Action Plan for the Accotink Creek Chloride TMDL

A Plan to Address NOVA's Assigned Wasteload Allocation for the Annandale Campus

Northern Virginia Community College

Annandale Campus

Permit #: VAR040095

Developed: May 2021
Latest Revisions: October 2026

This document addresses Part II B, of the General Virginia Pollution Discharge Elimination System Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer System. This document serves as a specific Total Maximum Daily Load Action Plan to identify the best management practices and other interim milestone activities to be implemented to address the Chloride wasteload allocation assigned to NOVA's regulated MS4 area in the *"Chloride TMDLs for the Accotink Creek Watershed, Fairfax County, Virginia*," approved by the Environmental Protection Agency on May 23, 2018. For the purposes of this Plan, the 2000 and 2010 Census Urbanized Areas were used to define NOVA's regulated MS4 area as defined in 9VAC25-890 Section 1.

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Summary of Revisions

The table below records the revisions made throughout the life of this TMDL Action Plan.

Date	Section	Brief Description of Revision
10/2026	4.1.6	Include Salt Management SOP
10/2026	5.1	Include salt management slides to be added to training
10/2026	5.2	Include NOVA implementation strategy selections
10/2026	5.2.2	Include implementation of salt management SOP effective 11/2026.
10/2026	5.2.4	Implementation of salt tracking spreadsheet and MS4 spreadsheet
10/2026	6.0	Updating Table 1 Action Items

EXECUTIVE SUMMARY

Northern Virginia Community College (NOVA) is authorized to discharge stormwater from its municipal separate storm sewer system (MS4) under the Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Discharge of Stormwater from Small MS4s (MS4 General Permit). To maintain permit compliance, NOVA implements an MS4 Program Plan that includes best management practices (BMPs) to address six minimum control measures (MCMs) and special conditions for the Total Maximum Daily Loads (TMDL) in which NOVA has been assigned a wasteload allocation (WLA). The Environmental Protection Agency (EPA) describes a TMDL as a "pollution diet" that identifies the maximum amount of a pollutant the waterway can receive and still meet water quality standards. A WLA determines the required reduction in pollutant of concern loadings from the MS4s to meet water quality standards. The MS4 General Permit serves as the regulatory mechanism for addressing the load reductions described in the TMDL, predominantly through the requirement of a TMDL Action Plan.

The purpose of this Action Plan is to address the WLA assigned to the NOVA Annandale Campus for the upper Accotink Creek Chloride TMDL in accordance with the special conditions in the MS4 General Permit. The TMDL entitled *"Chloride TMDLs for the Accotink Creek Watershed, Fairfax County, Virginia*" (TMDL Report) was approved by the EPA on May 23, 2018, and assigns a "maximum extent practicable" (MEP) WLA to NOVA, Fairfax County, VDOT, Fairfax County Public Schools, City of Fairfax, and Town of Vienna. There are two Virginia mandated chloride criteria discussed in the TMDL documentation – acute and chronic. Acute criteria require no more than one chloride concentration exceeding 860 mg/l every three years which equates to a 77% reduction in the upper Accotink Creek. The chronic criterion for chloride allows no more than one four-day average chloride concentration exceeding 230 mg/l every three years which is equivalent to an 84% reduction from current conditions in the upper Accotink Creek. The aggregate MS4 WLA is a total of 4,972,399 lbs./yr. or 61% of the TMDL for the upper Accotink Creek. This Action Plan addresses chloride in accordance with the special conditions demonstrating that NOVA uses an adaptive and iterative approach to reduce or eliminate the pollutant to the MEP. Compliance with the special conditions is demonstrated within this Action Plan through:

- ✓ NOVA's MS4 Program Plan MCMs which lists laws, programs, and other regulatory mechanisms relied upon that are applicable to reducing chloride.
- ✓ NOVA's MS4 Public Education and Outreach Program plan and strategy.
- ✓ Achieved goals (i.e., NOVA's Salt Management Strategy, working group, etc.); and
- ✓ A methodology to measure Action Plan effectiveness through MS4 annual reporting.

