Town of Leesburg, Virginia

Goose Creek Benthic TMDL Action Plan

Submittal to DEQ – May 1, 2020

Town of Leesburg
Department of Public Works and Capital Projects
25 West Market Street
Leesburg, Virginia 20176

Prepared with assistance by:
Wood Environment & Infrastructure Solutions
Chantilly, Virginia

Prepared in Compliance with Municipal Separate Storm Sewer System (MS4)
Permit No. VAR040059

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."

Renee McLafollette	Director, Public Works & Capital Projects	04/13/2020
Name	Title	Date

Town of Leesburg, Virginia
Goose Creek Benthic TMDL Action Plan

May 1, 2020

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1. Introduction

1.1 Purpose

This Goose Creek Benthic TMDL Action Plan documents how the Town of Leesburg 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 permit (VAR040059) issued by the Virginia Department of Environmental Quality (DEQ) became effective on November 1, 2018.

The Town's MS4 permit requires the development and implementation of action plans for impaired streams where a Total Maximum Daily Load (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 is subject to one TMDL for benthic impairments, "Benthic TMDLs for the Goose Creek Watershed" (Goose Creek TMDL) approved by the SWCB on August 31, 2004. The Goose Creek TMDL assigns a WLA for discharges of sediment to the impaired waters.

This Goose Creek Benthic TMDL Action Plan was originally approved by DEQ on November 6, 2015. 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). As such, this plan updates and replaces the plan previously approved by DEQ.

1.2 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 the 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

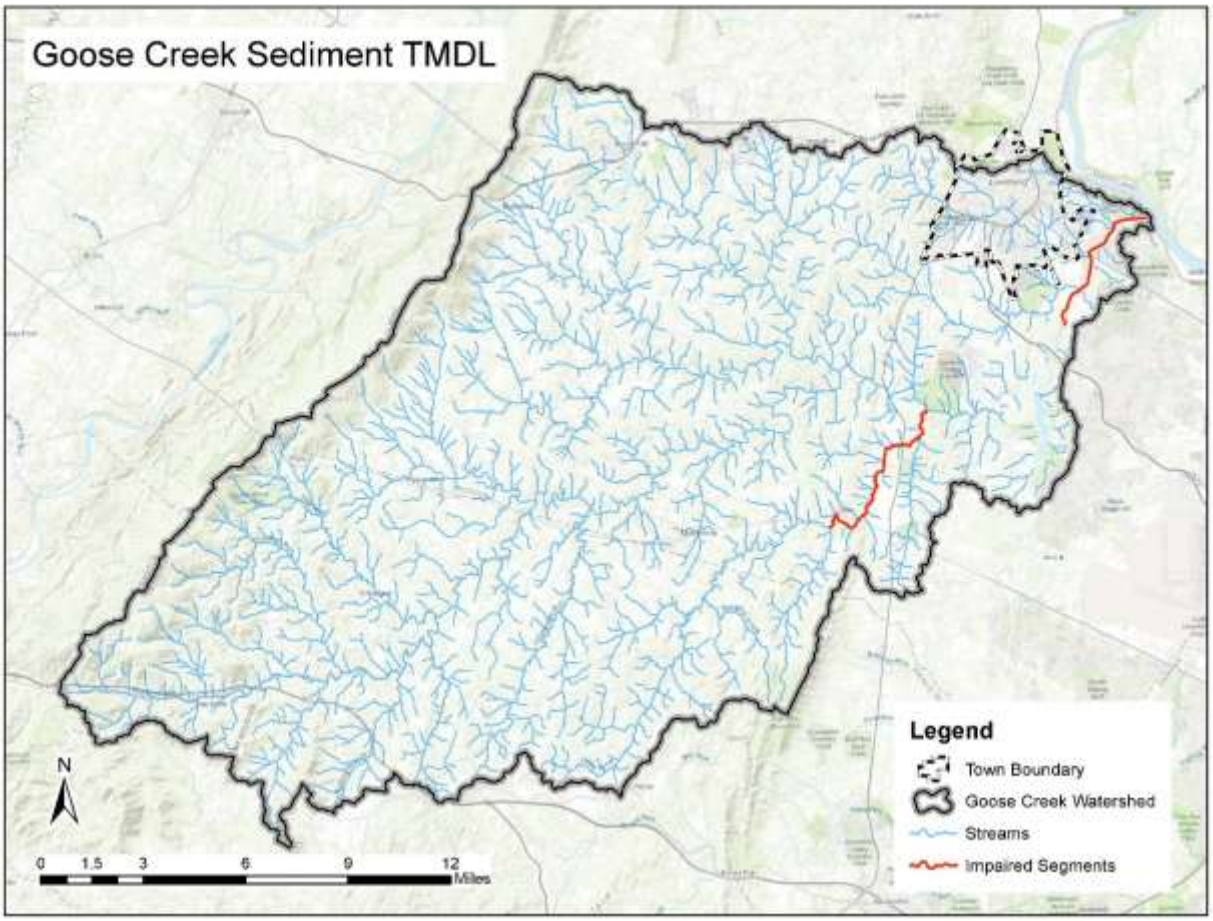
Action Plan	Plan Element	2018 MS4 Permit	
Section 1	Introduction		
Section 2	Overview of Benthic TMDL	Part II B 3	a. The TMDL project name. b. The EPA approval date of the TMDL. c. The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable.
Section 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.
Sections 4.1-4.3	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 4.4	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. b. The permittee may meet the local TMDL requirements for sediment, phosphorus, or nitrogen through BMPs implemented to meet the requirements of the

