.02)**

BMP Efficiency Methodology Description:

Pre-TP Load and Post-TP Load taken from Virginia Runoff Reduction Method Redevelopment Worksheet revised 3/16/2015. Methodology confirmed by email from Kelsey Brooks at DEQ received 5/18/2016. TP and TN efficiencies from Virginia BMP Clearinghouse for Bioretention #1 and Grass Channel. TSS efficiency from Chesapeake Bay Program Established Efficiencies. Note that Grass Channel pre-treatment to Bioretention is not included in the calculation.

Appendix C

Shared-Project Sediment Reduction Calculations

Appendix C provides calculations for shared-credit projects with Fairfax County. The project list is current as of December 17, 2019. The Town receives 14.6% credit for projects in the Difficult Run watershed and 7.7% credit for projects in the Accotink Creek watershed. Local TMDL sediment reduction projects do not have to adjust for the sediment delivery factor. However, they do have to account for the TMDL-specific baseline for areas outside of the regulated MS4. For Difficult Run (Table 7-5 of the TMDL), both the overall and instream erosion load reduction target is 32%. As a result, the MS4 may take credit for 68% of any reductions in the unregulated area. For Accotink Creek (Tables ES-10, ES-14, and ES-17 from the TMDL), the load reduction target for other developed land is 77%, which means the MS4 may take credit for 23% of any reduction from land-based structural retrofit projects. The load reduction target for streambank is 76%, which means the MS4 may take credit for 24% of any reduction from stream restoration projects.

Structural Retrofit Projects

#	Project Name	Substantial Completion	Long.	Lat.	Type of Project or BMP	Treated (Ac)	Imperv. Treated (Ac)	Pervious Treated (Ac)	Estimated Total Pollutant Reduction - TSS (lbs/yr)	Pollutant Reduction Calculation Method	% Treated Area Outside Regulated MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
18	Prosperity Heights	1/10/2011	-77.236636	38.858906	Extended Detention Pond	55.57	28.57	27.00	19105.61	CBP Established Efficiency, Dry Extended Detention Ponds	11%	17,003.99	2,101.62	Accotink Creek
26	Patriot Village Sec 2	2/2/2012	-77.221133	38.822246	Extended Detention Pond	75.00	42.75	32.25	27871.74	CBP Established Efficiency, Dry Extended Detention Ponds	5%	26,506.02	1,365.72	Accotink Creek
27	Villa D'Este Village Sec 3	5/18/2012	-77.288275	38.867642	Extended Detention Pond	14.70	5.88	8.82	4218.96	CBP Established Efficiency, Dry Extended Detention Ponds	3%	4,083.95	135.01	Accotink Creek
46	Springfield Forest Schupps Addition Pond 1115DP Retrofit (FX8000-AC010)	5/23/2014	-77.165459	38.777259	Constructed Wetland	4.67	1.17	3.50	1580.94	CBP Retrofits Expert Panel, ST, 2.5 inches of runoff treated	2%	1,550.91	30.04	Accotink Creek
54	Brookfield Park Dam	11/14/2014	-77.200901	38.788123	Wet Pond	48.69	18.57	30.12	21533.00	CBP Retrofits Expert Panel, ST, 2.5 inches of runoff treated	80%	4,306.60	17,226.40	Accotink Creek
54	Brookfield Park Dam	11/14/2014	-77.200141	38.786728	Permeable Pavement	0.17	0.17	0.00	166.51	CBP Retrofits Expert Panel, RR, 1.97 inches of runoff treated	100%	-	166.51	Accotink Creek
57	Merrifield Human Services Center (Mid County)	11/21/2014	-77.234023	38.863721	Infiltration	0.15	0.06	0.09	81.80	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	0%	81.80	-	Accotink Creek
57	Merrifield Human Services Center (Mid County)	11/21/2014	-77.234023	38.863721	Filtering Practices	0.14	0.03	0.11	43.58	CBP Established Efficiency, Filtering Practices	0%	43.58	-	Accotink Creek
57	Merrifield Human Services Center (Mid County)	11/21/2014	-77.234023	38.863721	Filtering Practices	0.12	0.04	0.08	48.73	CBP Established Efficiency, Filtering Practices	0%	48.73	-	Accotink Creek
57	Merrifield Human Services Center (Mid County)	11/21/2014	-77.234023	38.863721	Vegetated Roof	0.03	0.03	0.00	0.00	CBP Retrofits Expert Panel, RR, 0 inches of runoff treated	0%	-	-	Accotink Creek

