



**Site and Infrastructure
Development**
Sterrett Center
230 Sterrett Drive
Blacksburg, Virginia 24061

Virginia Tech MS4 Annual Report

Virginia Tech NPDES Phase II: Small MS4
VPDES Permit No. VAR 040049
Reporting Period: July 1st 2022 – June 30th 2023

**CERTIFICATION STATEMENT AND SIGNATORY REQUIREMENTS
FOR MS4 PERMIT APPLICATIONS AND REPORTS**

As required by 9VAC25-870-370 B, all reports required by state permits, and other information requested by the State Water Control Board shall be signed by a responsible official or by a duly authorized representative of that person. A responsible official is:

1. *For a corporation: a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for state permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;*
2. *For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or*
3. *For a municipality, state, federal, or other public agency: either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.*

A person is a duly authorized representative only if:

1. *The authorization is made in writing by a person described above;*
2. *The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and*
3. *The written authorization is submitted to the department.*

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.

DocuSigned by:
 Dr. Christopher H. Kiwus *Christopher H. Kiwus* Date 10/23/2023
C708F8A440EE40E
 Vice President for Campus Planning, Infrastructure and Facilities
 Permit Number: _VAR040049_ MS4 Name: _____ Virginia Tech_____

Table of Contents

Table of Contents..... 3

Program Plan..... 4

MCM 1..... 4

MCM 2..... 5

MCM 3..... 9

MCM 4..... 10

MCM 5..... 133

MCM 6..... 133

TMDL..... 188

Appendix A..... 199

Program Plan

Changes to the program plan during the reporting year included:

- Updated organizational chart to add Wendy Halsey Assistant Vice President for Facilities Operations.

MCM 1

High-priority stormwater issues addressed by the permittee included:

1. Sediment
2. Animal Waste
3. Trash

Strategies used to communicate each high-priority stormwater issue included:

1. Sediment
 - a. Speaking engagements: (2/22/2023) Chuck Dietz taught 26 Virginia Tech students in a Hydraulic Structures class. His presentation covered a description of the duties and responsibilities of our department and included a field trip to an on-campus stormwater facility to discuss maintenance and how the facility operates to protect water quality and remove pollutants like sediment.
 - b. Alternative Materials: Educational magnets that highlighted the importance of water quality and harmful pollutants like sediment, animal waste and trash were distributed to stream clean-up volunteers; approximately 65 magnets and stickers were given out.
 - c. Traditional Written Materials: An announcement across the Canvas educational platform was posted for over 37,000 students and faculty about the importance of protecting waterways.
2. Animal Waste
 - a. Signage: Permanent signage is placed on 32 different pet waste stations scattered around campus. These signs discuss pet waste's ability to transmit disease and pollute stormwater, and encourage the Virginia Tech campus to pick up after their pets.
 - b. Alternative Materials: Educational magnets that highlighted the importance of water quality and harmful pollutants like sediment, animal waste and trash were

distributed to stream clean-up volunteers, approximately 65 magnets and stickers were given out.

- c. Traditional Written Materials: An announcement across the Canvas educational platform was posted for over 37,000 students and faculty about the importance of protecting waterways.

3. Trash

- a. Speaking Engagement: VTSID staff gave presentations to Virginia Tech students throughout the year highlighting the importance of litter pick up and ways to get involved in protecting water quality on campus.
- b. Alternative Materials: Educational magnets that highlighted the importance of water quality and harmful pollutants like sediment, animal waste and trash were distributed to stream clean-up volunteers, approximately 65 magnets and stickers were given out.
- c. Traditional Written Materials: An announcement across the Canvas educational platform was posted for over 37,000 students and faculty about the importance of protecting waterways.

Evaluation of MCM 1: The number of individuals reached increased drastically from the previous year due to the Canvas announcement put out by VTSID and this should result in increased water quality.

MCM 2

Public Input on the MS4 program including stormwater complaints and a brief explanation of how the permittee responded can be seen in the table below.

Summary of Comments and Complaints			
Date Received	Who	Date Responded	How VTSID Responded
11/2022	Sally Entrekin	Multiple dates of communication	Dr. Entrekin wrote a letter for President Sands requesting that Stroubles creek be better protected and monitored more closely after discovering dead fish in the creek. VT SID hosted a meeting with Dr. Entrekin and other faculty to brainstorm ideas that could satisfy the requests for increased monitoring and protection of Stroubles Creek and