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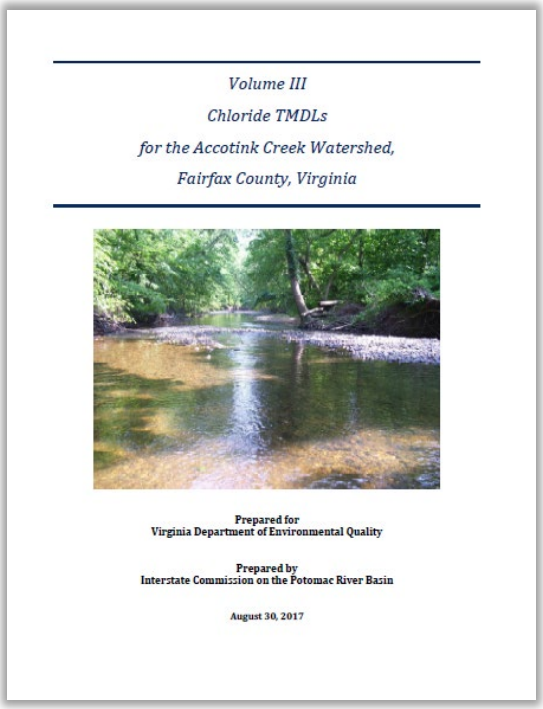
Acronyms

BMP	Best Management Practice
B&G	Buildings and Grounds Maintenance
DEQ	Virginia Department of Environmental Quality
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
LA	Load Allocation
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MOS	Margin of Safety
MS4	Municipal Separate Stormwater Sewer System
MS4 GP	General Permit for Discharge of Stormwater from Small MS4s
NPDES	National Pollutant Discharge Elimination System
SaMS	Salt Management Strategy
SWPPP	Stormwater Pollution Prevention Plan
SWM	Stormwater Management
TMDL	Total Maximum Daily Load
VPDES	Virginia Pollutant Discharge Elimination System
VESMP	Virginia Erosion and Stormwater Management Program
WLA	Wasteload Allocation

1.0 INTRODUCTION AND PURPOSE



Volume III

Chloride TMDLs

for the Accotink Creek Watershed,

Fairfax County, Virginia

Prepared for
Virginia Department of Environmental Quality

Prepared by
Interstate Commission on the Potomac River Basin

August 30, 2017

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

Deicing salt applied to areas such as roads, sidewalks and driveways is a major source of chloride in developed areas surrounding the upper Accotink Creek. Chloride can disrupt the osmotic regulation of aquatic organisms and therefore was determined to be a pollutant of concern. In 2014, DEQ listed portions of the Accotink Creek watershed on their biennial 303(d) TMDL Priority List and Report due to violations of the state's water quality standard for chloride. Subsequently, a TMDL was developed and approved on May 23, 2018, by the EPA. The TMDL assigned MS4 Permit holders a waste load allocation (WLA) for chloride discharges. The WLA was presented in Volume III of the TMDL as being an aggregate MS4 WLA for a total of 4,972,399 lbs./yr. or 61% of the TMDL for the upper Accotink Creek.

While a numeric WLA was discussed, implementation requires a MEP approach to address reductions. DEQ recognizes that public safety must remain the highest priority and believes that water quality concerns identified through the TMDL for chloride can be addressed while still maintaining the high standards of public safety during snow and ice events. Therefore, the Virginia Salt Management Strategy (SaMS) toolkit was developed by DEQ for implementation strategies. The presented strategies and research are to be used to assist MS4s and other regulated entities

within the watershed by recommending the use of performance-based goals rather than strictly adhering to a numeric TMDL reduction.

1.1 Total Maximum Daily Loads

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

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

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

$$\text{TMDL} = \sum \text{WLA} + \sum \text{LA} + \text{MOS}$$

Virginia provides two water quality standards for chloride concentrations – acute and chronic as part of 9VAC25-260-140. Acute concentrations of chloride cannot exceed one-hour average chloride concentration of 860 mg/l more than once every three years. Chronic concentrations of chloride are calculated as a four-hour average and cannot exceed 230 mg/l more than once every three years. To meet the acute criteria a 77% reduction in the upper Accotink Creek would be required, and for the chronic criteria an 84% reduction would be required. Ultimately the chronic criterion was chosen as the water quality threshold due to being more conservative and protective of the watershed. The TMDL report calculated a total TMDL of 8,217,030 lbs./yr. with an aggregate MS4 WLA set to 4,972,399 lbs./yr. for the upper Accotink Creek. While a numeric WLA was assigned, implementation of the TMDL will focus on best management practices that include training and use of more efficient and effective technologies to reduce chloride discharges to the MEP.

1.2 MS4 General Permit TMDL Special Conditions

NOVA operates a portion of their regulated MS4 within the Accotink Creek TMDL watershed, at the Annandale campus, and is therefore subject to the TMDL WLAs assigned to MS4s in the TMDL. The special conditions for the TMDL listed in the MS4 General Permit require NOVA to develop a TMDL Action Plan designed to reduce loadings for a POC where NOVA is given an WLA to an impaired water for which a TMDL has been approved by the EPA as described below:

- For TMDLs approved by the EPA prior to July 1, 2018, and in which an individual or aggregate wasteload has been allocated to NOVA, NOVA shall update the previously approved local TMDL action plans to meet the conditions of Part II B 4, B 6, B 7, and B 8 as applicable, no later than 18 months after the permit effective date and continue implementation of the action plan. Updated action plans shall include:
    (1) An evaluation of the results achieved by the previous action plan; and
    (2) Any adaptive management strategies incorporated into the updated action plans based on action plan evaluation.
- For TMDLs approved by EPA on or after July 1, 2018, and prior to October 31, 2023, and in which an individual or aggregate wasteload has been allocated to NOVA, NOVA shall develop and initiate implementation of action plans to meet the conditions of Part II B 4, B 5, B 6, B 7, and B 8 as applicable no later than 30 months after the permit effective date.

