Town of Christiansburg, Virginia

Municipal Separate Storm Sewer System Annual Report

For

General Permit No. VAR040025

Permit Year

July 1, 2019 through June 30, 2020

This annual report is submitted in accordance with 9VAC25-890-40 as part of the requirement for permit coverage to discharge stormwater to surface waters of the Commonwealth of Virginia consistent with the VAR04 General Permit effective date November 1, 2018.

Submitted: October 1, 2020

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APPENDICES

TABLES

BMP	Best Management Practices
DEQ	Virginia Department of Environmental Quality
ESC	Erosion and Sediment Control
IDDE	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
POC	Pollutants of Concern
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TOC	Town of Christiansburg
VESCP	Virginia Erosion and Sediment Control Program
VSMP	Virginia Stormwater Management Program
VPDES	Virginia Pollution Discharge Elimination System
WLA	Wasteload Allocation

1.0 GENERAL ANNUAL REPORTING REQUIREMENTS

1.1. General **Information (Part I.D.2.a)**

Permittee Name: Town of Christiansburg

Permit Number: VAR040025

1.2. Reporting Period (Part I.D.2.b)

The reporting period for which the annual report is being submitted:

July 1, 2019 through June 30, 2020

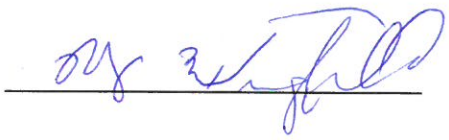
1.3. Signed Certification (Part I.D.2.c)

A signed certification as per Part III K

"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 ensure 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."

Printed Name: Randy Wingfield

Title: Town Manager

Signature:  Date: 9-25-2020

1.4. Reporting for MCMs #1 - #6 (Part I.D.2.d)

Include information for each annual reporting item specified in Part LE:

Reporting information for each Minimum Control Measure is provided in Section 2.0.

1.5. Evaluation of the MS4 Program Implementation (Part I.D.2.e)

An evaluation of the MS4 program implementation, including a review of each MCM to determine the MS4 program's effectiveness and whether changes to the MS4 Program Plan are necessary:

An evaluation for each Minimum Control Measure is provided in Section 2.0. Changes that are necessary to be made to the MS4 Program Plan are summarized in Table 1.

Table 1: Summary of MS4 Program Plan Changes
MCM #2 Public Involvement and Participation: Due to COVID-19 restrictions, planned activities from March 1 - June 30, 2020 were cancelled. As of March, 2020, the Town had completed two of the required four public involvement and participation activities. Upon approval by DEQ, the Town substituted two monitoring activities. The program plan is being updated to include all COVID-19 restriction adjustments. Documentation for the MCM #2 adjustments are in Appendix B. MCM#5 Due to COVID-19 staffing adjustments in spring 2020, the planned schedule for maintenance and inspection of the Town of Christiansburg owned and/or operated stormwater management facilities had to be adjusted. This adjustment resulted in a delay in performing significant maintenance and repair activities on these facilities and on the subsequent required inspections. This was communicated to DEQ, and that communication is documented in Appendix D. The program plan is being updated to include this delay in maintenance and inspections. The Town plans to come into compliance as soon as possible, and will notify DEQ when that occurs. MCM #6 Nutrient Management Plans: The program plan is being updated to reflect changes in areas receiving nutrients. The Christiansburg Aquatic Center grounds are no longer being fertilized and will be removed from the list. The Depot Park Field was determined to only have 0.5 acres fertilized and falls under the 1 contiguous acre requirement. This area will be removed from the list. The Kiwanis Park ball fields are managed by the Town of Christiansburg under an agreement with the Kiwanis Club and a nutrient management plan was developed for those fields. Biennial Good Housekeeping/ IDDE training: Due to COVID 19 restrictions, this was conducted as a dispersed training consisting of a recorded electronic meeting presentation with one live event and multiple viewings of the recording over a two-week period. The program plan is being updated to reflect this occurrence.

2.0 MINIMUM CONTROL MEASURES

2.1. MCM #1: Public Education and Outreach

2.1.1. High Priority Stormwater Issues (Part I.E.1.g(1))

A list of high-priority stormwater issues addressed in the public education and outreach program:

A list of high-priority stormwater issues addressed in public education and outreach program is provided in Table 2.

2.1.2. High Priority Stormwater Issue Communication Strategies (Part I.E. 1.g(2))

A list of strategies used to communicate each high-priority stormwater issue:

A list of strategies used to communicate each high-priority stormwater issue is provided in Table 2. Appendix A includes documentation of the communication efforts described in Table 2.

Table 2: High Priority Stormwater Issues

#	Stormwater Issue	Strategy	Communication	Completion Status
1	Education on special water quality concerns (PCBs)	Media & Traditional Written Materials	Articles in the Christiansburg Connection newsletter and posted on the Town's website and/or Facebook page.	☒ Yes ☐ No
2	Education on special water quality concerns (E. coli)	Media & Traditional Written Material	Articles in the Christiansburg Connection newsletter and posted on the Town's website and/or Facebook page.	☒ Yes ☐ No
3	Education on Stream Health (Stream restorations, lawn care/sediment)	Media & Traditional Written Material	Articles in the Christiansburg Connection newsletter and posted on the Town's website and/or Facebook page.	☒ Yes ☐ No
3	Education on Stream Health (Stream restorations, lawn care/sediment)	Signage	Permanent signs were installed along the Town Branch stream restoration in Depot Park in fall 2019.	☒ Yes ☐ No

2.1.3. MCM #1 Evaluation (Part I.D.2.e)

Review the MCM to determine the MS4 Program's effectiveness and whether or not changes to the MS4 Program Plan are necessary:

Were all MCM #1 communications accomplished to the intended public audience indicated in the MS4 Program Plan? ☒ Yes (Effective) ☐ No (Ineffective)

If any communications were determined to be ineffective, describe changes necessary to the MS4 Program. Include the response in Section 1.5.

2.2. MCM #2: Public Involvement and Participation

2.2.1. Public Input Summary (Part I.E.2.f(1))

A summary of any public input on the MS4 program received (including stormwater complaints) and responses:

If any MS4 Program inputs or stormwater complaints were received from the public, were responses provided?

☒ Yes (Refer to Table 3) ☐ No ☐ Not Applicable

Table 3: Public Input or Complaints and Responses
Input/Complaint Illicit Discharges/Spills: 12 Reported Complaints Response: Site visits by Town employee or Fire Department per Town's IDDE Manual
Input/Complaint Land Disturbing Activities: 40 Reported Complaints Response: Response by Environmental Inspector within 24 hours of complaint

2.2.2. MS4 Program Webpage (Part I.E.2.f(2))

A webpage address to the MS4 program and stormwater website:

The webpage address is https://www.christiansburg.org/250/Stormwater-Information-and-Education

2.2.3. Public Involvement Activities Implemented (Part I.E.2.f(3))

A description of the public involvement activities implemented:

A description of the implemented public involvement activities is provided in Table 4.

2.2.4. Public Involvement Activity Metric and Evaluation (Part I.E.2.f(4))

A report of the metric as defined for each activity and an evaluation as to whether or not the activity is beneficial to improving water quality:

A report of the metric as defined for each activity and an evaluation as to whether or not the activity is beneficial to improving water quality is provided in Table 4. Appendix B includes documentation of the public involvement activities.