			VT SID began the early stages of implementing a Stream Keepers program to address the concerns.
12/7/2022	Natalie Larsson (VT Student)	12/7/22	Reported concern of mud tracking from upper quad construction projects. ESC Inspector Mark Witt responded with "Thanks for the heads up. I inspected the site this afternoon and there was some tracking but they have a CE and are minimizing transport of sediment per MS-17, so it's not a violation. I'll swing by tomorrow morning to see if they clean up at eod per ms-17." Follow up inspection indicated that all of the tracking was cleaned up.
12/16/22	Mike Vellines (VT Staff)	12/16/22	Reported concern of construction vehicles parking in grass, creating erosion concerns behind Rector Hall
1/26/23	Curt Porterfiled (VT Faculty)	1/27/23	Informed us of potential illicit discharges taking place at Cowgill Hall. Students had been reportedly dumping waste materials from the Art and Architecture Department into drains and the storm system. VTSID made a site visit on 1/27 and didn't discover anything outside of the building that should be finding its way into the storm system. It was concluded that the report came from a house keeper dealing with clogged sanitary sewer drains inside the building.
6/22/23	Dr. Gray (VT Faculty)	6/22/23	Requested information on where stormwater ponds are located around campus. Katelyn Muldoon directed him to the online GIS Map with stormwater BMPs marked
6/26/23	Elizabeth Renner (VT Student)	6/26/23	Requested information and photographs for Graduate research related to buried creeks in Blacksburg and Roanoke. SID responded and gave several other points of contact for Stroubles Creek information.

The permittee's MS4 program plan can be accessed at <https://www.facilities.vt.edu/university-building-official/stormwater-management.html>

The permittee is currently on Instagram @vtstormwater and over the course of the year 181 followers were accumulated and 141 accounts were reached on average across 15 posts.

Public Involvement activities implemented include:

1. Restoration:

- (8/28/2022) ReNew the New a Clean Up event that took place at several locations along the New River included Virginia Tech Faculty and Staff and Students as some of the volunteers. The group was able to remove trash, tires and debris from the river.
 - i. Metric: Roughly 235 volunteers participated and around 72 of those were affiliated with Virginia Tech
- (2/18/2023) Virginia Tech Students from Alpha Phi Omega participated in a stream clean-up along Stroubles Creek and removed 2 bags of trash.
 - i. Metric: 8 Virginia Tech students volunteered
- (2/24/2023) Virginia Tech students from Lambda Iota Mu participated in a stream clean-up by the Stream Lab on Stroubles Creek and picked up 3 bags of trash.
 - i. Metric: 5 Virginia Tech students volunteered
- (3/20/2023) Virginia Tech students from the Campus Clean Up Club participated in a clean-up around Alumni Pond and removed 4 bags of trash.
 - i. Metric: 11 Virginia Tech students volunteered
- (3/23/2023) Virginia Tech students from Omega Phi Alpha participated in a clean-up around the Duck Pond to remove 2 bags of trash.
 - i. Metric: 7 Virginia tech Students Volunteered
- (2/25/2023) During the Big Plant Event VTSID partnered with The Environmental Coalition and the local Save Stroubles group to plant around 10,000 live stake trees on tributaries of Stroubles Creek. Volunteers came out to work to plant the stakes and learn about riparian buffers and stream restoration.
 - i. Metric: Around 558 volunteers participated in this event.
- (6/29/2023) Virginia 4-H Students participated in a stream clean-up around the Duck Pond and removed 3 bags of trash.
 - i. Metric: 20 Virginia Tech Students volunteered

Evaluation of Restoration as public involvement activities: Last reporting year over 500 volunteers participated in restoration events while this reporting year over 600 volunteers participated. The increase in number of volunteers in riparian areas is viewed as a benefit for water quality, and the increase in events and volunteers results in more individuals being educated about stormwater awareness and more trash being removed.

2. Educational Events:

- (8/5/21 & 8/6/22) Local MS4s partnered to run an educational booth at the local festival Steppin Out.
 - i. Metric: Attendance estimate by the Town of Blacksburg is 30,000 to 40,000 and roughly 220 freebies were given out to promote water quality and prevent stormwater pollution.
- (9/27/22, 9/30/22, 10/6/2022, 10/12/2022, 10/13/2022, 4/21/23 & 4/26/23)
 Katelyn Muldoon and Natalie Larsson presented at field trips hosted by the New River Land Trust. Students were given the opportunity to create their own stormwater filter and learn about pollution prevention.
 - i. Metric: 290 4th graders and 112 5th graders
- (2/22/23) Chuck Dietz taught Virginia Tech students in a Hydraulic Structures class. His presentation covered a description of the duties and responsibilities of our department and included a field trip to an on-campus stormwater facility to discuss maintenance and how the facility operates to protect water quality and remove pollutants like sediment.
 - i. Metric: 26 Virginia Tech Students were educated
- (4/26/2023) Katelyn Muldoon taught a Lecture for Dr. Krometis' BSE Class about the department's role at the university and the importance of stormwater regulations and protection of water quality.
 - i. Metric: 9 Virginia Tech Students were educated
- (April 2023) Local MS4s partnered to run an educational field trip for Montgomery County 7th graders about pollution prevention and protecting water quality. This event also utilized Virginia Tech students as volunteers to run the event.
 - i. Metric: 777 7th graders participated and 46 teachers and chaperones attended as well.
- (Fall semester 2022 & Summer Semester 2023) Chuck Dietz and Mark Witt mentored Freshmen Students in a Foundations of Engineering Class. These students learned about Virginia Tech's stormwater program and were part of an exercise that looked at the installation, design and maintenance of a proposed BMP.
 - i. Metric: 33 Virginia Tech Students participated in this program.
- (5/23/2023) Katelyn Muldoon participated in the Tech Tracks to educate rising high school seniors about career options in the stormwater field and she included general stormwater awareness.
 - i. Metric: 10 high school students, 2 high school teachers and 1 Virginia Tech Faculty and Staff member were educated