NOVA shall complete implementation of the TMDL action plans as determined by the schedule. TMDL action plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is achieved in the implementation of BMPs designed to reduce pollutant discharges in a manner that is consistent with the assumptions and requirements of the applicable TMDL.

Each local TMDL action plan developed by NOVA shall include the following:

- The TMDL project name;
- The EPA approval date of the TMDL;
- The wasteload allocated to NOVA (individually or in aggregate), and the corresponding percent reduction, if applicable;
- Identification of the significant sources of the pollutants of concern discharging to NOVA's MS4 and that are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL;
- The BMPs designed to reduce the pollutants of concern in accordance with Parts II B 5, B 6, B 7, and B 8;
- Any calculations required in accordance with Part II B 5, B 6, B7, or B 8;

- For action plans developed in accordance with Part II B 5, B6, and B 8, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants; and
- A schedule of anticipated actions planned for implementation during this permit term.

In addition, the following is required:

- Prior to submittal of the action plan required in Part II B 2, NOVA shall provide an opportunity for public comment for no fewer than 15 days on the proposal to meet the local TMDL action plan requirements.
- This TMDL action plan with the most recent date and identification of the location where a copy of the local TMDL action plan may be obtained is incorporated by reference into the MS4 program plan.
- For each reporting period, each annual report shall include a summary of actions conducted to implement each local TMDL action plan.

1.3 Accotink Creek Chloride TMDL Action Plan

The purpose of NOVA's Action Plan for the Accotink Creek Chloride TMDL is to address each of the local TMDL special conditions listed in Part II B. As an adaptive and iterative approach to meet surface water quality goals, the Action Plan may be revised from time to time to reduce chloride discharges from NOVA's MS4 to the MEP.

The MS4 General Permit requires the following be incorporated into the Good Housekeeping and Pollution prevention procedures:

- Within 24 months of permit issuance, permittees that apply anti-icing and deicing agents shall update and implement procedures in accordance with Part I E to include implementation of best management practices for anti-icing and deicing agent application, transport, and storage; and
- Procedures developed in accordance with Part I E shall prohibit the application of any anti-icing or deicing agent containing urea or other forms of nitrogen or phosphorus.

The MS4 General Permit requires the incorporation of the following described below:

- No later than 36 months after the permit effective date, NOVA shall develop an anti-icing and deicing agent education and outreach strategy that identifies target audiences for increasing awareness of anti-icing and deicing agent application impacts on receiving waters and encourages implementation of enhanced BMPs for application, handling, and storage of anti-icing and de-icing agents used for snow and ice management.

- Anti-icing and deicing agent education and outreach strategies shall contain a schedule to implement two or more of the strategies listed in Part I E 1 d Table 1 per year to communicate to target audiences the importance of responsible anti-icing and deicing agent application, transport, and storage.

- No later than 36 months after permit issuance, NOVA shall review good housekeeping procedures for anti-icing and deicing agent application, handling, storage, and transport activities required under Part I E 6 b (1) (a) and identify a minimum of two strategies for implementing enhanced BMPs that promote efficient management and application of anti-icing and deicing agents while maintaining public safety.

2.0 THE ACCOTINK CREEK CHLORIDE TMDL

The TMDL study area includes upper and lower sections of the Accotink Creek as well as Long Branch, a tributary to the Accotink Creek. In total, the watershed is approximately 52 square miles. The upper section begins at the river headwaters in the City of Fairfax and flows to the lower section which begins at Lake Accotink. Long Branch (central) is a tributary which flows into Accotink Creek within the upper Accotink Creek boundary. Figure 1 depicts the study areas, as indicated in the TMDL as well as NOVA's Annandale Campus which lies completely within the upper Accotink Creek watershed.