Action Plan	Plan Element	2018 MS4 Permit	
			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 5	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 6	Schedule of Anticipated Actions	Part II B 3	h. A schedule of anticipated actions planned for implementation during this permit term.
Section 7	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 8	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. Overview of Benthic TMDL

The "Benthic TMDLs for the Goose Creek Watershed" was approved by the U.S. EPA on April 26, 2004 and the SWCB on August 31, 2004. The Goose Creek TMDL delineated a total contributing watershed of 248,333 acres. The area covered by the TMDL is shown in Map 2A. The entire area of the Town in the Goose Creek watershed was aggregated into a single unit and includes the Town's MS4 service area, the Virginia Department of Transportation (VDOT) MS4 service area, and Virginia Pollutant Discharge Elimination System (VPDES) industrial permit holders, for a total of 6,334 acres and a WLA of 287.4 tons/year (574,800 lbs/year).

Map 2A – Goose Creek Impairment and Watershed Delineation

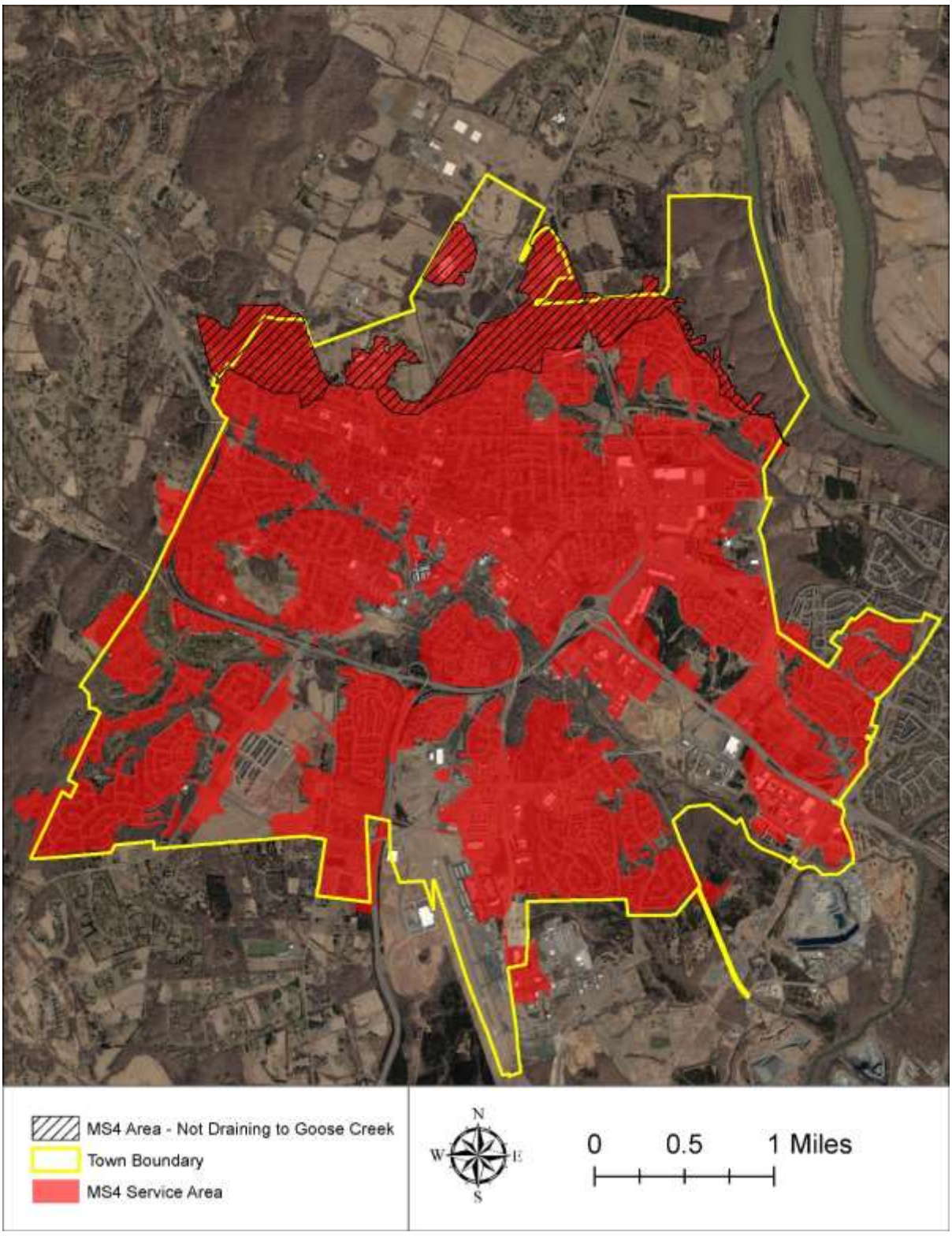


The TMDL assumes a reduction of 30% of the sediment load from developed land in determining the WLA.[1] A 30% reduction means that the baseline load is estimated to be 821,143 lbs/year $((100\% - 30\%)(baseline\ load) = 574{,}800\ lbs/year)$. As a result, the aggregated reduction assigned to the Town MS4 to meet the WLA is estimated to be 246,343 lbs/year $(821{,}143\ \text{lbs/year} - 574{,}800\ \text{lbs/year})$.

It is important to note that the TMDL reflects the Town boundary as the MS4 service area. The Town has since conducted a detailed assessment of the regulated MS4, including removal of areas not draining to the storm drain system, areas covered under VDOT's MS4 permit, and properties subject to separate VPDES industrial permits. The methodology used to delineate the regulated MS4 is described in the Town's Final Phase II Chesapeake Bay TMDL Action Plan. The most recent version of the Town MS4 service area is presented in Map 2B.

[1] Section 6.2.1.4 of the TMDL: "The wasteload allocation for the MS4s under each growth scenario was determined based on the acres of developed land and disturbed land within the MS4 boundary under each scenario. Under each scenario, these land uses were given the same reduction within the MS4 as they were given watershed-wide. The MS4 wasteload under each scenario is the load after the reductions from developed and disturbed land." Section 6.3: "The load reduction required from developed land was therefore set at 30%."

Map 2B – Leesburg MS4 Service Area Draining to Goose Creek