Evaluation of Educational Events as public involvement activities: An improvement in water quality can be expected due to the heightened stormwater pollution prevention awareness from the information delivered to over 1,500 individuals this reporting year, in comparison to 1,233 during the last reporting year through educational events.

3. Pollution Prevention:

- Unmarked storm drains that had lost their markers over the years were marked by the department's interns across campus with educational messages about protecting water quality.
 - i. Metric: Roughly 18 storm drain markers were put out during the reporting year
- 38 pet waste stations are scattered around campus for the public's use.
 - i. Metric: During the reporting year roughly 17,000 bags were used to pick up pet waste on campus and roughly 5,200 bags were used by the vet school program.

Evaluation of Pollution Prevention as public involvement activities: 19,000 pet waste bags were used in the previous reporting year and increase to 22,200 pet waste bags were put out during this reporting year. 72 storm drain markers were put out in the previous year and 18 were put out this reporting year. A decrease in storm drains being marked can be explained by lack of new construction and new storm drains since campus is a finite space.

VTSID collaborated with the following MS4 programs for public involvement opportunities during the reporting year.

1. Town of Blacksburg
2. Town of Christiansburg
3. Montgomery County

MCM 3

The up to date MS4 map is available on the permittee's website and at

<https://www.arcgis.com/home/webmap/viewer.html?webmap=d5896391f66f4ba7bf49e59469b66a30&extent=-80.4581,37.2127,-80.3947,37.2462>

In addition to the MS4 map requirements the permittee also added riparian buffers to the GIS map. The MS4 and information have been updated to reflect any changes that occurred before June 30th 2023.

The total number of outfalls screened during the reporting period as part of the dry weather screening program was 51. Outfall V21-1 and V20-1 required work order to be cleaned out of sediment and debris and that work was completed by Mark Kingery on 6/26/2023.

Inspection reports can be provided upon request.

A list of illicit discharges to the MS4 can be seen in the below table.

Summary of Illicit Discharges					
Observed Date	Date Closed	Illicit Discharge Description	Location	Who Discovered	Resolved/Follow-Up Activities
10/25/2022	10/27/2022	Report of approximately 10 dead fish and potential plume	Stroubles Creek Leading into Duck Pond	Dr. Entrekin (VT professor)	VTSID staff went on site when the call was received and water was clear but a passerby saw a plume earlier in the day. All upstream construction sites were inspected and no specific source was discovered. VT EHS was involved in this investigation as well and reported formally to DEQ.
11/15/2022	11/17/2022	Oil sheen on pavement and leading to storm drains	Drillfield Drive and Alumni Mall	Natalie Larsson (VT Student and SID Intern)	VTSID staff tracked the oil sheen and determined that it likely came from a moving vehicle that covered a large area and even left campus. Follow up inspections discovered that rain on 11/15 washed the oil away.
6/29/2023	6/29/2023	Minimal Oil sheen and cloudy water	Stroubles creek Leading in the Duck Pond	Maggie Patterson (SID Intern)	VTSID had been notified of a waterline break in the Town of Blacksburg early that morning and determined this to be the source. Waterways were clear by mid afternoon.

Evaluation of MCM 3: Three illicit discharges occurred within the reporting year which was the same number of illicit discharges in the previous year, therefore there wasn't an increase in illicit discharges during this reporting year in comparison to last year.

MCM 4

The Virginia Tech Annual Standards and Specifications for Erosion and Sediment Control (ESC) and Stormwater Management (SWM) are integral components of Virginia Tech's design, construction, and maintenance of the University's facilities and campuses. The Virginia Tech Annual Standards and Specifications for ESC and SWM are administered by Virginia Tech Site & Infrastructure Development and apply to all design, construction, and maintenance activities on property owned by Virginia Tech, either by its internal workforce or contracted to external entities. The Virginia Tech Annual Standards and Specifications for ESC and SWM are submitted to the

Virginia Department of Environmental Quality (DEQ) for review and approval on an annual basis. Virginia Tech shall ensure that project-specific plans are developed and implemented in accordance with the Virginia Tech Annual Standards and Specifications for ESC and SWM.