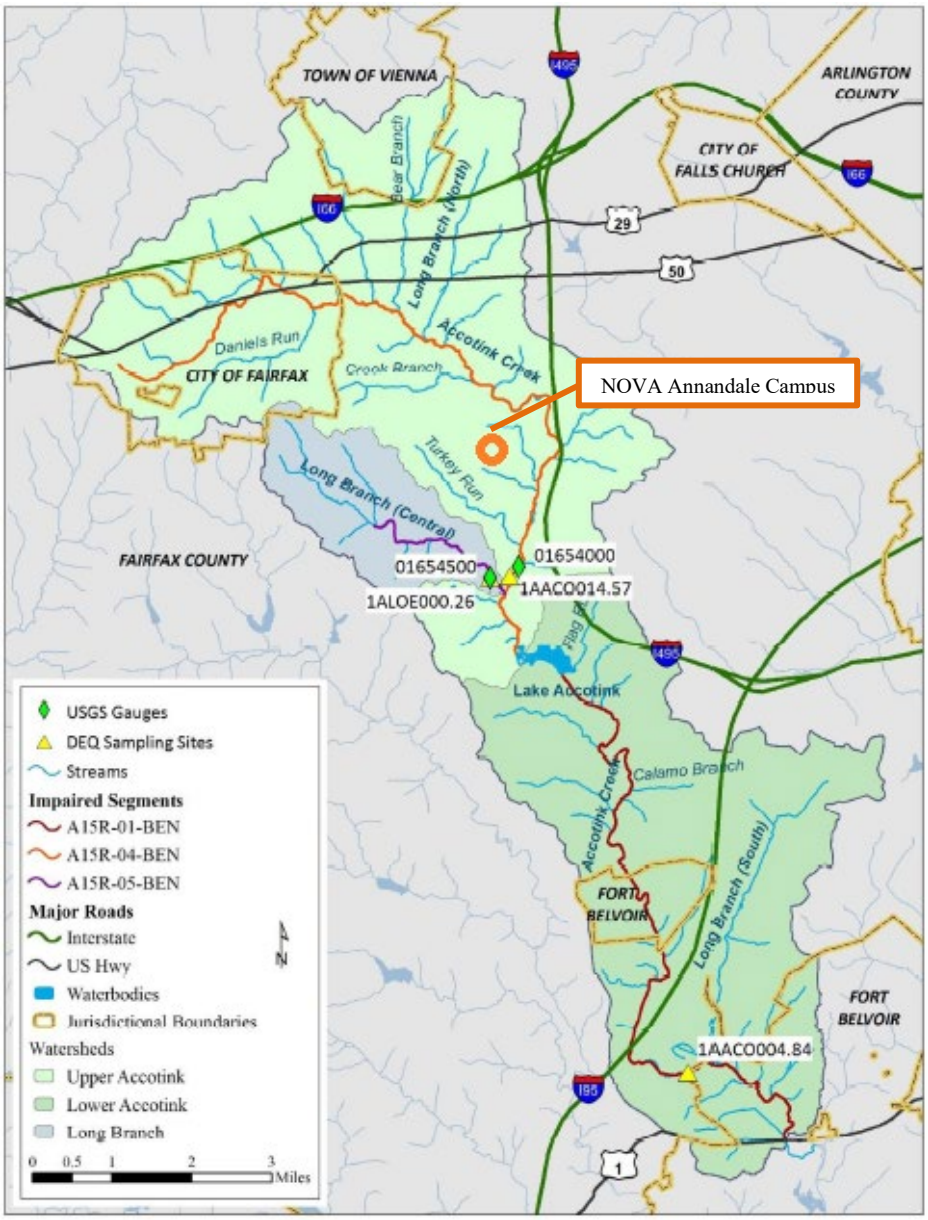


Figure 1. Accotink Creek Watershed Subbasins Map
(base map taken from Volume III TMDL)

Chloride can disrupt the osmotic regulation of aquatic organisms and therefore was determined to be a pollutant of interest. Chloride occurs naturally in water as part of the composition of soil and bedrock, but in urban watersheds chloride is commonly added to the watershed via deicing salts applied to roads, sidewalks, and driveways throughout the winter. Tracked concentrations spike in the winter months and are found at significantly lower values during the spring, summer, and fall. Figure 2 shows the average monthly chloride concentration in Accotink Creek Watershed tracked over the course of a year.