#	Project Name	Substantial Completion	Long.	Lat.	Type of Project or BMP	Treated (Ac)	Imperv. Treated (Ac)	Pervious Treated (Ac)	Estimated Total Pollutant Reduction - TSS (lbs/yr)	Pollutant Reduction Calculation Method	% Treated Area Outside Regulated MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
57	Merrifield Human Services Center (Mid County)	11/21/2014	-77.234023	38.863721	Dry Swale	0.10	0.04	0.06	45.92	CBP Established Efficiency, Bioswale	0%	45.92	-	Accotink Creek
57	Merrifield Human Services Center (Mid County)	11/21/2014	-77.234023	38.863721	Permeable Pavement	0.48	0.30	0.18	210.67	CBP Established Efficiency, Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	0%	210.67	-	Accotink Creek
77	Keene Mill ES	8/15/2016	-77.222504	38.780523	Permeable Pavement	0.42	0.27	0.15	292.27	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	100%	-	292.27	Accotink Creek
77	Keene Mill ES	8/15/2016	-77.221826	38.781915	Dry Swale	0.19	0.14	0.05	138.22	CBP Established Efficiency, Bioswale	0%	138.22	-	Accotink Creek
78	North Springfield ES	11/1/2016	-77.207982	38.802543	Bioretention	3.42	0.88	2.54	1209.71	CBP Retrofits Expert Panel RR, 1.67 inches of runoff treated	100%	-	1,209.71	Accotink Creek
82	Mantua ES	8/21/2017	-77.258500	38.847300	Infiltration	4.99	3.25	1.74	3907.05	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	37%	2,458.54	1,448.51	Accotink Creek
82	Mantua ES	8/21/2017	-77.258597	38.847374	Dry Swale	0.65	0.20	0.45	250.70	CBP Established Efficiency, Bioswale	0%	250.70	-	Accotink Creek
29	Government Center Stormwater Retrofit	6/29/2012	-77.353366	38.853269	Constructed Wetland	4.28	3.12	1.16	3071.89	CBP Retrofits Expert Panel, ST, 2.5 inches of runoff treated	0%	3,071.89	-	Difficult Run
29	Government Center Stormwater Retrofit	6/29/2012	-77.355078	38.852334	Constructed Wetland	45.35	25.85	19.50	25193.45	CBP Retrofits Expert Panel, ST, 1.39 inches of runoff treated	0%	25,193.45	-	Difficult Run
31	Waples Mill ES Phase II	8/8/2012	-77.345172	38.875711	Permeable Pavement	0.82	0.71	0.11	708.85	CBP Retrofits Expert Panel, RR, 1.92 inches of runoff treated		708.85	-	Difficult Run
32	Great Falls Nike Park #4	11/1/2012	-77.324875	38.992132	Infiltration	0.95	0.90	0.05	1009.83	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	0%	1,009.83	-	Difficult Run
32	Great Falls Nike Park #4	11/1/2012	-77.324875	38.992132	Dry Swale	0.40	0.09	0.31	133.07	CBP Retrofits Expert Panel, RR, 2 inches of runoff treated	0%	133.07	-	Difficult Run
32	Great Falls Nike Park #4	11/1/2012	-77.324875	38.992132	Infiltration	1.89	1.79	0.10	2008.53	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	0%	2,008.53	-	Difficult Run
34	Fairfax County Landbay C, Pond #4	3/20/2013	-77.355287	38.852875	Constructed Wetland	16.99	9.25	7.74	9722.55	CBP Retrofits Expert Panel, ST, 2.31 inches of runoff treated	0%	9,722.55	-	Difficult Run
38	Regional SWM Pond D-31	6/24/2013	-77.314594	38.892094	Extended Detention Pond	331.11	116.20	214.91	86944.28	CBP Established Efficiency, Dry Extended Detention Ponds	39%	53,296.84	33,647.44	Difficult Run