Table 4: Public Involvement Activities Implemented			
Activity Description	**Metric**	**Collaboration**	**Beneficial**
Stream Monitoring Towne Branch Diatom Study	Preliminary study report	No	☒ Yes ☐ No
Stream Monitoring Towne Branch Native Plant monitoring and remediation	Complete initial survey	No	☒ Yes ☐ No
Stormwater Education Days for School	300	Virginia Tech, Montgomery County, Town of Blacksburg	☒ Yes ☐ No
Christiansburg Aquatic Center Fins Summer Camp Benthic Macroinvertebrate session	50	No	☒ Yes ☐ No

2.2.5. MS4 Collaboration (Part I.E.2.f(5))

The name of other MS4 permittees collaborated with in the public involvement opportunities:

If applicable, the name of other MS4 permittees collaborated with for any of the public involvement opportunities are provided in Table 4.

2.2.6. MS4 Program Plan BMP Measurable Goals

The MS4 Program Plan BMPs measurable goals are provided in Table 5.

Table 5: MS4 Program Plan BMP Measurable Goals for MCM #2		
BMP	**Measurable Goal**	**Completeness Status**
2.1	Was documentation of the public input or complaints on the MS4 program and MS4 Program Plan maintained?	☒ Yes ☐ No ☐ Not Applicable
2.1	Is the effective MS4 permit and coverage letter on the webpage?	☒ Yes ☐ No
2.1	Is the most current MS4 Program Plan on the webpage?	☒ Yes ☐ No
2.1	Is the annual report for each year of the term covered by this permit posted to the webpage no later than 30 days after submittal to the department?	☒Yes ☐ No

2.1	Is there a mechanism for the public to report potential illicit discharges, improper disposal or spills to the MS4, complaints regarding land disturbing activities or other potential stormwater pollution concerns on the webpage?	☒ Yes ☐ No
2.1	Is there a method for how the public can provide input of the MS4 Program Plan on the webpage?	☒ Yes ☐ No

2.2.7. MCM #2 Evaluation (Part I.D.2.e)

Review the MCM to determine the MS4 Program's effectiveness and whether or not changes to the MS4 Program Plan are necessary:

Were all MCM #2 responses Yes or Not Applicable?

☒ Yes (Effective) ☐ No (Ineffective)

If any items are determined to be ineffective, describe changes necessary to the MS4 Program. Include the response in Section 1.5.

2.3. MCM #3: Illicit Discharge Detection and Elimination

2.3.1. MS4 Map and Information Table (Part I.E.3.e(1))

A confirmation statement that the MS4 map and information table have been updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year:

Were the MS4 storm sewer map and outfall information table updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year? ☒ Yes ☐ No

2.3.2. Dry Weather Screening (Part I.E.3.e(2))

The total number of outfalls screened during the reporting period as part of the dry weather screening program:

Were at least 50 outfalls screened during the reporting period? ☒ Yes ☐ No

The number of outfalls screened during the reporting yard as part of the dry weather screening program is 70. This represents 52% of the total outfalls.

2.3.3. Illicit Discharges (Part I.E.3.e(3))

A list of illicit discharges to the MS4 including spills reaching the MS4:

Were there any illicit discharges to the MS4 including spills reaching the MS4?
☒ Yes (Refer to Table 6) ☐ Not Applicable (No illicit discharges)

Table 6: Illicit Discharges
Illicit Discharge See Appendix C
Part I.E.3.e(3)(a) Source: See Appendix C
Part I.E.3.e(3)(b) Date Observed & Date Reported: See Appendix C
Part I.E.3.e(3)(c) Detected during Screening, Reported by Public or Other (Describe): See Appendix C
Part I.E.3.e(3)(d) Investigation Resolution: See Appendix C
Part I.E.3.e(3)(e) Description of Follow-up Activities: See Appendix C
Part I.E.3.e(3)(f) Date Investigation Closed: See Appendix C

2.3.4. MS4 Program Plan BMP Measurable Goals

The MS4 Program Plan BMPs measurable goals are provided in Table 7.

Table 7: MS4 Program Plan BMP Measurable Goals for MCM #3

BMP	Measurable Goal	Completeness Status
3.1	Was a GIS compatible shapefile submitted to DEQ?	☒ Yes ☐ No
3.1	Was written notification provided to any downstream adjacent MS4 of any known interconnection established or discovered during the permit reporting year?	☐ Yes ☒ Not Applicable (No new or discovered) ☐ No
3.2	Were all reported or observed non-stormwater discharges eliminated?	☐ Yes ☒ No
3.2	Were inspections, surveillance, monitoring and enforcement procedures in response to reports implemented?	☒ Yes ☐ No
3.3	Were illicit discharge detection and elimination procedures implemented, enforced and documentation maintained?	☒ Yes ☐ No

2.3.5. MCM #3 Evaluation (Part I.D.2.e)

Review the MCM to determine the MS4 Program's effectiveness and whether or not changes to the MS4 Program Plan are necessary:

Were all MCM #3 responses Yes or Not Applicable?

☐ Yes (Effective) ☒ No (Investigations and corrective actions ongoing and/or completed outside reporting year) The Town has a recurring issue with petroleum odors in the storm drain in the area of Town Hall, and a mulch discharge issue in a subdivision. These investigations are ongoing as solutions are sought. .

If any items are determined to be ineffective, describe changes necessary to the MS4 Program. Include the response in Section 1.5.

2.4. MCM #4: Construction Site Stormwater Runoff Control

2.4.1. Implementation of VESCP and Town Ordinance (Part I.E.4.a(1))

The MS4 has adopted a Virginia Erosion and Sediment Control Program (VESCP). The MS4 implements the VESCP consistent with the Virginia Erosion and Sediment Control Law and Virginia Erosion and Sediment Control Regulations.

Table 8: Project(s) Not in Conformance with VESCP and Town Ordinance
Project Name: NA Explanation: NA

2.4.2. Site Stormwater Runoff Inspections (Part I.E.4.d(2))

Total number of inspections conducted:

The total number of site stormwater runoff inspections conducted for regulated land disturbance activities is 1,834.

2.4.3. Enforcement Actions (Part I.E.4.d(3))

The total number and type of enforcement actions implemented:

The total number of enforcement actions implemented is 10.

The total number of Notices to Comply issued is 7.

The total number of Stop Work Orders issued is 3.

2.4.4. MCM #4 Evaluation (Part I.D.2.e)

Review the MCM to determine the MS Program's effectiveness and whether or not changes to the MS4 Program Plan are necessary:

Did the Town implement a VESCP consistent with the Virginia Erosion and Sediment Control Law and Virginia Erosion and Sediment Control Regulations?

☒ Yes (Effective) ☐ No (Ineffective)

If any items are determined to be ineffective, describe changes necessary to the MS4 Program. Include the response in Section 1.5.

2.5. MCM #5: Post-Construction Stormwater Management

2.5.1. Implementation of VSMP and Town Ordinance (Part I.E.5.i (1))

The MS4 has approved Virginia Stormwater Management Program (VSMP) and implements the VSMP consistent with the Virginia Stormwater Management Act and VSMP Regulations as well as has developed an inspection and maintenance program in accordance with Parts I.E.5.b and c.

2.5.1.1. Privately-Owned VSMP Inspections (Part I.E.5.i (1)(a))

The number of privately-owned stormwater management facility inspections conducted:

The number of privately-owned stormwater management facility inspections conducted is 11.

2.5.1.2. Privately-Owned VSMP Enforcement Actions (Part I.E.5.i (1)(b))

The number of enforcement actions initiated by the permittee to ensure long-term maintenance of privately-owned stormwater management facilities including the type of enforcement action**:**

The number of enforcement actions initiated by the MS4 to ensure long-term maintenance of privately-owned stormwater management facilities is 0.