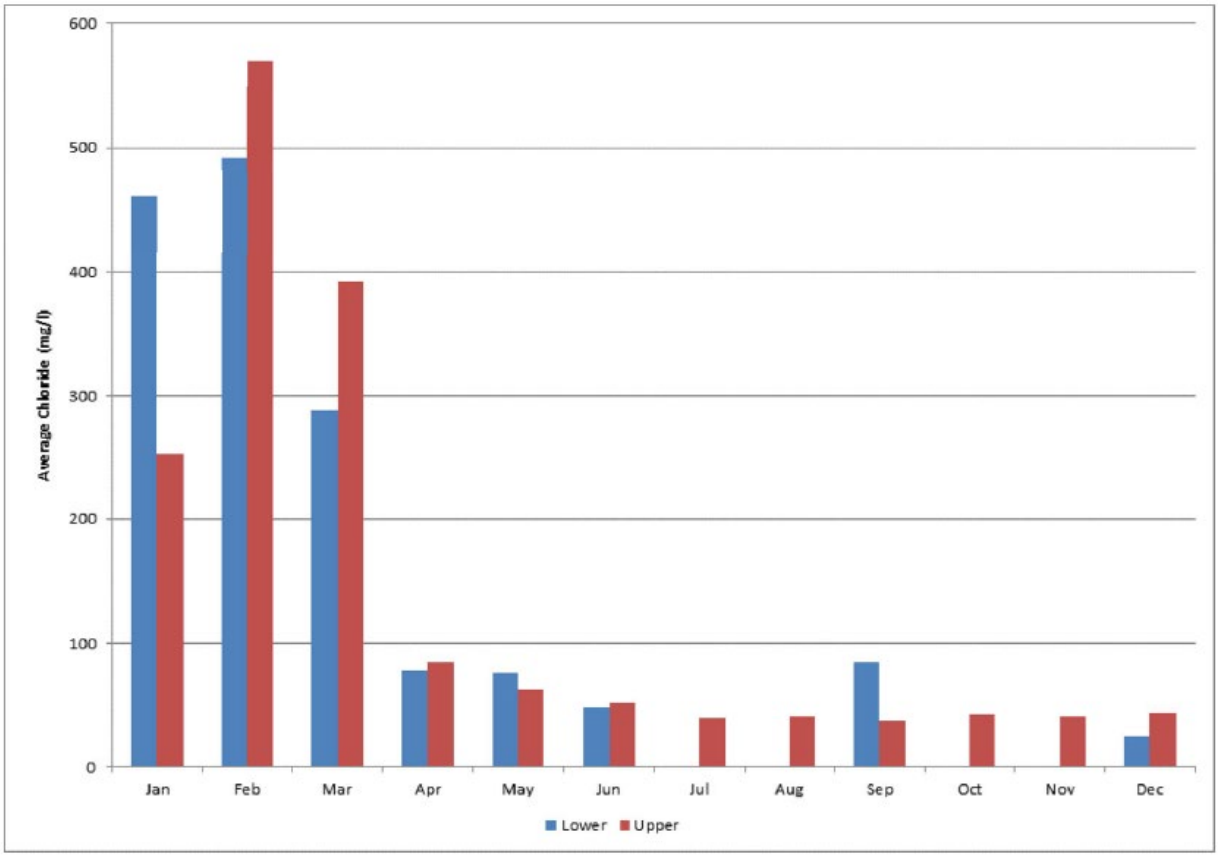


Figure 2. Monthly Average Chloride Values for the Lower and Upper Accotink Creek
(source: Volume III TMDL)

2.1 Wasteload Allocation

The TMDL Report assesses a WLA for chloride to existing point sources, including permitted MS4s. Chloride concentrations typically exceed acute and chronic criteria during the winter months which indicates that chloride water quality exceedances correlate to stormwater carrying deicing salts. The upper Accotink Creek maximum estimated chloride concentration was 3,978 mg/l during preparation of the TMDL. The Virginia chronic chloride concentration was chosen due to being more stringent which requires no more than one four-day average chloride concentration exceeding 230 mg/l every three years (9VAC25-260-140). This correlates to a reduction of 84% in the upper Accotink Creek. The total average annual chloride TMDL for the upper Accotink Creek was set to 8,217,030 lbs./yr.

The TMDL includes reductions from point source and non-point source contributors, including aggregate MS4s, aggregate industrial stormwater WLA, and 5% future growth. Future growth was set relatively low since 87% of the watershed is already developed commercial, industrial, residential, or transportation. The aggregate MS4 WLA, which NOVA is a part of, was set to 4,972,399 lbs./yr. or 61% of the total TMDL for the upper Accotink Creek. While a number was assigned in the TMDL Report, the Clean Water Act §402(p)(3)(B)(iii) requires implementation to the MEP.

2.2 Characterization of Chloride Sources in the TMDL

The SaMS toolkit includes potential sources of chloride. Chloride is highly soluble and readily travels with water. Chloride contamination can be attributed to deicing and salting techniques used during winter weather. These sources include both rock salt and brines applied to roadways, sidewalks, and driveways within the watershed. Additionally, storage of salts and deicing materials can be potential sources within the watershed (e.g., shipping containers, barns, domes, etc.). Additionally, chloride can be found naturally occurring in soils although stormwater flows of deicing chloride tend to contaminate the naturally occurring chloride quantities in soils causing the soil to react differently.