The total number of inspections conducted on active construction sites within the reporting year are listed in the below table.

ESC CONSTRUCTION INSPECTIONS		
Project Name	Total Inspections	Final Inspection Date
Tom's Creek Landfill	27	Active
Athletic Soil Stockpile	27	Active
Airport Runway (Phase 2)	1	7/13/22
Detrick First Floor and Plaza Renovation	17	Active
Hitt Hall and New Dining Facility	22	Active
Chiller (Phase 2)	3	Active
CLMS	24	Active
Contractor Laydown	22	Active
D&DS	19	Active
LPRF Beef Nutrition	27	Active
LPRF Equine Barn	27	Active

LPRF Swine	27	Active
LPRF Equipment Storage	24	Active
LPRF Turkey Grow	25	Active
Lower Rec Turf Fields	2	Active
MMTF	24	Active
NUQRH	20	Active
Outfield Pitching Lab	19	Active
Student Wellness Improvements	2	
Undergraduate Science Lab Building	24	Active
Total Inspections	383	

Enforcement actions:

No enforcement actions were taken during the reporting year.

All land disturbing projects that occurred during the reporting year were conducted in accordance with the current department approved AS&S.

Evaluation of MCM 4: Last reporting year 622 inspections occurred and this reporting year less inspections were completed due to less active projects on campus. The fact that no enforcement actions were needed during the reporting year reflects that that the ESC program is working effectively considering that the previous year required a notice to comply.

MCM 5

153 total inspections were conducted during the reporting year for stormwater management facilities owned and operated by Virginia Tech. Detailed inspection reports can be provided upon request. Attached in Appendix A is the spreadsheet of all stormwater management facilities.

The BMP Warehouse was updated on Tuesday June 20th, there were no new BMPs added in the reporting year but the most recent inspection for each BMP was updated in the system. DEQ Approval can be provided upon request.

Three different Bioretention facilities were rehabbed during the reporting year to repair erosion issues and help cut back on maintenance. From Appendix A those 3 BMPs are number 41, 66 and 67. Bioretention 66 and 67 were regraded so that incoming slopes weren't as steep and larger stone was added around the BMPs perimeter to slow down water that was leading to erosion. Plants that were dying were replaced and some of the areas of mulch were replaced with sod. Bioretention 41 was converted from a mulched surface to a sod surface and dead plants were removed.

Evaluation of MCM 5: 217 inspections were conducted in the previous reporting year and 153 were conducted this reporting year, the decrease can be explained by a maternity leave taken by Katelyn Muldoon from 7/11/2023 to 10/25/2023. All BMPs remained in compliance as they were expected at least once within the reporting year. The rehabilitation and repair projects that took place on the 3 bioretention facilities will aid in increased water quality and performance.

MCM 6

Updated dates of all approved Nutrient Management Plans can be found in the table below:

Nutrient Management Plans						
Department (Location)	Area (Acres)	Issue Date	Expiration Date	Category	Contact Name	Contact Information
CALS Livestock Plan for Campus and Montgomery County Lands	1545.5	4/1/2021	9/1/2023	Agriculture	Dr. Allen Grant	540-231-4152 kentland@vt.edu

Virginia Tech Athletic Department	31.3	7/1/2022	7/1/2025	Turf & Landscape	Casey Underwood Emerson Pulliam	540-231-6067 caunderw@vt.edu 540-231-2840 emerson@vt.edu
Golf Course	18.5	1/1/2022	1/1/2025	Turf & Landscape	Jason Ratcliff	540-231-5619 jratclif@vt.edu
Virginia Tech Campus Grounds Blacksburg, VA	174	2/1/2022	2/1/2025	Turf & Landscape	Robert Perfater	540-200-7163 rperfatr@vt.edu
Hahn Horticulture Garden Blacksburg, VA	3	8/1/2021	8/1/2024	Turf & Landscape	Dr. Holly Scoggins Dr. Shawn Askew	540-231-5783 hollysco@vt.edu 540-231-5807 saskew@vt.edu
Virginia Tech Recreational Sports Blacksburg, VA	27	2/1/2022	2/1/2025	Turf & Landscape	Kyle LeDuc	540-231-3045 kleduc@vt.edu
Virginia Tech Dairy and Animal and Poultry Sciences Blacksburg, VA	1429	4/1/2021	9/1/2023	Agriculture	Dr. Allen Grant	540-231-4152 kentland@vt.edu