The type of enforcement actions issued are Not Applicable.

2.5.2. Stormwater Management Facility Inspections (Part I.E.5.i(2))

Total number of inspections conducted on stormwater management facilities owned or operated by the permittee:

Were inspections conducted on stormwater management facilities during the reporting year? ☒ Yes ☐ No

The total number of inspections conducted on stormwater management facilities is 1. The one was inspected by a third-party as part of stream mitigation project inspection requirements. Due to COVID-19 restrictions, implementation of significant maintenance was delayed and progress significantly slowed. As of June 30, 2020, the Town had completed significant maintenance on 6 stormwater management facilities based on the fall 2018/winter 2019 inspections. Inspections were originally planned to follow maintenance. DEQ was notified of the effects of COVID-19 restrictions on the schedule. This notification and response are documented in Appendix D. The Town is continuing to conduct significant maintenance on the stormwater management facilities and will notify DEQ when back in compliance.

2.5.3. Stormwater Management Facility Maintenance (Part I.E.5.i(3))

A description of significant maintenance, repair, or retrofit activities performed on the stormwater management facilities owned or operated by the permittee to ensure it continues to perform as designed. This does not include routine activities such as grass mowing or trash collection:

Were significant maintenance, repair, or retrofit activities performed on any stormwater management facilities during the reporting year?

☒Yes ☐ No (Being assessed) ☐ Not Applicable (No maintenance required)

A description of significant maintenance, repair, or retrofit activities performed on the stormwater management facilities owned or operated by the MS4 to ensure it continues to perform as designed is provided in Table 9.

Table 9: Maintenance Activities Performed on Stormwater Management Facilities

Stormwater Management Facility	Significant Maintenance Activity
Arbor View Phase 5/Burch Property View Plantation	• Removed brush • Grass seed • Straw • Rock at outfall • Regraded for ponding issues
VDOT Pond for 114	• Removed brush and small trees • Grass seed • EC3 matting • Repaired sinkhole
R&W Subdivision	• Removed brush • Removed litter • Repaired Gate
White Pine Ct.	• Removed brush
VDOT Pond on Quin W Stuart	• Removed brush
VDOT Pond Behind First Church of the Nazarene	• Removed brush • Grass seed • Straw matting • Rock in the outfall

2.5.4. Virginia Construction Stormwater General Permit Database (Part I.E.5.i(4))

A confirmation statement that the permittee submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing activities for which the permittee was required to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities in accordance with Part I E 5 f or a statement that the Permittee did not complete any projects requiring coverage under the General VPDES Permit for Discharges of Stormwater form Construction Activities:

Stormwater management facility information for stormwater facilities installed after July 1, 2014 was submitted through the Virginia Construction Stormwater General Permit database for land disturbing activities requiring a General VPDES Permit for Discharges of Stormwater from Construction Activities.

☐ Yes ☒ No (All stormwater management facility information for stormwater facilities installed during the reporting year was submitted through the Virginia Construction Stormwater General Permit database. An email was sent to constructiongp@deq.virginia,gov inquiring about updating the incomplete information submitted in previous years. There has been no response. A copy of the email is in Appendix D.)

2.5.5. DEQ BMP Warehouse (Part I.E.5.i(5))

A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part I E 5 g and the date on which the information was submitted:

No later than October 1 of each year, stormwater management facilities and BMPs implemented to meet a TMDL load reduction between July 1 and June 30 of each year were electronically reported using the DEQ BMP Warehouse for any practices not reported in accordance with Part I.E.5.f (requirement 2.5.4) including stormwater management facilities from land disturbing activities less than one acre in accordance with the Chesapeake Bay Preservation Act regulations and for which a General VPDES Permit for Discharges of Stormwater from Construction Activities was not required?

☐ Yes, Date Submitted: NA ☐ No ☒ Not Applicable (No SWM facilities constructed or BMPs implemented.)

2.5.6. MS4 Program Plan BMP Measurable Goals

The MS4 Program Plan BMPs measurable goals are provided in Table 10.

Table 10: MS4 Program Plan BMP Measurable Goals for MCM #5		
BMP	**Measurable Goal**	**Completeness Status**
5.1	Was the inspection and maintenance program on post-construction stormwater management facilities implemented?	☒ Yes ☐ No
5.1	Did all regulated land disturbance activities have a Town approved SWM plan?	☒ Yes ☐ No
5.1	Were all stormwater management facilities recorded with inspection and maintenance plans and/or agreements, where applicable?	☒ Yes ☐ No
5.2	Was the stormwater management facility tracking database updated?	☒ Yes ☐ Not Applicable (No new or discovered) ☐ No

2.5.7. MCM #5 Evaluation (Part I.D.2.e)

Review the MCM to determine the MS4 program's effectiveness and whether or not changes to the MS4 Program Plan are necessary:

Were all MCM #5 responses Yes or Not Applicable?

☐ Yes (Effective) ☐ No (Ineffective) ☒ No (Plan still effective, see 2.5.4 and 2.5.2)

If any items are determined to be ineffective, describe changes necessary to the MS4 Program. Include the response in Section 1.5.

2.6. MCM #6: Pollution Prevention and Good Housekeeping

2.6.1. Operational Procedures (Part I.E.6.q(1))

A summary of any operational procedures developed or modified in accordance with Part I E 6 a during the reporting period:

Were any operational procedures developed or modified in accordance with Part I E 6 a during the reporting period?

☐ Yes (Refer to Table 11) ☐ No ☒ Not Applicable (Not necessary)

Table 11: Good Housekeeping Operational Procedures Developed or Modified
NA

2.6.2. Newly Developed SWPPPs (Part I.E.6.q(2))

A summary of any new SWPPPs developed in accordance Part I.E.6.c during the reporting period:

Were any new SWPPPs developed in accordance Part I E 6 c during the reporting period?

☐ Yes (Refer to Table 12) ☐ No ☒ Not Applicable (No new high priority facilities)

Table 12: New SWPPPs Developed	
SWPPP Name	**SWPPP Address**

2.6.3. Modified or Delisted SWPPPs (Part I.E.6.q(3))

A summary of any new SWPPPs modified in accordance with Part I.E.6.f or the rationale of any high priority facilities delisted in accordance with Part I.E.6.h during the reporting period:

Were any new SWPPPs modified after an unauthorized discharge, release or spill reported?

☐ Yes (Refer to Table 13) ☐ No ☒ Not Applicable (No illicit discharges)

Were any high priority facilities delisted in accordance with Part I.E.6.h during the reporting period?

☐ Yes (Refer to Table 13) ☐ No ☒ Not Applicable (No delisted high priority facilities)

If "Yes" is checked above, the rationale is provided for any high priority facilities delisted in accordance with Part I.E.6.h during the reporting period in Table 13.

Table 13: SWPPPs Modified or Delisted	
SWPPPs Modified/Delisted	**Rationale for Delisting**

2.6.4. Newly Developed Nutrient Management Plans (Part I.E.6.q(4))

A summary of new turf and landscape nutrient management plans developed:

Were any new turf and landscape nutrient management plans developed?
☒Yes (Refer to Table 14) ☐ No ☐ Not Applicable (Not required this permit year)
Two areas were removed from the Nutrient Management Plan requirement.
The Christiansburg Aquatic Center site is no longer being fertilized. The Depot Park Field was determined to be approximately 0.5 acres instead of the 1.3 acres previously determined. Therefore this field does not meet the contiguous 1 acre nutrient application criteria.
The program plan is being updated to reflect these changes.