#	Project Name	Substantial Completion	Long.	Lat.	Type of Project or BMP	Treated (Ac)	Imperv. Treated (Ac)	Pervious Treated (Ac)	Estimated Total Pollutant Reduction - TSS (lbs/yr)	Pollutant Reduction Calculation Method	% Treated Area Outside Regulated MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
45	Towlston Meadow (0371DP)	4/4/2014	-77.265751	38.949846	Constructed Wetland	26.00	8.00	18.00	6267.48	CBP Established Efficiency, Wet Ponds and Wetlands	0%	6,267.48	-	Difficult Run
48	Oak Marr Rec Center Stormwater Enhancements (DF87-0006)	8/1/2014	-77.316279	38.874842	Bioretention	0.95	0.75	0.20	441.28	CBP Retrofits Expert Panel, RR, 0.4 inches of runoff treated	0%	441.28	-	Difficult Run
51	Oakton Library	9/15/2014	-77.302299	38.883608	Permeable Pavement	0.37	0.25	0.12	267.78	CBP Retrofits Expert Panel, RR, 2.5 inches of runoff treated	0%	267.78	-	Difficult Run
51	Oakton Library	9/15/2014	-77.301820	38.883805	Bioretention	0.91	0.67	0.24	454.84	CBP Established Efficiency, Bioretention C/D soils, underdrain	0%	454.84	-	Difficult Run
51	Oakton Library	9/15/2014	-77.301959	38.883783	Infiltration	0.50	0.42	0.08	480.72	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	0%	480.72	-	Difficult Run
62	Oakton Swim and Racquet Club (DF9045A6)	5/22/2015	-77.350396	38.880302	Bioretention	22.70	3.74	18.96	4242.65	CBP Established Efficiency, Bioretention C/D soils, underdrain	0%	4,242.65	-	Difficult Run
62	Oakton Swim and Racquet Club (DF9045A6)	5/22/2015	-77.350679	38.880300	Bioretention	18.87	2.47	16.40	3176.95	CBP Established Efficiency, Bioretention C/D soils, underdrain	2%	3,103.88	73.07	Difficult Run
62	Oakton Swim and Racquet Club (DF9045A6)	5/22/2015	-77.350653	38.879188	Bioretention	5.32	2.18	3.14	1708.02	CBP Established Efficiency, Bioretention C/D soils, underdrain	2%	1,675.57	32.45	Difficult Run
74	Sunrise Valley ES	9/1/2015	-77.321300	38.941291	Permeable Pavement	0.21	0.14	0.07	150.38	CBP Retrofits Expert Panel, RR, 2.5 inches of runoff treated	0%	150.38	-	Difficult Run
74	Sunrise Valley ES	9/1/2015	-77.320802	38.941418	Permeable Pavement	0.55	0.39	0.16	413.66	CBP Retrofits Expert Panel, RR, 2.5 inches of runoff treated	0%	413.66	-	Difficult Run
74	Sunrise Valley ES	9/1/2015	-77.319947	38.941094	Dry Swale	0.33	0.19	0.14	197.73	CBP Established Efficiency, Bioswale	0%	197.73	-	Difficult Run
74	Sunrise Valley ES	9/1/2015	-77.318977	38.939997	Infiltration	2.72	1.43	1.29	1797.22	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	0%	1,797.22	-	Difficult Run
67	Terraset ES	12/15/2015	-77.343127	38.937057	Permeable Pavement	1.28	0.84	0.44	905.27	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	100%	-	905.27	Difficult Run
67	Terraset ES	12/15/2015	-77.343622	38.935493	Permeable Pavement	0.69	0.35	0.34	400.69	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	100%	-	400.69	Difficult Run
66	Penderbrook (DF9045/0691DP)	3/8/2016	-77.362336	38.877710	Constructed Wetland	22.53	2.60	19.93	4239.05	CBP Retrofits Expert Panel, ST, 0.79 inches of runoff treated	90%	415.43	3,823.63	Difficult Run