Based on the MS4 service area map, the Town calculates that 4,723.37 acres drain to Goose Creek from the regulated Leesburg MS4. This MS4 service area is 74.6% of the assumed aggregated MS4 area for the Town in the Goose Creek TMDL of 6,334 acres. As a result, it is estimated that the Town is responsible for approximately 74.6% of the aggregated reduction of 246,343 lbs/year, which equals 183,702 lbs/year.

3. Identification of Significant Sources of Sediment

Sediment from developed land can enter the storm drain system when stormwater mixes with exposed or poorly stabilized soils. In urban areas like the Town of Leesburg, soils can be subject to scour by stormwater, compaction, or disturbance where stabilization can be difficult. Soil stockpiles that are not protected from precipitation can be a source of sediment if not properly controlled.

Construction and other land disturbing activities can become a source of sediment if adequate erosion and sediment controls are not in place. Similarly, structural stormwater management controls, if not properly operated and maintained, could result in increased sediment loads. As such, a core strategy of this action plan is to ensure that Leesburg's erosion and sediment control and stormwater management programs are vigorously implemented and enforced. These programs are further discussed in Section 4.

As required in the MS4 permit, an evaluation of the regulated MS4 service area was completed to determine whether any Town facility subject to this action plan should be considered a significant source of sediment. The MS4 permit defines a significant source as a facility that has a "discharge where the expected pollutant loading is greater than the average pollutant loading for the land used identified in the TMDL." The evaluation consisted of a desktop survey of Town facilities within the Goose Creek watershed.[2] Aerial imagery for each facility was observed for indications of conditions or activities that could constitute a significant source of sediment. Facilities evaluated included:

- Town Hall and Parking Garage, 25 West Market Street
- Thomas Balch Library, 208 West Market Street
- Public Safety Center, 65 Plaza Street NE
- Town Central Maintenance Facility/Utilities Maintenance Facility, 1393 Russel Branch Parkway SE/1385 Russell Branch Parkway SE

Based on this evaluation, only the Central Maintenance Facility/Utilities Maintenance Facility was determined to potentially be a significant pollutant source due to the presence of soil stockpiles and the use/maintenance of heavy equipment. In accordance with the MS4 permit, a separate stormwater pollution prevention plan (SWPPP) has been developed for this facility that includes measures to control sediment. The SWPPP is further discussed in Section 4.