2.6.4.1. Nutrient Management Plan Acreage (Part I.E.6.q(4)(a))

The location and the total acreage of each land area:

If "Yes" is checked above, the location and total acreage of the land area for any newly developed nutrient management plan is provided in Table 14.

2.6.4.2. Nutrient Management Plan Approval Date (Part I.E.6.q(4)(b))

The date of the approved nutrient management plan:

If "Yes" is checked above, the approval date of any newly developed nutrient management plan is provided in Table 14.

Table 14: New Turf and Landscape Nutrient Management Plans		
Location	**Total Acreages**	**Date Approved**
Harkrader Sports Complex, 1205 Buffalo Dr., Christiansburg	5.1	5/21/2020
Kiwanis Park, 310 Kiwanis Lane, Christiansburg	1.9	5/21/2020

2.6.5. Training Events (Part I.E.6.q(5))

A list of the training events conducted in accordance with Part I.E.6.m, including the following information:

Was training conducted?
☒ Yes (Refer to Table 15) ☐ No ☐ Not Applicable (Not required this permit year)

If "Yes" is checked above, a list of training events conducted in accordance with Part I.E.6.m is provided in Table 15.

2.6.5.1. Training Dates (Part I.E.6.q(5)(a))

The date of the training event:

If "Yes" is checked above, the date of the training event is provided in Table 15.

2.6.5.2. Quantity Trained (Part I.E.6.q(5)(b))

The number of employees who attended the training event:

If "Yes" is checked above, the number of employees who attended the training event is provided in Table 15.

2.6.5.3. Training Objective (Part I.E.6.q(5)(c))

The objective of the training event:

If "Yes" is checked above, the objective of the training event is provided in Table 15.

Table 15: Training Events

Dates	# of Attendees	Training Objective
6/16/2020 through 6/30/2020	81	Good Housekeeping, IDDE Training done as dispersed recorded and live online video conference due to COVID 19 restrictions

2.6.6. MS4 Program Plan BMP Measurable Goals

The MS4 Program Plan BMPs measurable goals are provided in Table 16.

Table 16: MS4 Program Plan BMP Measurable Goals for MCM #6

BMP	Measurable Goal	Completeness Status
6.1	Was good housekeeping and pollution prevention biennial training conducted this reporting year?	☒ Yes ☐ Not Applicable (Not required this reporting year.) ☐ No
6.2	Was the annual comprehensive compliance evaluations conducted?	☒ Yes (These are done monthly) ☐ No
6.2	Were the SWPPPs reviewed within 30 days after an unauthorized discharge, release or spill reported?	☐ Yes ☒ Not Applicable (No illicit discharges at high priority facilities.) ☐ No
6.2	Were the SWPPPs updated within 90 days after an unauthorized discharge?	☐ Yes ☒ Not Applicable (No illicit discharges at high priority facilities.) ☐ No

6.2	Were the MS4's properties reviewed this reporting year to determine if the properties meet the criteria of a high priority facility?	☒ Yes ☐ No
6.3	Were the nutrient management plans implemented through completion of application records?	☒Yes ☐ Not Applicable (No fertilizer applied) ☐ No
6.5	Did all signed contracts executed for pesticide and herbicide application maintain proof of certifications on file?	☒ Yes ☐ Not Applicable ☐ No
6.5	Did training occur and were proof of certifications maintained on file for employees performing pesticide and herbicide applications?	☒ Yes (no training required this year; certifications maintained) ☐ Not Applicable ☐ No
6.6	Were all signed contracts executed with contract good housekeeping and pollution prevention language?	☒Yes ☐ No

2.6.7. MCM #6 Evaluation (Part I.D.2.e)

Review the MCM to determine the MS4 Program's effectiveness and whether or not changes to the MS4 Program Plan are necessary:

Were all MCM #6 responses Yes or Not Applicable?
☒Yes (Effective) ☐ No

If any items are determined to be ineffective, describe changes necessary to the MS4 Program. Include the response in Section 1.5.

3.0 TMDL SPECIAL CONDITIONS

3.1. Crab Creek and Upper Roanoke River E.coli TMDL Action Plan

3.1.1. Bacteria TMDL Implementation (Part II.B.9)

A summary of actions conducted to implement each local TMDL action plan:

A summary of actions conducted to implement each local TMDL action plan is provided in Table 17.

Table 17: Bacteria TMDL Action Plan Summary of Actions

BMP	Measurable Goals	Completeness Status
1	Is education on special water quality concerns, specifically E.coli, addressed in the Town's Public Education and Outreach Plan?	☒ Yes ☐ No
2	Were methodologies determined to assess the most effective structural and nonstructural best management practices to employ?	☒ Yes ☐ No
3	Did employees receive IDDE training to enhance efforts to minimize illicit discharges?	☒ Yes ☐ No
4	Did the Town create an IDDE and construction site issue complaint link on the Town website to enhance public IDDE reporting capabilities?	☒ Yes ☐ No
5	Did the Town develop a long-term capital and operating program to offset capital funding and operating costs associated with structural BMP installation and maintenance?	☒ Yes ☐ No
6	Are the legal authorities outlined in plan in place?	☒ Yes ☐ No
7	Is the FOG Ordinance in place?	☒ Yes ☐ No
8	Does the stormwater website contain FOG information?	☐ Yes ☒ No (BMP revised in May 2020 revision.)
9	Was the pet waste disposal public education completed?	☒ Yes ☐ No
10	Does the stormwater website contain IDDE reporting information?	☒ Yes ☐ No
11	Was the Crab Creek Interceptor Study completed?	☒ Yes ☐ No

3.2. Crab Creek and Upper Roanoke River Sediment TMDL Action Plan

3.2.1. Sediment TMDL Implementation (Part II.B.9)

A summary of actions conducted to implement each local TMDL action plan:A summary of actions conducted to implement each local TMDL action plan is provided in Table 18.

Table 18: Sediment TMDL Action Plan Summary of Actions

BMP	Measurable Goals	Completeness Status
1	Did the Town implement SWPPPs for the Town Public Works Station (Station B)?	☒ Yes ☐ No
2	Did the Town implement SWPPPs for the historic Town landfill?	☒ Yes ☐ No
3	Does the Town Code address Erosion and Sediment Control and Virginia Stormwater Management Program standards and permitting requirements?	☒ Yes ☐ No
4	Were methodologies determined to assess the most effective structural and nonstructural best management practices to employ?	☒ Yes ☐ No
5	Is education on special water quality concerns, specifically sediment, addressed in the Town's Public Education and Outreach Plan?	☒ Yes ☐ No
6	Does the Town implement an ESC and VSMP Inspection and Enforcement Program for land disturbing activities?	☒ Yes ☐ No
7	Does the Town implement a Post-construction Inspection and Maintenance Program for structural BMPs?	☒ Yes ☐ No
6	Did the Town develop a long-term capital and operating program to offset capital funding and operating costs associated with structural BMP installation and maintenance?	☒ Yes ☐ No
7	Does the Town provide Good Housekeeping and Pollution Prevention Training to employees?	☒ Yes ☐ No
8	Did the Town create an IDDE and construction site issue complaint link on the Town website to enhance public IDDE reporting capabilities?	☒ Yes ☐ No
9	Did the Town participate in the development of the Crab Creek and Roanoke River Implementation Plans?	☒ Yes ☐ No

10	Were street sweeping measurable goals implemented?	☒ Yes, ongoing ☐ No
11	Is the Diamond Hills Phase I Project implemented?	☒ Yes ☐ No
12	Is the Diamond Hills Phase II Project implemented?	☐ Yes ☒ No (Removed BMP in May 2020 revision.)
13	Were neighboring MS4 coordination efforts implemented?	☒ Yes, ongoing ☐ No
14	Was the railroad coordination efforts for funding a stream restoration project implemented?	☐ Yes, ongoing ☒ No (BMP removed in May 2020 revision.)