3.0 NOVA ANNANDALE CAMPUS CHARACTERIZATION

The NOVA Annandale campus is located fully within the upper Accotink watershed, located at the approximate middle of the sub watershed as shown on Figure 1. The Accotink Creek continues south through the lower Accotink Creek watershed and ultimately reaches the Accotink Bay which flows into the Potomac River.

3.1 Potential Campus Sources of Chloride

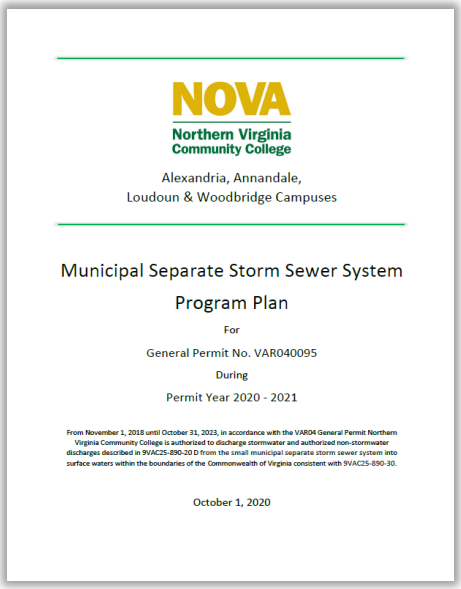
The TMDL Implementation Plan considered potential sources of chloride from a point and non-point source contribution to the Accotink Creek watershed. The sources discussed in the SaMS toolkit indicate that runoff carrying deicing and salting material could potentially be a contributor to chloride contamination within the watershed.

3.1.1 Deicing Techniques

For the purposes of public safety, campus staff in anticipation of and during a snow or ice storm will apply deicers on campus roads, parking lots, and on walkways to ensure safe access to campus facilities. Deicers are used in the highest quantities during January and February but storms in late December or early March also sometimes require the use of deicers. Buildings and Grounds Maintenance (B&G) staff have a pre-season meeting to discuss general snow operation procedures. If a large storm is forecast, an additional meeting may be held to discuss specific operations per storm event. The B&G staff adjust application rates based on the type of snowstorm and how heavy the snow is falling. Bulk salt is stored in shipping containers behind the Facilities Building (CW). Bags of magnesium chloride are located on palettes under a covered lean-to in between the CW and the Buildings and Grounds Maintenance Building (CBG). While storage can be classified as a point source, the *NOVA Good Housekeeping and Pollution Prevention Manual* along with staff training addresses these concerns with the implementation of BMPs specifically for Salt Storage and Operations.

4.0 NOVA'S MS4 PROGRAM

NOVA's MS4 Permit covers stormwater discharges from areas included within the census urbanized areas including its Annandale Campus within the TMDL watershed. NOVA's collective efforts, as described in the NOVA MS4 Program Plan, result in significant reduction of pollutants that may be discharged from its regulated MS4.



NOVA
Northern Virginia Community College

Alexandria, Annandale,
Loudoun & Woodbridge Campuses

Municipal Separate Storm Sewer System
Program Plan
For
General Permit No. VAR040095
During
Permit Year 2020 - 2021

From November 1, 2018 until October 31, 2023, in accordance with the VAR04 General Permit Northern Virginia Community College is authorized to discharge stormwater and authorized non-stormwater discharges described in 9VAC25-890-20 D from the small municipal separate storm sewer system into surface waters within the boundaries of the Commonwealth of Virginia consistent with 9VAC25-890-30.

October 1, 2020

4.1 Minimum Control Measures

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

4.1.1 MCM 1 Public Education and Outreach on Stormwater Impacts

NOVA's MS4 Program includes a Public Education and Outreach Program (PEOP) that incorporates educational information about TMDL pollutants of concern. The PEOP includes stormwater pollution prevention training that focuses on daily operations at NOVA's campuses.

4.1.2 MCM 2 Public Involvement and Participation

NOVA will post this Action Plan on their stormwater pollution prevention webpage at https://www.nvcc.edu/about/offices/sustainability/stormwater/index.html. Availability of this Action Plan will increase awareness of the TMDL with webpage visitors.

4.1.3 MCM 3 Illicit Discharge Detection and Elimination

NOVA's MS4 Program includes an Illicit Discharge Detection and Elimination (IDDE) Program with written procedures to detect, identify, and address non-stormwater discharges including illegal dumping to the small MS4 along with policies and procedures for when and how to use legal authorities. NOVA prohibits non-stormwater discharges into the storm sewer system through language provided within the Standards of Conduct for employees, the Student Handbook for students, and in the college's Pollution Prevention Policy. IDDE BMPs are described in the MCM 3 BMPs in the NOVA MS4 Program Plan. The IDDE Program is effective at addressing the pollutants of concern through staff training, prohibition of illicit discharges, and annual outfall screening.