#	Project Name	Substantial Completion	Long.	Lat.	Type of Project or BMP	Treated (Ac)	Imperv. Treated (Ac)	Pervious Treated (Ac)	Estimated Total Pollutant Reduction - TSS (lbs/yr)	Pollutant Reduction Calculation Method	% Treated Area Outside Regulated MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
87	Public Safety Headquarters Building Stormwater Enhancements	8/30/2017	-77.362589	38.857386	Dry Swale	3.10	2.54	0.56	2458.08	CBP Established Efficiency, Bioswale	0%	2,458.08	-	Difficult Run
					Dry Swale	0.26	0.20	0.06	194.26	CBP Established Efficiency, Bioswale	0%	194.26	-	Difficult Run
					Permeable Pavement	0.24	0.24	0.00	210.59	CBP Retrofits Expert Panel RR, 1.0 inches of runoff treated	0%	210.59	-	Difficult Run
					Vegetated Roof	0.53	0.53	0.00	465.05	CBP Retrofits Expert Panel, RR, 1.0 inches of runoff treated	0%	465.05	-	Difficult Run
					Rainwater Harvesting	0.61	0.61	0.00	582.95	CBP Retrofits Expert Panel, RR, 1.51 inches of runoff treated	0%	582.95	-	Difficult Run
					Biofilter # 1	0.09	0.02	0.07	25.01	CBP Retrofits Expert Panel, ST, 1.0 inches of runoff treated	0%	25.01	-	Difficult Run
					Biofilter # 2	0.26	0.15	0.11	136.36	CBP Retrofits Expert Panel, ST, 1.0 inches of runoff treated	0%	136.36	-	Difficult Run
	Herrity Pond Retrofit	8/8/2018	-77.361313	38.857138	Wet Pond	33.90	17.43	16.47	412.29	CBP Retrofits Expert Panel RR, 0.48 inches of runoff treated	0%	412.29	-	Difficult Run
	Browns Chapel Pond & Outfall Improvement	4/20/2019	-77.308138	38.970711	Extended Detention Pond	81.66	20.07	61.59	2693.90	CBP Retrofits Expert Panel, ST curve (wet ponds) for forebay only, 0.14 inches of runoff treated	27%	1,965.11	728.79	Difficult Run

Shared Retrofit Project Total

Difficult Run Total	**121,503.34**	**39,611.34**	
Reduction to Account for Baseline	1.00	0.68	
Difficult Run After Baseline	121,503.34	26,935.71	
Vienna % per Cooperative Agreement	0.146	0.146	**Total**
Difficult Run Vienna Share	**17,739.49**	**3,932.61**	**21,672.10**

Accotink Creek Total	**56,729.64**	**23,975.78**	
Reduction to Account for Baseline	1.00	0.23	
Accotink Creek After Baseline	56,729.64	5,514.43	
Vienna % per Cooperative Agreement	0.077	0.077	**Total**
Accotink Creek Vienna Share	**4,368.18**	**424.61**	**4,792.79**

Stream Restoration Projects

#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Restored Length (LF)	Estimated Total TSS Reduction (lbs/yr) without SDR	Pollutant Reduction Calculation Method	% Outside MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
6	Hunters Branch	6/13/2011	-77.2633	38.866006	Outfall Restoration	4.14	65.00	5380.05	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 65 LF, Average Stream Bank Height: 65 ft, Sediment Delivery Ratio: 0.181	4.8%	5,121.81	258.24	Accotink Creek
7	Villa D'Este Village Sec 3	5/18/2012	-77.28831562	38.86771963	Urban Stream Restoration	14.64	260.00	64468.51	CBP Urban Stream Restoration Interim Approved Removal Rates	1.7%	63,372.54	1,095.96	Accotink Creek
16	Wakefield Run Stream Restoration	3/25/2014	-77.224239	38.825398	Urban Stream Restoration	106.50	816.00	76255.20	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 816 LF, Average Stream Bank Height: 3.5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 20 ft	16.5%	63,673.09	12,582.11	Accotink Creek
28	Crestleigh Way Outfall Restoration (AC83-0007)	9/14/2015	-77.1689987	38.7583008	Outfall Restoration	14.35	105.00	3691.53	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 70 LF, Average Stream Bank Height: 105 ft, Sediment Delivery Ratio: 0.065	0.0%	3,691.53	-	Accotink Creek
29	Lenox Drive Outfall Restoration (AC83-0006)	10/30/2015	-77.2805023	38.8372002	Outfall Restoration	16.26	100.00	25632.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 120 LF, Average Stream Bank Height: 100 ft, Sediment Delivery Ratio: 0.181	1.0%	25,375.68	256.32	Accotink Creek
31	5216 Inverchapel Rd (AC83-0003)	12/21/2015	-77.23000389	38.80915889	Outfall Restoration	35.64	175.00	17755.50	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 175 LF, Average Stream Bank Height: 175 ft, Sediment Delivery Ratio: 0.181; Protocol 4: Runoff Depth Treated: 1.16in	1.6%	17,471.41	284.09	Accotink Creek
33	Accotink Tributary 9210(Wakefield Park South)	8/17/2016	-77.2276	38.813801	Urban Stream Restoration	271.49	2700.00	3484000.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 3484 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 4.55 ft	67.8%	1,121,848.00	2,362,152.00	Accotink Creek
35	Hunters Branch Restoration	10/1/2016	-77.272799	38.887594	Urban Stream Restoration	388.72	2067.00	512524.64	CBP Urban Stream Restoration Interim Approved Removal Rates	28.0%	369,017.74	143,506.90	Accotink Creek
36	Accotink Tributary 9232(Wakefield Park North)	10/6/2016	-77.225601	38.820702	Urban Stream Restoration	113.37	865.00	293000.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 293 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 1.9 ft	21.9%	228,833.00	64,167.00	Accotink Creek
38	Accotink Tributary at Daventry	10/25/2016	-77.209548	38.765789	Urban Stream Restoration	133.89	153.10	22399.03	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 152.53 LF, Average Stream Bank Height: 5.5 ft, Sediment Delivery Ratio: 0.181;	25.3%	16,732.08	5,666.95	Accotink Creek