A summary of quantifiable pollutant of concern reductions is provided in Table 19.

Table 19: 2019-2020 POC Reductions	
BMP #10: Street Sweeping – Crab Creek	
Required tons of material swept	27.57 tons
Estimated tons of material swept	347.5 tons
BMP #10: Street Sweeping – Roanoke River	
Required tons of material swept	22.9 tons
Estimated tons of material swept	100.1 tons

3.3. Roanoke River PCB TMDL Action Plan

3.3.1. PCB TMDL Implementation (Part II.B.9)

A summary of actions conducted to implement each local TMDL action plan:
A summary of actions conducted to implement each local TMDL action plan is provided in Table 20.

Table 20: PCB TMDL Action Plan Summary of Actions

BMP	Measurable Goal	Completeness Status
1	Was an evaluation on the substitution or addition of education on PCB sources and elimination as a high-priority water quality issue completed?	☒ Yes ☐ No
2	Was information included about PCB as a Pollutant of Concern in annual mailers that are attached to the annual drinking water quality information?	☐ Yes ☐ No ☒ N/A (Mailers are no longer distributed.)
3	Did the Town participate in the New River TAC to advocate for consistent TMDL requirements across all town watersheds?	☒ Yes ☐ No
4	Did coordination occur with the town Public Works Wastewater Treatment Plant (WWTP) to gather information on potential PCB sources through the WWTP Industrial Waste Surveys?	☐ Yes ☐ No ☒ N/A (Coordination occurred. Survey timeframe adjusted.)
5	Was IDDE ordinance language researched at other localities for specific PCB prohibition?	☒ Yes ☐ No
6	Was existing PCB-free purchasing ordinance language surveyed at other localities and evaluated for the potential to add such language to Town Code?	☒Yes (This was incorrectly reported last year.) ☐No
7	Were methods examined to determine historical land uses to identify potential legacy sources of PCBs?	☐ Yes ☒ No (Removed BMP in May 2020 revision.)
8	Was the Montgomery Regional Solid Waste Authority (MRSWA) contacted regarding disposal of PCB products and the potential for partnership?	☒ Yes ☐ No
9	Was the Good Housekeeping SWPPP materials reviewed for potential revisions to more specifically address PCBs as a pollutant of concern?	☒ Yes ☐ No

Appendix A: Documentation of Public Education and Outreach Activities

The Christiansburg Connection

Newsletter for the Town of Christiansburg

January/February 2020

COMMUNITY CORNER

2020 Census is Coming!

The Census is coming in 2020, and it's important to make sure you get counted! The data collected by the Census is used to distribute billions in federal funds to local communities and determine how many seats in Congress each state gets.

By April 1, 2020, every home will have received an invitation to participate in the 2020 Census. Once the invitation arrives, you should respond for your home in one of three ways: online, by phone, or by mail. When you respond to the census, you tell the Census Bureau where you live as of April 1, 2020.

Don't have a computer to fill out the 2020 Census? We can help! The Christiansburg Recreation Center's senior lounge computer lab will be open to the public Mondays and Wednesdays, from 8:30 a.m. to noon, throughout the month of April so that residents can take the Census online.

COMMUNITY HEALTH FAIR

Feb. 27 from 9 a.m. - noon at the Recreation Center 1600 N. Franklin St.

Get FREE health screenings, nutrition assessments, snacks, samples, giveaways and door prizes.

Follow us!

IN THE KNOW

Happy New Year! We hope all of our residents enjoyed a safe and relaxing holiday season. We've had a mild winter so far, but that doesn't mean we won't get more snow and ice in the coming months, so please take a moment to review the town's winter weather procedures at **www.christiansburg.org/beprepared**. Don't forget to subscribe to Citizens Alert at **www.christiansburg.org/alerts** to receive updates on water line breaks, garbage collection suspension and more.

FALLING BRANCH TRAFFIC SIGNAL OPERATIONAL

A new traffic signal has been installed at the intersection of Roanoke Street and Falling Branch Road. The signal is part of a larger project that aligns the intersection with a new entrance to the Gateway Plaza Shopping Center. While the light is now in use, work on other parts of the project will continue. The contractor will be completing minimal work in the coming weeks that may result in intermittent temporary lane closures.

IMPORTANCE OF STREAM RESTORATIONS

Winter is a great time to explore stream restorations in Christiansburg! Both Depot Park and Diamond Hills Park have restored streams. Now that plants have died back, you can see the small trees, shrubs and wetland plants that provide long-term stability to stream banks.

Photo provided by Wetlands Studies and Solutions, Inc.
Image is of Depot Park (250 Depot St. NE)

This is integral because common turf grasses have shallow roots, often less than six inches deep, but native vegetation have roots between 12 to 24 inches beneath the surface. Trees, especially, have roots that can spread two to four times the edge of the canopy. Together, a dense network of roots and vegetation are formed to protect the stream bank from collapsing, which keeps erosion to a minimum and prevents tons of sediment from washing down to Crab Creek each year.

Reducing sediment runoff helps restore the biological communities in Crab Creek. The Town of Christiansburg sets a goal to take action toward stream restoration as part of its Municipal Separate Storm Sewer System (MS4) program.

Have a question? Let us know!
540-382-6128 ext. 1150
info@christiansburg.org
www.christiansburg.org

The Christiansburg Connection

Newsletter for the Town of Christiansburg

March/April 2020

Please note a change in the Town's utility payment policy. In order to avoid water and sewer cut-off, utility payments must be recieved by 7:30 a.m. on the cut-off date listed on your utility bill.

COMMUNITY CORNER
Census 2020 is Here!

Census Day is observed nationwide on April 1, 2020. Prior to this date, every home will have received an invitation to participate in the Census. Once your invitation arrives, you should respond for your home in one of three ways: online, by phone, or by mail. When you respond, tell the Census Bureau where you live as of April 1, 2020.

The data collected by the Census is used to distribute billions in federal funds to local communities and determine how many seats in Congress each state gets. It's important everyone in Christiansburg is counted because the data will directly affect how much money is allocated for infrastructure, such as neighborhood improvements, emergency preparedness and disaster recovery, public health, education, transportation, senior services and much more.

For individuals who need computer access to complete the Census, the Christiansburg Recreation Center's senior lounge computer lab will be open every Monday and Wednesday throughout the month of April. Visit between 8:30 a.m. and noon, and be sure to bring your Census ID, which will be mailed to your household prior to April 1. Can't make it during those times? You can also visit the Blacksburg Library, Blacksburg Community Center, Christiansburg Library or the Meadowbrook Library. And, of course, you can also complete the Census via mail or phone if you prefer.

Make sure to get counted!

IN THE KNOW

Spring is almost here, and the Town is preparing for the warmer weather! Spring Cleanup will run from April 11-24 (more on the next page). A different type of cleanup will be on April 11 from 10 a.m. to noon if you'd like to help pick up garbage along the Diamond Hills Stream. We've got other events coming up, too! Check out the annual NRV Home Expo at the Christiansburg Recreation Center from March 14-15; admission is $5. Catch the Easter Bunny at the Great Christiansburg Easter Egg Hunt at Kiwanis Park on April 11 at 10 a.m. Photos with the Easter Bunny will be $1. The Aquatic Center is offering some new programs, such as MERMADNESS; see more on the following page. See you around Christiansburg!