Turfgrass Research Center Blacksburg, VA	20	5/1/2022	5/1/2025	Turf & Landscape	Dr. Michael Evans Jon Dickerson	540-231-9775 mrevans1@vt.edu 540-231-6113 dickersj@vt.edu
Northern Piedmont AREC Orange County,	268	9/1/2021	9/2/2024	Turf & Landscape	Steve Gulick	540-672-2660 sgulick@vt.edu
Urban Horticulture Center Blacksburg, VA	15	7/19/2022	7/19/2025	Turf & Landscape	Dr. Michael Evans John James	540-231-9775 mrevans1@vt.edu 540-231-2683 jojames@vt.edu
Kentland Managed Lands Blacksburg, VA	85.6	4/8/2022	4/8/2025	Turf & Landscape	Patrick Hilt	540-231-9405 philt@vt.edu
Glade Road Research Center Blacksburg, VA	6.3	9/25/2023	9/25/2026	Turf & Landscape	Patrick Hilt	540-231-9405 philt@vt.edu
Alson H. Smith, Jr AREC Winchester, VA	52.4	12/1/2021	12/1/2024	Turf & Landscape	Dr. Tony Wolf	540-869-2560 vitis@vt.edu
Eastern Shore AREC Painter, VA	117	3/16/2019	3/15/2025	Turf & Landscape	Steven Rideout	757-414-0724 srideout@vt.edu

Eastern Virginia AREC Warsaw, VA	152	9/3/2021	9/3/2024	Turf & Landscape	Robert Pitman	804-333-3485 rpitman@vt.edu
Hampton Roads AREC Virginia Beach, VA	40.25	7/1/2021	7/1/2024	Turf & Landscape	Dr. Pete Shultz	757-363-3900 jderr@vt.edu
Middleburg AREC Middleburg, VA	268.6	7/1/2021	7/2/2024	Turf & Landscape	Ryan Brooks	540-687-3521 tgolight@vt.edu
Reynolds Homestead AREC Critz, VA	2.73	12/1/2021	12/1/2024	Turf & Landscape	Dr. Kyle Peer	276-694-4135 krpeer@vt.edu
Shenandoah Valley AREC Raphine, VA	616.1	2/24/2022	12/31/2024	Agriculture	Lee Wright	540-377-2255 lrite@vt.edu
Southern Piedmont AREC Blackstone, VA	340	7/11/2022	7/11/2025	Agriculture	Dr. Carl Wilkinson	434-292-5331 wilki@vt.edu
Southwest AREC Glade Spring VA	106.4	7/26/2022	7/26/2025	Agriculture	Lee Wright	276-944-2203 lrite@vt.edu
Tidewater AREC Suffolk VA	245	1/1/2021	12/31/2023	Agriculture	David Langston	757-657-6450 whframe@vt.edu

The training events conducted within the reporting year can be found in the below table:

Stormwater Training			
Training Event Title	Objective	Date of Event	Number of Individuals Trained
Power House SWPPP Training	Train employees about the SWPPP and describe the employee's responsibility to prevent stormwater pollution.	December, 2022	28
Quarry SWPPP Training	Train employees about the SWPPP and describe the employee's responsibility to prevent stormwater pollution.	April, 2023	15
Stormwater Training for Housekeeping Services Staff	Educate Housekeeping Staff about stormwater runoff, as well as how to reduce and prevent stormwater pollution.	February 2023	100
Virginia Tech Electrical Services	Educating staff about stormwater runoff and ways to prevent pollution and how to report an illicit discharge.	2/7/23	17
Grounds and Facilities SWPPP Training	Train employees about the SWPPP and describe the employee's responsibility to prevent stormwater pollution.	2/7/23 & 4/14/23	10
Stormwater Training for Dining Hall Employees	Educate the dining hall staff about stormwater runoff, as well as how to reduce and prevent stormwater pollution.	All year long	1,582

No operation procedures were developed or modified during the reporting year.

No new SWPPPs were developed and there were no SWPPP modifications during the reporting period.

Evaluation of MCM 6: Improved water quality and pollution prevention can be expected due to the addition of a group of employees being trained at Virginia Tech Electrical Services.