#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Restored Length (LF)	Estimated Total TSS Reduction (lbs/yr) without SDR	Pollutant Reduction Calculation Method	% Outside MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
									Protocol 2 - Average Stream Bank Width: 7.42 ft				
38	Accotink Tributary at Daventry	10/25/2016	-77.209548	38.765789	Urban Stream Restoration		185.35	29117.95	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 181.76 LF, Average Stream Bank Height: 6 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 6.73 ft	25.3%	21,751.11	7,366.84	Accotink Creek
42	Toll House Road Outfall Restoration	3/31/2017	-77.225823137 8881	38.8234086031 456	Outfall Restoration	24.39	227.19	33334.97	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 227 LF, Average Stream Bank Height: 5.5 ft, Sediment Delivery Ratio: 0.181	0.0%	33,334.97	-	Accotink Creek
44	Babson Court Outfall Restoration	7/21/2017	-77.271345	38.817677	Outfall Restoration	12.96	383.21	60876.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 - Existing Length: 380 LF, Average Stream Bank Height: 6 ft, Sediment Delivery Ratio: 0.181	30.8%	42,126.19	18,749.81	Accotink Creek
48	Turkey Run at Truro	10/19/2017	-77.245164	38.828326	Urban Stream Restoration	259.23	3581.50	1475690.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 1,475.69 tons/yr, Sediment Delivery Ratio: 0.181	10.9%	1,315,476.38	160,213.62	Accotink Creek
50	Nottoway Park Retrofit Ph I	2/15/2018	-77.189617	38.938023	Outfall Restoration	47.14	248.00	28929.03	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 18.42 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 4 - Treated Runoff Depth: 0.0626 in	81.7%	5,307.73	23,621.29	Accotink Creek
52	Nottoway Park Retrofit Ph I	2/15/2018	-77.192597	38.937042	Outfall Restoration	20.10	213.00	19570.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 19.57 tons/yr, Sediment Delivery Ratio: 0.181	77.1%	4,482.83	15,087.17	Accotink Creek
54	Oakford Drive Stream Restoration	4/27/2018	-77.230847	38.757118	Urban Stream Restoration	97.59	1302.00	440248.62	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 440.25 tons/yr, Sediment Delivery Ratio: 0.181	8.3%	403,913.06	36,335.56	Accotink Creek
60	Long Branch at Long Branch Falls Park	11/20/2018	-77.259204	38.815669	Urban Stream Restoration	79.94	533.00	120530.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 120.53 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 4.46 ft	0.1%	120,409.47	120.53	Accotink Creek
							227.00	11980.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 11.98 tons/yr, Sediment Delivery Ratio: 0.181	0.1%	11,968.02	11.98	Accotink Creek