TOWN RECYCLING DROP-OFF SITES TO CLOSE

Closure Schedule

- Feb. 1 — Cambria Site (Cambria St./Palmer St. Intersection)
- Mar. 1 — Betty Drive Site (Betty Dr./Depot St. Intersection)
- April 1 — Food Lion Parking Lot Site (1530 Roanoke St.)
- May 1 — Home Depot Site (200 Constar Ave.)
- June 1 — Christiansburg High School Site (100 Independence Blvd.)

The Town's five recycling drop-off sites will be closing over the next few months (schedule to the left). The Town has been offering curbside recycling service to its residents since July 1, 2018, and introduced curbside recycling service to businesses on February 1, 2020. Because of these services, there is less need for recycling drop-off sites. There has also been an increase in contamination and trash-dumping at the Town's recycling drop-off sites, causing much of the recycling to be rejected. For those interested in still utilizing drop-off sites, Montgomery County offers locations that are staffed to reduce contamination and trash-dumping; you can view those sites' addresses at www.montva.gov/wastemanagement.

SIMPLE AND ECO-FRIENDLY LAWN CARE

You can avoid bare grass areas in your yard by following the tips below.

You can get a yard that looks like this and be eco-friendly by following the strategies below.

Spring is right around the corner, and with it, comes yard work. But did you know that your bright green grass and gardens can help prevent erosion, too? Porous mulches reduce runoff, and planting native flowers, trees or shrubs helps reduce soil loss. Erosion happens during every rain event, large or small, and it is one of the largest contributors to sediment pollution in streams, which negatively affects the wildlife. You can help reduce the sediment transported to our streams by following the tips above or learn more strategies at https://tinyurl.com/sdsf8a8. These practices help Christiansburg meet the goals set in its Municipal Separate Storm Sewer System (MS4) Permit.

Have a question? Let us know!
540-382-6128 ext. 1150
info@christiansburg.org
www.christiansburg.org

The Christiansburg Connection

Newsletter for the Town of Christiansburg

May/June 2020

BE AWARE: COVID-19 RELATED SCAMS

- Scammers will claim to be from the IRS and ask for your banking information or attempt to have you sign over your economic impact payment check. The IRS will never ask for this type of information.
- Scammers are creating fake shops, websites, social media accounts and email addresses claiming to sell medical and cleaning supplies currently in high demand. When consumers attempt to purchase these supplies, fraudsters pocket the money and never provide the promised items.
- Scammers are contacting people, claiming to be doctors and hospitals that have treated a friend or relative for COVID-19, and demanding payment.
- Scammers are soliciting donations for individuals, groups, and areas affected by COVID-19.
- Scammers posing as the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) are sending emails designed to trick recipients into downloading malware or providing personal-identifying and financial information.
- Scammers are creating and manipulating mobile apps designed to track the spread of COVID-19 to insert malware that will compromise users' devices and personal information.
- Scammers are offering online promotions on various platforms, claiming that the products or services of publicly traded companies can prevent, detect, or cure COVID-19, and that the stock of these companies will dramatically increase in value as a result. These promotions are often styled as "research reports," make predictions of a specific "target price," and relate to microcap stocks, or low-priced stocks issued by the smallest of companies with limited publicly available information.
- Individuals and businesses may sell essential goods for significantly higher prices than in a non-emergency setting. It is legally considered price gouging when the price of one of these products increases more than 20 percent in one week prior to an emergency declaration from the state of Virginia.

If you think you may be a victim of a scam, report it to local law enforcement immediately.

2020 FARMERS MARKET VENDORS

The Christiansburg Farmers Market will be each Thursday from 3-7 p.m. on Hickok Street from May 21 to Oct. 22. Vendors for the 2020 season are below.

- Mountain View Hops
- Cavalier Farms
- Birdsong Farms
- Peace and Harmony Farms
- Bird and Hopper
- Gracie's Gardens
- Not Your Mama's Pasta
- Granny Bean's Confections
- Afternoon Delight
- Slider Kings Food Truck
- Hot Diggity Dog
- Kona Ice
- Grumpy Pig Barbeque

BAG & TRASH IT: PICKING UP AFTER YOUR PET

As the weather warms up, it's a great time to get outside to walk and play with your pets. It's also an activity that allows you to practice social distancing. While having fun, please remember to always pick up after your pet.

Dog and cat waste can carry disease. Even healthy pets shed bacteria like E. coli, and dog waste can contain roundworms and giardia—all of which can make you sick. Roundworms and giardia may stay active in the soil long after the visible evidence is gone. Fresh dog waste can be less infectious than aged, so scoop daily!

Dog and cat excrement left on your yard can wash into your neighbor's yard, into the neighborhood park, or anywhere downhill. The health of our streams is important. All that waste washes into the streets, into the storm drains and ditches, and then directly into our creeks. Think about how many dogs live on your block—and now visualize all that poop in the creek. Ewww!

Christiansburg's Municipal Separate Storm Sewer System (MS4) permit requires that we show a reduction in bacteria transported to our streams. Bagging pet waste both on and off your property is a significant step toward ensuring that our streams are clean and safe for swimming and fishing.

FLUSHABLE WIPES AREN'T FLUSHABLE

This image was taken at the Town's Wastewater Treatment Facility. The bar screen is cleaned out twice a day, so this is how many wipes were flushed through the Town's system in just twelve hours. But that's not all, these are just the wipes that got stuck! Many more wipes were processed before the system was overloaded. Wipes can clog the Town's sewer system but can also cause harm to your own pipes, costing you as a taxpayer and as a homeowner.

While wipes may be labeled as "flushable" on packaging, they actually stay durable through plumbing and sewer systems. When you flush a wipe, it is like flushing a piece of cloth. Wipes can get snagged on grease and form clogs in the systems, which can lead to pipe bursts, overflows and damage to Town equipment.

Please only flush toilet paper. Toss other items like wipes in the trash.

UPCOMING MEETINGS

Town Council Meetings*

May 12 at 7 p.m.
May 26 at 7 p.m.
June 9 at 7 p.m.
June 23 at 7 p.m.

*While these meetings are normally held at Town Hall, there is a possibility they will be held virtually. Please visit the website for information regarding the location of each meeting closer to the dates above.

Never miss a meeting! Sign up for notifications at www.christiansburg.org/notifyme. All meetings are recorded and posted to the Town's YouTube page the following day.

UPCOMING HOLIDAY

Town Hall will be closed Memorial Day, May 25. Solid waste collection normally scheduled for Mondays will be collected Friday, May 22, along with Friday's regular collection.

Have a question? Let us know!
540-382-6128, ext. 1150
info@christiansburg.org
www.christiansburg.org

[Facebook: June 26, 2020 PCBs Post]

Post Details

Reported stats may be delayed from what appears on posts

Town of Christiansburg, VA
June 26 ·

Are you thinking about taking on a summer project like remodeling or updating some of the older amenities of your property? Maybe it's a shed or outdoor garage you haven't touched in years?