TMDL

Status report on the implementation:

- Training was delivered to those operating Street Sweepers and cleaning out storm sewer inlets on April 14th 2023 and will occur again in the next reporting year.
- The Lane Mile Approach for tracking was continued.
- During the reporting year Virginia Tech has also been working with Wetland Studies and Solutions, Inc. which has included communication with DEQ staff (Jeff Selengut) to shift gears away from street sweeping and to take credit for sediment removal through dredging projects instead. Assessments show that the street sweeper would have to be ran an unrealistic amount to hit the WLA due to the effectiveness of the sweeper and the low mileage of roadways on campus. Based on this fact Table 3 wasn't necessarily adhered to during this reporting year and no changes were made to the training materials. Virginia Tech did develop the attached street sweeping spreadsheet to assist with assessing the numerical progress towards meeting the Stroubles Creek Sediment TMDL. Within the spreadsheet is a variable labeled "impervious surface loading rate" where the user is required to provide an input to calculate the total suspended solids removed. Currently, it is unclear of the correct loading rate to utilize for quantifying street sweeping reductions. The correct loading rate issue was previously discussed with personnel at the DEQ Blue Ridge Regional Office and DEQ Central Office who recognized the need for a TSS loading rate and additional consultation with DEQ TMDL modelers. Virginia Tech would appreciate and welcome any information on the correct TSS loading rate to utilize with the "qualifying street lanes method."

Actions conducted to implement local TMDL action plan:

- Street Sweeping: Approximately 411 miles were logged by the Street Sweeper during the reporting year. Street sweeper logs can be provided upon request.



**Site and Infrastructure
Development**
Sterrett Center
230 Sterrett Drive
Blacksburg, Virginia 24061

Appendix A

BMP	BMP Name	BMP Status	BMP Type	Lat	Long	Perv. DrainArea	Imperv. Drain Area	Total Acres	Date Added	HUC	Imp-aired Water	Ownership	Maint Agreement	Date of Last Insp.
1	Lane Stadium - Extended Detention Basin	Existing	Extended Detention	37.2190N	80.4169W	1.06	0.05	1.11	06/2010	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
2	Chicken Hill Underground Detention Basin	Existing	Underground Stormwater Detention	37.2173N	80.4183W	3.35	7.15	10.5	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023
4	Vet Med - Retention Pond	Existing	Retention Pond	37.2164N	80.4259W	312.2	119.5	431.7	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/2/2023
5	Vet Med - Detention Pond	Existing	Detention Pond	37.2158N	80.4309W	457.5	148.3	605.8	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/2/2023
7	Smithfield Lot Bioretention Pretreatment	Existing	Bioretention Pretreatment	37.2229N	80.4295W	0.36	1.03	1.39	06/2010	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
8	Smithfield Lot Bioretention	Existing	Bioretention	37.2230N	80.4296W	0.49	1.04	1.53	07/2007	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
9	Smithfield Lot Extended Detention1	Existing	Extended Detention	37.2233N	80.4295W	0.09	0.16	0.25	07/2007	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
10	Smithfield Lot Extended Detention2	Existing	Extended Detention	37.2238N	80.4292W	0.22	0.27	0.49	07/2007	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
11	Duck Pond Overflow Lot - Extended Detention	Existing	Extended Detention	37.2230N	80.4307W	0.43	1.83	2.26	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/1/2023

13	Oak Lane (SPH) - Extended Detention Basin	Existing	Extended Detention	37.2248N	80.4381W	6.89	4.31	11.2	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
14	Alumni Pond	Existing	Enhanced Extended Detention	37.2282N	80.4281W	15.8	28	43.78	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
15	Grove Lane Extended Detention	Existing	Extended Detention	37.2230N	80.4278W	33.5	28.2	61.7	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
16	Life Sciences - Green Roof Extension 1	Existing	Green Roof	37.2211N	80.4245W	0	0.5	0.5	06/2010	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
17	Life Sciences - Green Roof Extension 2	Existing	Green Roof	37.2208N	80.4246W	0	0.2	0.2	06/2010	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
18	Payne Detention Basin	Existing	Underground Detention	37.2253N	80.4212W	3.16	2.13	5.29	06/2005	NE59	Stroubles Creek	Operator-owned	N	1/2023
19	Henderson Hall Bioretention Filter	Existing	Bioretention	37.2306N	80.4161W	2.32	1.26	3.58	07/2011	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
20	New Hall West 1	Existing	Bioretention	37.2221N	80.4228W	0	0.3	0.3	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
21	New Hall West 2	Existing	Bioretention	37.2224N	80.4222W	0	0.4	0.4	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
22	Horse Exhibit - Livestock Arena	Existing	Extended Detention	37.2203N	80.4405W	4.93	0.87	5.8	06/2005	NE59	Stroubles Creek	Operator-owned	N	1/24/2023
23	VTES - Extended Detention	Existing	Extended Detention	37.2113N	80.4128W	28.32	8.58	36.9	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
24	Library Storage - Extended Detention	Existing	Extended Detention	37.2128N	80.4113W	10.97	2.73	13.7	06/2005	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
27	ICTAS II- Bioretention	Existing	Bioretention	37.2218N	80.4261W	0.05	0.28	0.33	07/2011	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
28	HABBI Bioretention	Proposed	Bioretention	37.2201N	80.4274W	0.7	0.69	1.39	7/2015	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
29	SWCP Extended Detention	Existing	extended detention	37.2213N	80.4306W	3.25	1.31	4.56	11/2013	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
30	IDRF Retention Pond	Existing	Retention Basin	37.2169N	80.4295W	6.61	8.17	14.78	05/2012	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
34	Lower Chicken Hill WQU	Existing	Underground WQU	37.2171N	80.4184W	3.35	7.15	10.5	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023