4. Best Management Practices

This section discusses the Town's program for preventing new sources of sediment and reducing the discharge of existing sources of sediment from the MS4. Reductions will occur in coordination with the Leesburg MS4 Program Plan and the Leesburg Final Phase II

[2] Leesburg Airport was not evaluated since it maintains a separate VPDES industrial stormwater permit. In addition, the Leesburg Water Pollution Control Facility has been granted a no-exposure certification from DEQ.

Chesapeake Bay TMDL Action Plan. The following provides an overview of these programs, a description of actions to address potential sources of sediment from Town property identified in Section 3, and sediment reduction calculations as required by the MS4 permit.

4.1 Town Legal Authorities, Plans, and Policies

The Town has put in place the legal mechanisms necessary to control sediment as a result of active land-disturbing activities, ensure that new development does not add to pollutant loads, and reduce existing sediment loads as a result of redevelopment. In addition, the Town has adopted several plans and policies that relate to the control and reduction of sediment. Table 4A provides a summary of these legal authorities, plans, and policies.

Table 4A - Town of Leesburg Legal Authorities, Plans, and Policies

Title	Applicability
Stormwater Management Ordinance, Town Code, Chapter 14	The Stormwater Management Ordinance establishes the Town's authority to implement and enforce a comprehensive stormwater management program. Components include: (a) Illicit Discharge Detection and Elimination; (b) Construction Site Stormwater Control; (c) Post-Construction Stormwater Control; and, (d) Stormwater Management System Maintenance. Specific to sediment control: • Sec. 14-23(b) and (d) prohibit the discharge of eroded soil and sediment to the stormwater system and allows the Town to designate erosion impact areas with enhanced mitigation requirements. • Sec. 14-23(f) requires any proposed disturbance of the natural terrain of any subdivision or development where the disturbed area is greater than 500 square feet or includes the removal or addition of soil in excess of 12 inches in depth to develop an erosion and sediment control plan and comply with the Town's DCSM. • Sec. 14-23(g) requires all regulated development, redevelopment, and uses within the Town to develop a stormwater management plan.
Design and Construction Standards Manual (DCSM)	The DCSM establishes specific design standards for meeting the water quality requirements of the Stormwater Management Ordinance. In addition, to provide a buffer from direct urban runoff, which can exacerbate stream bank erosion, the DCSM contains a requirement (with exceptions) for a 50 foot buffer along both sides of any perennial stream within a natural channel.
Town Plan (adopted 2012 and amended through 2018)	The Town Plan sets forth the Town's vision and goals for reducing the impact of the developed environment on the Town's natural resources. Relevant to sediment control, the Town Plan contains the following objectives under Natural Resources: • Objective 1: Identify, protect, and restore an integrated open space network of ecologically valuable land and water resources within the town and its Joint Land Management Area. • Objective 2: Protect and restore the ecological integrity of streams in Leesburg and its JMLA by utilizing a series of watershed management tools to offset the impacts of development. The tools include: watershed planning, land conservation, aquatic buffers, low impact site design,

Title	Applicability
	erosion control, stormwater treatment practices, control of non-stormwater discharges, and watershed stewardship. • Objective 3: Minimize the impact of new development on natural systems by adopting low impact development standards and conservation subdivision design techniques. • Objective 5: Protect the Town's water resources and downstream receiving waters including Goose Creek, the Potomac River, and the Chesapeake Bay from the impacts of non-point source pollution. • Objective 9: Design new construction to protect people and property from natural hazards such as flooding, unstable conditions related to soil and geology, and vectors that may transmit disease. The plan then contains specific implementation actions to meet these objectives.
Town Zoning Ordinance	The Zoning Ordinance, in addition to requiring compliance with the DCSM, also establishes Creek Valley Buffer standards for larger streams (640 acres drainage and greater) in excess of those required in the DCSM.
Tuscarora Creek Watershed Study (2008)	This study, developed through a Town Council appointed Leesburg Watershed Committee, contains both specific and broad-based recommendations for improving water quality and aquatic habitats in the Town of Leesburg. Specific to sediment pollution, the study contains recommendations for stormwater retrofits to reduce the volume and velocity of stormwater runoff and to promote recharge and recommendations for stream corridor restoration opportunities.
Loudoun County Erosion and Sediment Control Enforcement	Loudoun County administers erosion and sediment control inspection and enforcement activities in the Town. Loudoun County's program is consistent with Virginia Erosion and Sediment Control Regulations.
Storm Water Pollution Prevention Plans (SWPPPs)	Leesburg Executive Airport maintains a SWPPP in accordance with a separate VPDES industrial permit. The Central Maintenance Facility/Utilities Maintenance Facility maintains a SWPPP in accordance with the Town's MS4 permit. These SWPPPs contain BMPs for stormwater pollution prevention training and erosion and sediment control.