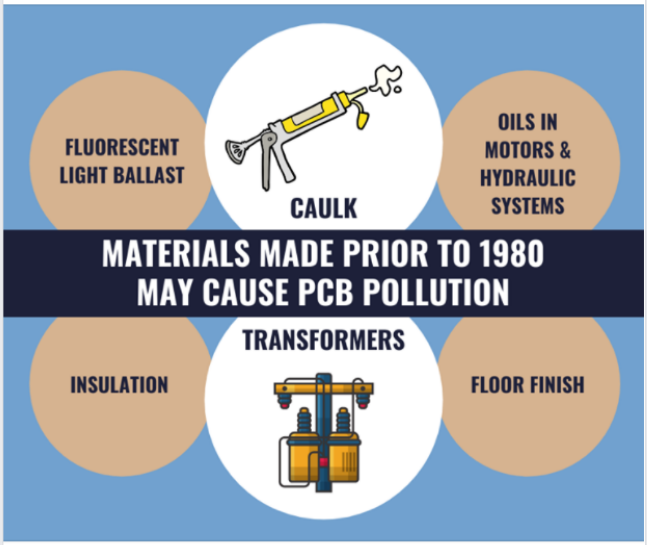
Well, before you strip those building materials and replace them with new ones, the Town wants you to be aware that building materials manufactured before 1979 may contain PCBs.

PCBs, or polychlorinated biphenyls, can be found in transformers and capacitors, fluorescent light ballasts, oils in motors and hydraulic systems, insulation materials, caulking and other materials.

PCBs are released from these materials as they degrade or break. If remnants of this material land on the ground, it can allow PCBs to travel through runoff into storm sewers, streams and rivers. Due to this pollution, some local rivers have fish consumption advisories. Learn more about these advisories at tinyurl.com/VAFishConsumptionAdvisories.

To dispose of items that may possibly contain PCBs, please contact the Montgomery Regional Solid Waste Authority at 540-381-2820 and ask about their free household hazardous waste disposal programs. To find out more about PCB pollution, please visit tinyurl.com/VDHPCBs and tinyurl.com/USEPAPCBs.

Christiansburg's Municipal Separate Storm Sewer System (MS4) permit allows the Town to discharge stormwater to our streams, and one requirement of this permit is to inform residents of PCB pollution.



1,657 People Reached | **45** Engagements | **Boost Post**

Ginger Mck, John Williams and 5 others — 1 Share

Like | Comment | Share

Performance for Your Post

1,657 People Reached

8 Reactions, Comments & Shares

6 Like	**6** On Post	**0** On Shares
1 Love	**1** On Post	**0** On Shares
0 Comments	**0** On Post	**0** On Shares
1 Shares	**1** On Post	**0** On Shares

37 Post Clicks

12 Photo Views	**1** Link Clicks	**24** Other Clicks

NEGATIVE FEEDBACK

1 Hide Post | **0** Hide All Posts
0 Report as Spam | **0** Unlike Page

Reported stats may be delayed from what appears on posts

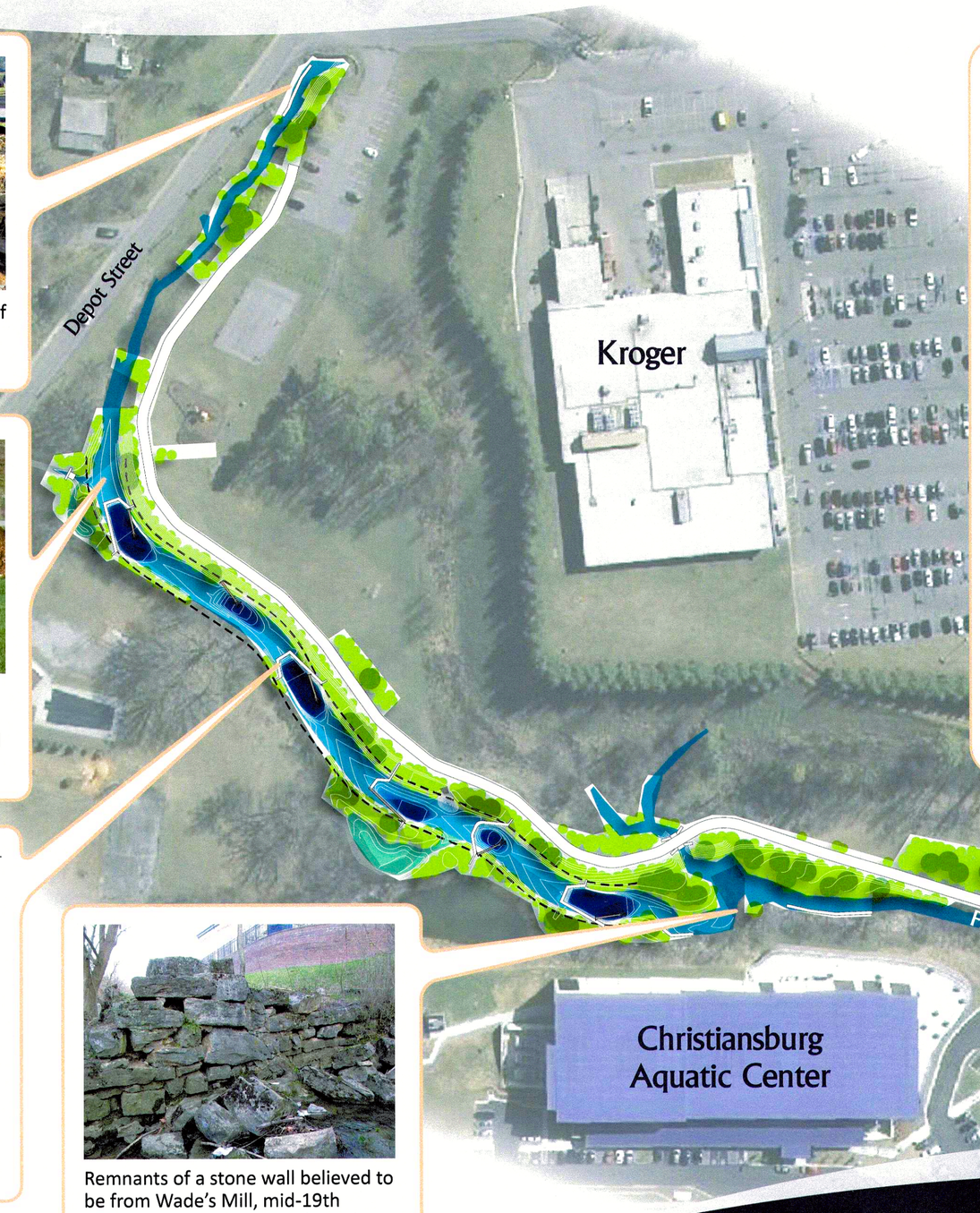
Towne Branch Stream Restoration

This photo shows the construction of the stone wall to repair the eroding stream bank along Depot Street.

As part of the stream restoration, a specially designed stream bed mix was installed to improve stream bed stability.

Five grade control structures were installed to stabilize the stream and create pools.

Remnants of a stone wall believed to be from Wade's Mill, mid-19th century, can still be seen along the stream bank.



Site History

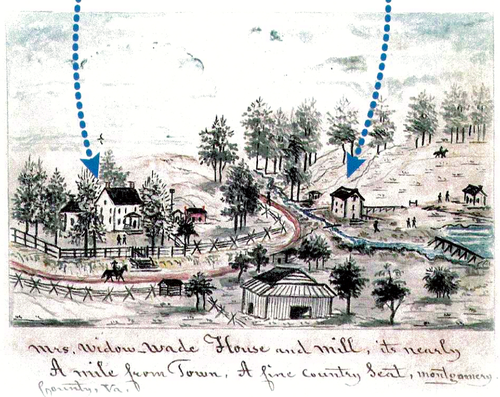
Archaeological records are a great way to catch a glimpse of the past and better understand a site's history.

The map to the right shows a portion of Montgomery County from 1864. Several mills are depicted north of the Town of Christiansburg.