35	New Hall West 3	Existing	Bioretention	37.2225N	80.4224W	0	0.3	0.3	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
36	New Hall West 4	Existing	Bioretention	37.2220N	80.4227W	0	0.3	0.3	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
37	McComas Filterra Unit	Existing	MTD Filterra Unit	37.2197N	80.4230W	0.3	0.4	0.7	07/2011	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
38	Football Locker Room WQU	Existing	Underground WQU	37.2226N	80.4178W	0.7	2.6	3.3	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023
39	ICTAS II - Rain Garden	Existing	Bioretention	37.2221N	80.4258W	0	0.15	0.15	07/2011	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
41	MMF Bioretention Filter	Existing	Bioretention	37.2148N	80.4172W	10.25	1.37	11.62	09/2011	NE59	Stroubles Creek	Operator-Owned	N	6/6/2023
42	West End Bioretention Filter	Existing	Bioretention	37.2236N	80.4221W	0.1	0.19	0.29	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
43	West End Filterra	Existing	MTD Filterra Unit	37.2239N	80.4221W	0.06	0.59	0.65	01/2012	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
44	Roller Hockey Rink WQU	Existing	MTD Stormceptor Underground WQU	37.2231N	80.4172W	2.6	4.2	6.8	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023
45	Visitor's Center - Bioretention Filter 1	Existing	Bioretention	37.2306N	80.4351W	0.9	0.47	1.37	07/2012	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
46	Visitor's Center - Bioretention Filter 2	Existing	Bioretention	37.2310N	80.4345W	0.34	0.14	0.48	07/2012	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
47	Visitor's Center - Bioretention Filter 3	Existing	Bioretention	37.2301N	80.4348W	0.47	0.16	0.63	07/2012	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
48	Visitor's Center - Bioretention Filter 5	Existing	Bioretention	37.2301N	80.4332W	1.53	0	1.53	07/2012	NE59	Stroubles Creek	Operator-owned	N	6/1/2023
49	ASA - Underground Storage Tank 1	Existing	MTD Underground Detention Center	37.2315N	80.4229W	0.11	1.15	1.26	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023
50	ASA - Underground WQU 1	Existing	MTD Underground WQU	37.2315N	80.4229W	0.11	1.15	1.26	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023
51	ASA - Underground Storage Tank 2	Existing	MTD Underground Detention Center	37.2312N	80.4231W	0.06	0.86	0.92	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023
52	ASA - Underground WQU 2	Existing	MTD Underground WQU	37.2312N	80.4232W	0.06	0.86	0.92	01/2012	NE59	Stroubles Creek	Operator-owned	N	1/2023