#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Restored Length (LF)	Estimated Total TSS Reduction (lbs/yr) without SDR	Pollutant Reduction Calculation Method	% Outside MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
63	Glenbrook Road Outfall Restoration	12/11/2018	-77.25341	38.851399	Outfall Restoration	15.84	274.00	29370.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 275 LF, Average Stream Bank Height: 4.0 ft, Sediment Delivery Ratio: 0.181	0.7%	29,164.41	205.59	Accotink Creek
69	Robey Avenue Outfall Restoration	6/12/2019	-77.231483	38.846742	Outfall Restoration	24.68	163.00	13697.10	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 171 LF, Average Stream Bank Height: 3.0 ft, Sediment Delivery Ratio: 0.181	2.0%	13,419.16	277.94	Accotink Creek
8	Government Center Stormwater Retrofit	6/29/2012	-77.35337445	38.85410551	Urban Stream Restoration	148.14	1000.00	125490.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 1000 LF, Average Stream Bank Height: 4.7 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 1 ft	15.8%	105,662.58	19,827.42	Difficult Run
14	Wolftrap Creek	10/19/2013	-77.25065238	38.90247256	Urban Stream Restoration	755.57	2089.00	172906.52	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 2089 LF, Average Stream Bank Height: 3.1 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 25.8 ft	26.0%	127,950.83	44,955.70	Difficult Run
22	Miller Heights Outfall	8/7/2014	-77.325369	38.888489	Outfall Restoration	23.83	233.00	64800.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 64.8 tons/yr, Sediment Delivery Ratio: 0.181	6.2%	60,782.40	4,017.60	Difficult Run
23	South Lakes Stream Restoration	10/1/2014	-77.33658495	38.93207598	Urban Stream Restoration	37.23	660.00	24318.36	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 660 LF, Average Stream Bank Height: 1.38 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 5.7 ft	14.3%	20,840.83	3,477.53	Difficult Run
25	Difficult Run Tributary at Oakton Estates (DF9045)	6/26/2015	-77.35026779	38.87799459	Urban Stream Restoration	55.97	300.00	36045.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 300 LF, Average Stream Bank Height: 4.5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 6 ft	6.6%	33,666.03	2,378.97	Difficult Run
45	Colvin Run Ph I	8/9/2017	-77.311688	38.965054	Urban Stream Restoration	2776.59	2175.00	846000.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 846 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 30.8 ft	43.2%	480,528.00	365,472.00	Difficult Run
45	Colvin Run Ph I	8/9/2017	-77.314909	38.963992	Urban Stream Restoration		110.00	17000.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS	43.2%	9,656.00	7,344.00	Difficult Run

#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Restored Length (LF)	Estimated Total TSS Reduction (lbs/yr) without SDR	Pollutant Reduction Calculation Method	% Outside MS4	Local TMDL Credit Not Subject to Baseline -- TSS (lb/yr)	Local TMDL Credit Subject to Baseline -- TSS (lb/yr)	Watershed
									Sediment Load Estimate: 17 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 4.6 ft				
45	Colvin Run Ph I	8/9/2017	-77.313468	38.964642	Urban Stream Restoration		350.00	63000.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 63 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 4 ft	43.2%	35,784.00	27,216.00	Difficult Run
52	Stone Mill Court Reach 2	4/24/2018	-77.342058	38.879321	Outfall Restoration	32.96	262.79	28088.40	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 263 LF, Average Stream Bank Height: 4 ft, Sediment Delivery Ratio: 0.181	4.3%	26,880.60	1,207.80	Difficult Run
55	Robinson, PCL 19 @ 0723DP (DF82-03)	5/22/2018	-77.293272	38.9708	Outfall Restoration	34.33	260.00	6942.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 260 LF, Average Stream Bank Height: 1.0 ft, Sediment Delivery Ratio: 0.181	93.6%	444.29	6,497.71	Difficult Run
59	Lake Martin Tributaries	10/23/2018	-77.341165	38.88487	Outfall Restoration	29.48	1363.00	200377.87	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 175 tons/yr**,** Sediment Delivery Ratio: 0.181, Protocol 4 - a RSC with 6,534 cf of runoff treated	10.57%	179,190.64	21,187.23	Difficult Run
66	Browns Chapel Pond & Outfall Improvement	4/20/2019	-77.307614	38.96985	Outfall Restoration	91.58	145.00	28355.40	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 180 LF, Average Stream Bank Height: 5.9 ft, Sediment Delivery Ratio: 0.181	26.1%	20,946.33	7,409.07	Difficult Run
62	Wolftrap Creek Phase 2	N/A	-77.246262	38.90577	Urban Stream Restoration	693.74	1020.00	252914.92	CBP Urban Stream Restoration Interim Approved Removal Rates	12.0%	222,565.13	30,349.79	Difficult Run

Stream Restoration Project Total

Difficult Run Total	**1,324,897.65**	**541,340.82**	
Reduction to Account for Baseline	1.00	0.68	
Difficult Run After Baseline	1,324,897.65	368,111.75	
Vienna % per Cooperative Agreement	0.146	0.146	**Total**
Difficult Run Vienna Share	**193,435.06**	**53,744.32**	**247,179.37**

Accotink Creek Total	**3,916,490.21**	**2,851,959.92**	
Reduction to Account for Baseline	1.00	0.24	
Accotink Creek After Baseline	3,916,490.21	684,470.38	
Vienna % per Cooperative Agreement	0.077	0.077	**Total**
Accotink Creek Vienna Share	**301,569.75**	**52,704.22**	**354,273.97**