4.2 MS4 Program Plan

Leesburg 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.leesburgva.gov/home/showdocument?id=31331. Table 4B provides a summary of elements of the six minimum control measures (MCMs) implemented by the Town under the MS4 permit that relate to meeting the benthic TMDL.

Table 4B – MS4 Program Plan Components Related to the Benthic TMDL

Minimum Control Measure	Description
Public Education and Outreach MCM #1	The Town has adopted a broad-based public outreach strategy about the importance of reducing stormwater pollution and actions that can be taken to protect the Chesapeake Bay and the Town's local waterways. A focus of the Town's efforts is on educating school-age youth.
Public Involvement and Participation MCM #2	The Town has developed a program to promote the ability of the public to report illicit discharges, including sediment from land-disturbing activities. The Town maintains a reporting function on its "How Do I Report…" webpage.
Illicit Discharge Detection and Elimination MCM #3	The Town has adopted an Illicit Discharge Detection and Elimination (IDDE) Program. This program includes preventing, identifying, and eliminating sources of sediment.
Construction Site Stormwater Runoff Control MCM #4	The Town's construction site stormwater runoff control program is designed to minimize the impacts from land-disturbing activities and meet all applicable local, state, and federal requirements. The Town leverages Loudoun County's erosion and sediment control program to meet construction site stormwater runoff control requirements. A Memorandum of Understanding (MOU) has been executed between the Town and the County to memorialize roles and responsibilities.
Post-Construction Stormwater Management MCM #5	The Town's post construction stormwater management program is designed to meet all applicable local, state, and federal requirements to minimize the long-term water quality impacts associated with development and redevelopment. The Town was approved as a VSMP authority by DEQ on June 13, 2014.
Pollution Prevention and Good Housekeeping for Municipal Operations MCM #6	The Town maintains an active street sweeping program and implements a training program for personnel on illicit discharges, good housekeeping, and pollution prevention. The Town has developed and is implementing SOPs related to sediment control. These include catch basin repair, outfall repair, storm drain system repair, erosion and sediment control, and landscape design and management. Finally, the Town has adopted a SWPPP for the Central Maintenance Facility/Utilities Maintenance Facility that contains BMPs related to sediment pollution. The Town conducts quarterly site inspections of the property.

4.3 Chesapeake Bay TMDL Action Plan

The Town has adopted a Final Phase II Chesapeake Bay TMDL Action Plan that documents existing and planned sediment load reductions to meet the Chesapeake Bay TMDL. The full plan can be found at https://www.leesburgva.gov/government/departments/public-works/water-quality-stormwater-management. The Chesapeake Bay TMDL was established by the U.S. EPA in 2010 and identifies pollutants of concern (POCs) as 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 required reductions by the end of the first permit cycle (June 30, 2018); a total of 40% of required reductions by the end of the second permit cycle (October 31, 2023); and, 100% of required reductions by the end of the third permit cycle.

The MS4 permit specifically authorizes local TMDLs to be met through BMPs implemented to meet the Chesapeake Bay TMDL. Table 4C outlines strategies from the Final Phase II Chesapeake Bay TMDL Action Plan that are applicable to sediment. Specific projects and calculations are contained in Section 4.4.