53	ASA - Biofilter	Existing	MTD WQU - Contech Urbangreen Biofilter	37.2311N	80.4237W	0.1	0.18	0.28	01/2012	NE59	Stroubles Creek	Operator- owned	N	1/2023
54	SPE Filterra Unit 1	Existing	MTD Filtterra Unit	37.2261N	80.4371W	0.11	0.42	0.53	08/2013	NE59	Stroubles Creek	Operator- owned	N	6/1/2023
55	SPE Filterra Unit 2	Existing	MTD Filtterra Unit	37.2254N	80.4367W	0.15	0.52	0.67	08/2013	NE59	Stroubles Creek	Operator- owned	N	6/1/2023
56	SPE Underground Detention Piping	Existing	Underground Detention	37.2252N	80.4353W	0.51	0.35	0.86	08/2013	NE59	Stroubles Creek	Operator- owned	N	1/2023
57	VMIA - Detention Swale	Existing	Detention Swale	37.2175N	80.4266W	0.09	0.25	0.34	11/2012	NE59	Stroubles Creek	Operator- owned	N	6/6/2023
58	VMIA - Filterra Unit	Existing	MTD Filtterra Unit	37.2180N	80.4266W	0.01	0.23	0.24	11/2012	NE59	Stroubles Creek	Operator- owned	N	6/6/2023
59	Dairy Barn Extended Detention	Existing	Extended Detention	37.2005N	80.5775W	0	8.49	34.91	7/2016	NE60	Stroubles Creek	Operator- owned	N	10/25/2022
60	CFTA Water Quality Unit 1	Existing	MTD Stormceptor Underground WQU	37.2310N	80.4173W	2.9	4.43	7.33	07/2013	NE59	Stroubles Creek	Operator- owned	N	1/2023
61	CFTA Water Quality Unit 2	Existing	MTD Stormceptor Underground WQU	37.2316 N	80.4169W	1.94	1.82	3.76	07/2013	NE59	Stroubles Creek	Operator- owned	N	1/2023
62	CFTA Underground Detention	Existing	MTD Underground Detention	37.2317N	80.4170W	1.94	1.82	3.76	07/2013	NE59	Stroubles Creek	Operator- owned	N	1/2023
64	Oil/Water Separator at Perry Street Parking Garage	Existing	MTD Underground WQU Hydrodynamic Separator	37.2310N	80.4257W	0	-	-	05/2011	NE59	Stroubles Creek	Operator- owned	N	1/2023
65	VT Airport Extended Detention Basin	Existing	Extended Detention	37.2055N	80.4114W	5.69	2.44	8.13	06/2005	NE60	Stroubles Creek	Privately- owned	Y	11/22/2022
66	Upper Quad Bioretention 1	Existing	Bioretention	37.2304N	80.4190W	0	0.3	0.3	02/2018	NE59	Stroubles Creek	Operator- owned	N	5/31/2023
67	Upper Quad Bioretention 2	Existing	Bioretention	37.2302N	80.4193W	0	0.4	0.4	02/2018	NE60	Stroubles Creek	Operator- owned	N	5/31/2023
68	Upper Quad Underground Detention	Existing	MTD Underground Detention	37.2306N	80.4194W	0	0.9	0.9	02/2018	NE61	Stroubles Creek	Operator- owned	N	1/2023

71	Drillfield Road Improvements Filtterra Unit 1	Existing	MTD Filtterra Unit	37.2294N	80.4213W	0.06	0.24	0.3	4/2016	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
72	Drillfield Road Improvements Filtterra Unit 2	Existing	MTD Filtterra Unit	37.2279N	80.4198W	0.22	0.19	0.41	4/2016	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
73	IATF Filtterra Unit 1	Existing	MTD Filtterra Unit	37.2212N	80.4173W	0	0.24	0.24	9/2015	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
74	IATF Filtterra Unit 2	Existing	MTD Filtterra Unit	37.2212N	80.4172W	0	0.19	0.19	9/2015	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
75	IATF Filtterra Unit 3	Existing	MTD Filtterra Unit	37.2181N	80.4167W	0	0.19	0.19	9/2015	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
76	IATF Filtterra Unit 4	Existing	MTD Filtterra Unit	37.2219N	80.4169W	0	0.24	0.24	9/2015	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
77	IATF Filtterra Unit 5	Existing	MTD Filtterra Unit	37.2221N	80.4171W	0	0.24	0.24	9/2015	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
78	IATF Filtterra Unit 6	Existing	MTD Filtterra Unit	37.2223N	80.4173W	0	0.24	0.24	9/2015	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
79	IATF Filtterra Unit 7	Existing	MTD Filtterra Unit	37.2224N	80.4175W	0	0.19	0.19	09/2015	NE59	Stroubles Creek	Operator-owned	N	5/31/2023
80	IATF Underground Detention	Existing	MTD Underground Detention	37.2213N	80.4174W	0	1.29	1.29	09/2015	NE59	Stroubles Creek	Operator-owned	N	1/2023
82	MARCHING VIRGINIANS Extended Detention	Existing	Extended Detention	37.1257N	80.2459W	12.79	2.72	15.51	07/2016	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
83	MARCHING VIRGINIANS Extended Detention	Existing	Enhanced Extended Detention	37.1253N	80.2451W	32.16	6.23	38.39	07/2016	NE59	Stroubles Creek	Operator-owned	N	6/6/2023
84	BETR Underground Detention	Existing	Underground Detention	37.2184N	80.4411W	1.71	0.38	2.09	01/2021	NE59	Stroubles Creek	Operator-owned	N	1/2023
90	Smoot Drive Remote Parking Underground Detention Northwest	Existing	Underground Detention	37.210N	80.419W	0.21	0.57	0.78	07/2019	NE59	Stroubles Creek	Operator-owned	N	1/2023
91	Smoot Drive Remote Parking Underground Detention Southwest	Existing	Underground Detention	37.209N	80.416W	0.21	1.31	1.51	07/2019	NE59	Stroubles Creek	Operator-owned	N	1/2023

92	Holden Hall Underground Detention	Existing	Underground Detention	37.230N	80.423W	0.12	0.66	0.78	03/2022	NE59	Stroubles Creek	Operator-owned	N	1/2023
----	-----------------------------------	----------	-----------------------	---------	---------	------	------	------	---------	------	-----------------	----------------	---	--------