4.1.4 MCM 4 Construction Site Stormwater Runoff Control

NOVA's MS4 Program includes a Construction Site Runoff Control Program that includes mechanisms to ensure compliance and enforcement on regulated construction sites with implementation of the DEQ-approved "*VCCS Standards and Specifications for Erosion and Sediment Control and Stormwater Management.*" The standards and specifications are consistent with the Virginia Erosion and Stormwater Management Laws and Regulations and includes:

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

Through inspections and enforcement, especially regarding stormwater pollution prevention plan inspections, potential for chloride discharges (i.e., deicing during winter construction or storage of onsite chemicals) is minimized. MCM 4 BMPs in the NOVA MS4 Program Plan describe construction site runoff control BMPs.

4.1.5 MCM 5 Post-Construction Stormwater Management

NOVA's MS4 Program includes a Post-Construction SWM Program that ensures water quality criteria in the Virginia Erosion and Stormwater Management Regulations have been achieved on new developments and developments on prior developed land. Included among these requirements are written policies and procedures in the VCCS Standards and Specifications for Erosion and Sediment Control and Stormwater Management to ensure that stormwater management facilities are designed and installed in accordance with appropriate law and regulations. Although the facilities are designed to achieve target phosphorus reductions, it is thought that water quality BMPs should provide some benefit for potential chloride removal. Post-construction, the Program includes schedules and written procedures to ensure long-term inspections and maintenance of stormwater management BMPs. MCM 5 BMPs in the NOVA MS4 Program Plan describes stormwater management BMPs.

4.1.6 MCM 6 Good Housekeeping

NOVA's MS4 Program includes a Good Housekeeping and Pollution Prevention Program that includes policies and procedures to ensure that daily operations minimize the exposure of pollutants to rainfall on campus grounds to the MEP. The program is supported with NOVA's Good Housekeeping and Pollution Prevention Manual, which now includes and now includes a dedicated Salt Management Standard Operating Procedure (SOP), and is supported by biennial training for applicable staff. MCM 6 BMPs in the NOVA MS4 Program Plan describe good housekeeping and pollution prevention BMPs.

5.0 IMPLEMENTATION OF THE STRATEGY TO REDUCE CHLORIDE

The SaMS toolkit will be used as a guideline to apply less salt, thereby reducing chloride within the MS4. In particular, the SaMS toolkit recommends enhanced winter operations strategies including the following:

1) Using weather reports and road surface conditions to determine the amount of deicing materials needed;
2) Integrating the pretreatment of impervious surface with anti-icing agents like magnesium chloride or other products with lower chloride content into winter maintenance programs;
3) Increasing snow removal rates prior to deicer application;
4) Upgrading equipment for spreading of deicers;
5) Educating vendors, staff and the public on the optimum time to apply deicers and the optimum rate of application;
6) Training staff in spreader calibration;
7) Improved storage of deicing material; and
8) Improved record keeping.

5.1 Good Housekeeping Training

Proper storage of salts used in deicing can eliminate potential introduction of chlorides into the environment. The Good Housekeeping and Pollution Prevention Manual is kept current as part of the MS4 requirements. B&G staff will be trained in BMPs concerning proper storage and operational handling of deicing salts. Additionally, NOVA plans to create new slides specific to the Salt Management SOP to incorporate in the biennial MS4 training.

5.2 Salt Management Working Group

NOVA developed a Salt Management Working Group to assist in the decision making and approval processes for implementing procedures to achieve the goals set for the 2018 – 2023 and in the 2023 – 2028 permit cycles. The group served as stakeholders to ensure public safety remains the priority while achieving chloride reduction strategies.

The Annandale Facility Salt Management Program Work Group consisted of NOVA's Chief Facilities Officer, Associate Director of Operations, Manager of Environmental Services, Annandale Campus Facility Manager, B&G staff, and a representative from the Parking Department. This group worked to discuss the existing winter operations procedures, determine feasibility of new strategies, and implement newly considered strategies. Discussions included the strategies outlined in SaMS before, during, and after the winter season, the success or infeasibility of newly implemented strategies, and changes for the future. Below are the SaMS strategies that NOVA considered employing:

- Equipment Calibration
- Integration of Liquids
- Reduce Bounce and Scatter of Salt
- Anti-ice Before Events
- Upgrades to Equipment
- Alternate Storage Options
- Refine Application Rates
- Immediate Manual Removal

As a result of Salt Management Working Group, NOVA evaluated several potential implementation strategies, but ultimately selected Upgrades to Equipment and Refining Application Rates. To move forward with these strategies, NOVA added one Hilltip IceStriker™ 2000 AM Spreader and the Geotab Telematics System to integrate in with their existing fleet of 17 salt spreaders and 16 vehicles. These upgrades will drive chloride reduction and support overall pollutant load reduction efforts within the upper Accotink Creek watershed and are scheduled to be in operation for the 2026 - 2027 season.