Table 4C – Chesapeake Bay TMDL Action Plan Components Related to the Benthic 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 Section 14-23 requires a reduction in total phosphorus for any redevelopment project. This reduction in phosphorus also results in a reduction in sediment. Between adoption of the Town's stormwater management ordinance in 2007 and the adoption of amendments in July 1, 2014, the Town required a 10% reduction in phosphorus from existing conditions for any redevelopment. After July 1, 2014, redevelopment over one acre or more must achieve a 20% reduction, while redevelopment under one acre must still achieve a 10% reduction.
Town-Initiated Projects	The Town has initiated multiple projects to address sediment. These include three stormwater management retrofits (Greenway Pond, Foxridge Pond, and Stratford Pond) completed in 2018 and one stream restoration (Tuscarora Creek) that is anticipated to be completed in 2020. All projects are located within the Goose Creek watershed.
Street Sweeping	The Town will continue to take credit for sediment reductions as a result of its street sweeping program. Reductions are calculated using the methodology described in "Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices." The Expert Panel guidance requires vacuum assisted sweeper technology and then assigns a removal efficiency based on the number of passes per year. The Town meets the technology requirement and typically achieves 7-8 passes annually. As a result, the Town meets the efficiencies associated with practice SPC-5 from Table 17 of the Expert Panel report.

4.4 Sediment Reduction Calculations

In accordance with Part II B 5 of the MS4 permit, the Town must calculate actual and planned sediment reductions related to the Goose Creek TMDL. Table 4D presents a summary of these reductions. Detailed calculations are provided in Appendix A.

Table 4D – Summary of Sediment Reductions

Project	Name	Year Completed	Sediment Reduction (lbs/year)
Achieved Reductions			
Redevelopment		Ongoing	13,383.67
Town-Initiated Projects	*Greenway Pond Retrofit*	2018	56,576.69
	Foxridge Pond Retrofit	2018	25,837.78
	Stratford Pond Retrofit	2018	41,142.77
Street Sweeping		Ongoing	10,769.20
Subtotal			***147,710.11***
Planned Reductions			
Town-Initiated Projects	*Tuscarora Creek Restoration*	2020	652,737.52
Subtotal			***652,737.52***
Total			**800,447.63**

5. Outreach Strategy

As noted in Section 4, the Town has integrated into its MS4 Program Plan a broad-based strategy to educate residents and businesses about the importance of reducing stormwater pollution and actions that can be taken to protect the Town's local waterways. This includes education, outreach, and training on subjects related to the reduction of sediment in stormwater discharges. Of particular note is the Illicit Discharge Detection and Elimination (IDDE) program and training that specifically includes potential sources of sediment. In addition, standard operating procedures (SOPs) that relate to sediment have been developed for landscape and grounds maintenance and outdoor storage. These SOPs have been incorporated into annual training requirements for Town staff as provided for in the MS4 Program Plan. The Town will continue to assess whether additional enhancement of education, outreach and training would be beneficial to reducing sediment loads within the Goose Creek watershed.

6. Schedule of Anticipated Actions

This Benthic TMDL Action Plan will be implemented in accordance with the following schedule and milestones.

Table 6A – Schedule and Milestones

Implementation Item	Description	Schedule
MS4 Program Plan	The Town will continue to implement the MS4 Program Plan, including elements related to sediment, in accordance with the schedule provided for in the MS4 Program Plan.	See MS4 Program Plan for implementation schedule.
Central Maintenance Facility/Utilities Maintenance Facility	The Town will continue to implement the Central Maintenance Facility/Utilities Maintenance Facility SWPPP.	Ongoing implementation. Quarterly site inspections and annual personnel training.
Chesapeake Bay TMDL Action Plan	The Town will implement the Final Phase II Chesapeake Bay TMDL Action Plan and subsequent plans designed to meet the Chesapeake Bay TMDL. This includes tracking redevelopment, Town-initiated projects, and street sweeping.	See Final Phase II Chesapeake Bay TMDL Action Plan for implementation schedule.
Outreach Strategy	The Town will continue to implement its public outreach strategy as outlined in the MS4 Program Plan. This includes outreach to residents and businesses as well as training on Town SOPs and the Central Maintenance Facility/Utilities Maintenance Facility SWPPP.	See MS4 Program Plan (MCMs #1, #2, and #6) for implementation schedule.

7. Anticipated End Date

The MS4 permit requires the Town to submit the anticipated end date by which it will meet the WLA for sediment. As described in Section 2, the Town estimates its share of the aggregated load reduction to be 183,702 lbs/year. Table 4D demonstrates that the Town has already achieved a reduction of 147,710.11 lbs/year, or 80% of the total reduction, through the use of stormwater pond retrofits and street sweeping. Once the Tuscarora Creek stream restoration is completed in late 2020, the total reduction is expected to be 800,447.63 lbs/year. This exceeds

the reduction requirement to meet the Goose Creek TMDL. As a result, the estimated end date to meet the Town's WLA for the Goose Creek sediment TMDL is 2020.

Although the Town anticipates meeting the Goose Creek sediment TMDL, it will continue to implement projects necessary to meet the Chesapeake Bay TMDL, which will further reduce sediment loads to Goose Creek.