The Hilltip IceStriker™ 2000 AM Spreader features a corrosion-resistant polyethylene hopper and stainless-steel auger engineered for uniform material delivery. Its advanced control interface gives operators precise control over application rates, preventing over-application and material waste. The system also supports configurations for pre-wetting or liquid deicing applications, both of which keep material anchored to the pavement, directly reducing the bounce and scatter of salt.

To complement these physical upgrades, NOVA is expanding its reliance on digital fleet tracking and oversight. The Geotab platform captures core telematics such as vehicle positioning, speed, idling, milage, and operator diagnostics. NOVA is now moving forward to incorporate the Geotab winter operation capabilities. Once active, this feature will track plow routes, attachment engagement, and real-time application volumes for both solid and liquid treatments. Integrating these improvements into NOVA's existing infrastructure will enhance real-time decision-making during storm events and strengthen reporting to meet long-term goals.

5.2.1 Evaluate Resources & Implement Interim Strategies

NOVA has and will continue to evaluate resources required to achieve chloride reductions. This includes evaluating budgets, equipment, personnel, and record keeping software. In addition, NOVA tested equipment and alternative strategies to determine feasibility for incorporation into the Standard Operating Procedures. Progress of these evaluations and testing of interim strategies were reported to DEQ during the MS4 Annual Reporting submittal.

5.2.2 Salt Management Standard Operating Procedures

The Salt Management Program has been in operation for several years, and Salt Management Standard Operating Procedures have been included in the Good Housekeeping and Pollution Prevention Manual and include specific salt management strategies that will be implemented by NOVA effective November 2026. The Salt Management Standard Operating Procedures are used to satisfy the chloride reductions on the Annandale campus.

5.2.3 Salt Management Standard Operating Procedures Training

B&G staff who implement the snow operations will be trained on the strategies from the Salt Management Standard Operating Procedures that will be included in the MS4 training. B&G staff will be required to complete the training on a biennial basis. Training will include BMPs for proper storage and handling, approved materials for use, equipment calibration, etc.

5.2.4 Record Keeping

Salt usage data will be reviewed each year by the Annandale Facility Salt Management Program Work Group and maintained on file. Tracking salt usage information will be useful to determine the success of the program but also annual program costs and future financial decisions. The Annandale B&G Salt Usage Tracker spreadsheet has been created for NOVA to track salt usage, areas treated, and any BMPs utilized. Additionally, training will be tracked on the Training tab of the MS4 Tracking spreadsheet.

5.3 Evaluation of the Results Achieved by the 2018 – 2023 Action Plan

During the 2018 - 2023 MS4 Permit cycle, NOVA established a Salt Management Working Group and conducted meetings to discuss salt management strategies for implementation. NOVA also conducted staff training and reported annually summarizing progress in developing standard operation procedures. Based on an evaluation of progress provided in the annual reports for the 2018 - 2023 permit cycle, NOVA has met the 2018 – 2023 action plan goals to the maximum extent practicable.

5.4 Adaptive Management Strategies for the 2023 – 2028 Action Plan

In future permit years, NOVA will work towards implementing the action items in Table 1 which include implementing the Salt Management Standard Operating Procedures, two enhanced strategies, enhanced public education and outreach strategies and tracking usage. NOVA will report progress in the MS4 annual reporting process.

6.0 SCHEDULE

NOVA will implement the MS4 Program components described in Section 5 to reduce the potential of chloride discharge to surface waters to the MEP. Table 1 provides a schedule of anticipated actions recommended or planned during the implementation of this Action Plan.

Table 1. Schedule of Anticipated Actions for Implementation of Chloride Reduction

Action Items
• Implement anti-icing/deicing agent education and outreach strategies to the public once annually.
• Conduct annual B&G staff training for Snow Operations and Salt Management and track the training on the MS4 Tracking spreadsheet Training tab.
• Implement the Annandale B&G Contractor Snow Operations Log. B&G staff inputs the data in the Annandale B&G Salt Usage Tracker spreadsheet.
• Implement two enhanced strategies by using Hilltip IceStriker 2000 spreaders and the Geotab system.
• Implement Salt Management Standard Operationl Procedures in the Good Housekeeping Pollution Prevention Manual and Master Snow Book.
• Track salt usage per the Annandale B&G Salt Usage Tracker spreadsheet and MS4 Tracking Spreadsheet on the Chloride TMDL tab.
• Analyze data collected over successive seasons and adjust as needed.