8. Opportunity for Public Comment

This plan was made available for public comment no less than 15 days prior to submittal to DEQ in accordance with Part II B 7 of the MS4 permit. No comments were received by the Town prior to May 1, 2020. The invitation for public comment from is shown below.

Water Quality & Stormwater Management

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News and Important Information

MS4 Permit Annual Report October 2019 (PDF - Large File)

Report Suspected Illicit Discharge or Illegal Dumping

Leesburg MS4 Program Plan

Leesburg Phase II Bay TMDL Action Plan Final 8-27-2019

Benthic TMDL Action Plan

The Town is updating its plan to reduce the amount of sediment pollution that flows into Goose Creek. Water quality in Goose Creek is considered impaired as a result of sediment pollution. The Leesburg Goose Creek Sediment TMDL Action Plan identifies the projects and strategies that will be implemented to ensure that the Town does its part to clean up this important water resource. Residents are invited to provide comments on the plan through April 28, 2020. For additional information or to submit comments, please contact Nathaniel Ogedegbe at nogedegbe@leesburgva.gov or (703) 737-3269.

Appendix A

Sediment Reduction Calculations

Redevelopment

With one exception (Spring Arbor), redevelopment projects from the Final Phase II Chesapeake Bay TMDL Action Plan are located within the MS4 portion of the Goose Creek watershed. Additional calculations can be found in the Final Phase II Chesapeake Bay TMDL Action Plan.

Redevelopment Project	TN Credit	TP Credit	TSS Credit	Year	Goose Creek
Spring Arbor - 237 Fair View Street	2.02	0.80	275.71	2011	N
Loudoun County Building - 102 North Stree	3.41	1.37	455.83	2011	Y
Lowanbach Subdivision Road Improvemen	1.90	0.21	259.53	2011	Y
Frederick Douglass ES - 510 Principal Drum	4.46	0.66	380.67	2011	Y
Turner Harwood Drainage - Sycolin Road	0.64	0.26	87.60	2012	Y
Wolf Furniture - 131 Fort Evans Road	1.54	0.63	210.41	2012	Y
Star Building Addition - 326 East Market Str	6.96	2.40	912.86	2012	Y
Dulles Chrysler Dodge - 109 Catoctin Circle	4.56	1.77	621.09	2011	Y
South King Street Phase 1	7.61	2.75	1,036.53	2013	Y
INOVA Cornwall Building - 224 Cornwall St	3.75	1.04	510.33	2014	Y
Chipotle - Edwards Ferry Road	0.97	0.40	132.20	2014	Y
Sycolin Road Widening Phase III - Sycolin R	4.31	1.56	587.36	2014	Y
Sycolin Road and Tavistock Drive Intersecti	1.93	0.35	200.37	2013	Y
Leesburg Toyota - 1 Cardinal Drive Park, SE	17.17	6.14	2,321.49	2015	Y
Verizon Leesburg Training Center - 501 Tol	4.06	1.18	463.74	2014	Y
Leesburg Airpark	3.44	0.73	424.30	2014	Y
Lowenbach Phase V Road Improvements	15.89	3.63	2,165.03	2016	Y
Jerry's Ford Site Redevelopment	48.15	6.74	2,614.32	2017	Y

Goose Creek Reductions							
Pollutant => FY	2017	2018	2019	2020	2021	2022	2023
TN	130.77	130.77	130.77	130.77	130.77	130.77	130.77
TP	31.82	31.82	31.82	31.82	31.82	31.82	31.82
TSS	13383.67	13383.67	13383.67	13383.67	13383.67	13383.67	13383.67

Town-Initiated Projects

All Town-initiated structural retrofit projects from the Final Phase II Chesapeake Bay TMDL Action Plan are located within the MS4 portion of the Goose Creek watershed. Detailed calculations for the Greenway Pond, Foxridge Pond, and Stratford Pond retrofits can be found in the Final Phase II Chesapeake Bay TMDL Action Plan.

New Town Project	TN Credit	TP Credit	TSS Credit	FY
Greenway Pond Retrofit	514.00	69.59	56,576.69	2018
Foxridge Pond Retrofit to Extended Dry Detention	236.04	14.39	25,837.78	2018
Stratford Pond Retrofit to Extended Dry Detention	507.02	21.47	41,142.77	2018

The calculations for the Tuscarora Creek stream restoration have been modified from the Final Phase II Chesapeake Bay TMDL Action Plan and are presented on the following page. The modification reflects that local TMDL sediment reduction projects do not have to account for the sediment delivery factor. In addition, baseline for stream restoration projects must reflect the local TMDL. In the case of Goose Creek, a 62% percent reduction from the load allocation is assigned to stream bank erosion. This means that the Town can take 38% of the sediment reduction credit for areas outside of the regulated MS4.[3]

Table 6.16: TMDL Load Allocation for Goose Creek

Land Use	Projected Load (tons/yr)	Load Allocation (tons/year)	Percent Reduction
Forest	998	998	0%
Clear-Cut Timber	2	0.2	92%
Select-Cut Timber	72	6	92%
Cropland	1,666	1,166	30%
Pasture	14,185	9,930	30%
Developed Land*	634	444	30%
Streambank Erosion	83,842	31,860	62%
Sediment Trapping	-10,140	-4,440	---
Total	91,259	39,963	56%

* Excludes developed land within MS4s

[3] Email communication from Allan Brockenbrough, DEQ, 4/8/2020.

Tuscarora Creek Restoration

Anticipated Installation Date: 2020

Latitude: 39.105642	HUC: PL15
Longitude: -77.560196	Calculation Method: BANCS Method, Protocol 1

Restoration Length (ft)	**2,262.00**
Credit for Unregulated Land	**38%**

STEP 1	**TN**	**TP**	**TSS**
BANCS Initial Sediment (tons/year)			1,012.36
Conversion to Pounds (2.28*TSS Tons for TN; 1.05*TSS Tons for TP; TSS*2,000)	2,308.18	1,062.98	2,024,720.00
Apply Effectiveness of 50%	1,154.09	531.49	1,012,360.00
Apply Sediment Delivery Factor (None for Local TMDLs)			1,012,360.00
Total Reduction Based on Protocol 1 (lbs/year)	1,154.09	531.49	**1,012,360.00**

STEP 2	**Total**	**Impervious**	**Forested**	**Pervious**
Regulated Acres	2,654.60	706.50	493.70	1,454.40
Unregulated Acres	3,561.60	122.80	1,617.00	1,821.80
	6,216.20	829.30	2,110.70	3,276.20

STEP 3		**Portion of Reductions (lbs/yr)**		
	Land Ratio	**TN**	**TP**	**TSS**
Regulated	0.43	492.85	226.97	432,323.74
Unregulated	0.57	661.24	304.52	580,036.26

STEP 4	**TN**	**TP**	**TSS**
Regulated Credits (100%)	492.85	226.97	432,323.74
Unregulated Credits	251.27	115.72	220,413.78
Total Credits	**744.12**	**342.69**	**652,737.52**

Street Sweeping

Calculations for street sweeping are modified from the Final Phase II Chesapeake Bay TMDL Action Plan to reflect the portion of the Town draining to Goose Creek. The percent of the total impervious area in the Town associated with Goose Creek is 95%. As a result, 95% of the total sediment reduction through street sweeping is assigned to Goose Creek.

Street Sweeping Calculations

Notes: Updated calculation based on 2019 DEQ guidance. Must be vacuum assisted sweeper and utilize efficiencies from the Expert Panel Report (May 19, 2016). The Town typically does 7-8 passes per year. As a result, the Town may take credit in accordance with practice SPC-5 from Table 17 of the Expert Panel report.

TN Efficiency	0.7%	**Load per Acre**	15.5	Table 18 of Expert Panel.
TP Efficiency	2.0%	**Load per Acre**	1.93	Table 18 of Expert Panel.
TSS Efficiency	4.0%	**Load per Acre**	1300	Table 18 of Expert Panel.
Goose Creek %	0.95	Percent of total impervious area in Goose Creek watershed.		

Year	Centerline Miles	Curb Miles
FY18	109	218.00
FY19	109	218.00
FY20	109	218.00
FY21	109	218.00
FY22	109	218.00
FY23	109	218.00

Enter estimate for out-years.

Town Wide Reductions

Pollutant	FY18	FY19	FY20	FY21	FY22	FY23
TN	23.65	23.65	23.65	23.65	23.65	23.65
TP	8.41	8.41	8.41	8.41	8.41	8.41
TSS	11,336.00	11,336.00	11,336.00	11,336.00	11,336.00	11,336.00

Goose Creek Reductions

Pollutant	Through FY18	FY19	FY20	FY21	FY22	FY23
TN	22.47	22.47	22.47	22.47	22.47	22.47
TP	7.99	7.99	7.99	7.99	7.99	7.99
TSS	10769.20	10769.20	10769.20	10769.20	10769.20	10769.20