One of these mills, Wade's Mill, was situated on the eastern bank of the stream restoration project area. The bottom photo at the left is a stone wall that may have been part of Wade's Mill, possibly part of the mill pond dam itself.

The sketch to the right was drawn by a German folk artist named Lewis Miller around the year 1850. In the sketch you can see the Wade residence and mill which are depicted on the map above.

To operate the mill, the stream was dammed to create a pond. Water from the pond was then channeled into a mill race, through a flume, and used to power the mill mechanism.



Get to Know Your Stream

- The Towne Branch stream restoration project was completed in 2018
- 1,180-acre urban watershed
- > 40% impervious (roads, rooftops, parking lots)
- ~2,000 feet of stream restored

Stream restoration design by:

Wetland Studies and Solutions, Inc. a DAVEY company

Towne Branch Stream Restoration

Riparian Buffer Planting

The Towne Branch Stream Restoration project included planting the riparian buffer with native vegetation. A healthy riparian buffer is imporant for the health of the stream because it filters sediment and nutrients from storm water. Riparian buffers also help to stabilize streambanks to prevent excessive amounts of erosion and create excellent habitat for local wildlife.

How many of these plants can you find?


Pin Oak

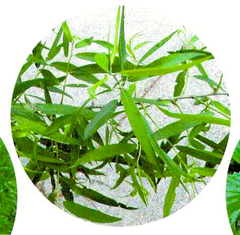

White Oak


Northern Red Oak


Willow Oak


Red Maple


Black Gum


Black Willow


Arrowwood


Buttonbush

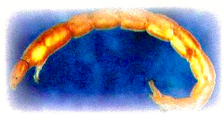

Brookside Alder


Eastern Redbud

What's Under That Rock?

Macroinvertebrates! Macroinvertebrates are spineless organisms that spend at least a portion of their life cycle in the stream. They are a critical component of the stream's ecosystem. In addition to being a major food source for larger organisms, macroinvertebrates also serve the purpose of nutrient cycling through the breakdown of organic matter such as leaf debris. The presence (or absence) of certain types of macroinvertebrates can tell us a great deal about the water quality of the stream. For example, if stonefly and mayfly larvae are present in the stream, we can conclude that the stream has good water quality because these types cannot tolerate pollution. On the other hand, if midge and blackfly larvae are the only types of macroinvertebrates found, then we can conclude that the water quality is too poor to support other species typically found in better water quality.

Can you find any macroinvertebrates?

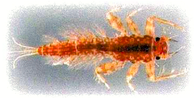

Midge Larvae


Pouch Snails


Damselfly Larvae


Fishfly Larvae


Dobsonfly Larvae


Mayfly Larvae


Stonefly Larvae

Poor Water Quality (High Pollution Tolerance)

- Leeches

- Blackfly Larvae

Moderate Water Quality (Moderate Pollution Tolerance)

- Cranefly Larvae

- Crayfish

- Dragonfly Larvae

Good Water Quality (Low Pollution Tolerance)

- Caddisfly Larvae

- Gill Breathing Snails

Stream restoration design by:

Wetland Studies and Solutions, Inc.® a DAVEY company

Appendix B: Documentation of Public Involvement Activities

COVID 19 MCM #2 Substitutions – communication with DEQ

From: Patricia Colatosti
Sent: Friday, May 22, 2020 12:59 PM
To: Roberts, Jesse
Cc: Emma Danz
Subject: Re: Town Branch Public Involvement

Emma,

The Town of Christiansburg is planning to make the following MCM 2 substitutions due to COVID 19.

The Town of Christiansburg completed the following Public Involvement and Participation events to meet MCM2 during the July 1, 2019 – June 30, 2020 MS4 permit reporting year:

- Educational opportunity– August 2019 – stormwater education event for Christiansburg Aquatic Center camp
- Educational opportunity – October 2019 – Stormwater Education Day for Montgomery County 6th graders – Blacksburg Middle School

We had planned the following events for March and April 2020, all of which were cancelled:
Educational opportunity – March 2020 – Informational booth at NRV Home Expo

Educational opportunity - April 2020- Stormwater Education Days for Montgomery County 6th graders – Christiansburg Middle School, Shawsville Middle School, Auburn Middle School

Restoration opportunity – April 2020- Stream and wetland cleanup at Diamond Hills Park

Restoration opportunity – April 2020 – Provide support for Montgomery County Broomin' and Bloomin' activity that might occur within the Town of Christiansburg

Since the above listed activities were cancelled, the Town plans to report the following two public involvement activities to meet the permit requirements for July 2019-June 2020. The permit language for Part I.E.2.c is " ...provide an opportunity for public involvement to improve water quality and support local restoration and clean-up efforts." These two projects directly support local restoration efforts and will also help improve water quality.

(1)Restoration opportunity – starting in February 2020 and ongoing-
A Master Naturalist team has designed a project to monitor and remove invasive exotic plants within the Towne Branch Stream Restoration within Depot Park. They will also be planting additional native plants from seed in areas where they remove invasive exotic plants. They have already documented plants that need to be removed, and will be starting work in June 2020. They are working with the planting plan that was prepared for the project. Towne Branch Stream Restoration is a SLAF funded project designed to help the Town meet its sediment waste load allocation by reducing bank erosion and providing a riparian buffer of native plants. The riparian buffer should filter sediment from both overland flow from the adjacent properties and roads, as well as provide filtering capacity for ditches that outfall into the stream. Those ditches now outfall into wetlands associated with the stream. Creating and maintaining riparian buffers is also a BMP for lowering bacterial loads from stormwater. Keeping a diverse native plant community should enhance filtering capacity as well as provide a diverse network of roots to enhance bank stability.

Additionally, Master Naturalist projects have community educational components, so the team will be talking with park visitors who ask about their activity as well as providing signage while they are working. There may be further educational components as the project progresses.

(2) Monitoring opportunity – started in September 2018 and ongoing
Mr. Dave Orcutt has been conducting a Master Gardener project on Towne Branch in Depot

Park since September 2018. The goal of the study is to determine if diatoms can be used as bioindicators of organic/inorganic pollution in Towne Branch. He is also investigating if the stream restoration, which essentially replaced the stream bed within the park, had an impact on the diatom species presence. He has been collecting and identifying diatom samples and monitoring dissolved oxygen, water temperature, light conditions, pH, salinity, conductivity and total dissolved solids. At one sample location he is additionally monitoring NO3/NO2 (ppm total N), NO2 (ppm total N), hardness, Chlorine, Lead, Pesticides and Bacteria.

We are currently working to provide Mr. Orcutt with sanitary sewer overflow data for that area, as he wishes look for correlations.

The next phase of this project was to reach out to Christiansburg High School and teach the methods to students. This is on hold, but we plan to reach out to MCPS over the summer to gauge interest and the possibility of remote instruction.

The Master Gardener project progress report is available if you would like to review it. I currently only have a paper copy so I did not attach it to this email. The preliminary findings have been presented to the Blacksburg Master Naturalists, the Radford Democrats, a discussion group, and myself.

Thank you for reviewing this,

Patricia

Patricia Colatosti
Environmental Program Supervisor
Town of Christiansburg
100 East Main Street
Christiansburg, VA 24073
(540) 382-6120 x1157

From: Roberts, Jesse <jesse.roberts@deq.virginia.gov>
Sent: Monday, April 6, 2020 4:07 PM
To: Patricia Colatosti <pcolatosti@christiansburg.org>
Cc: Emma Danz <Emma.Danz@deq.virginia.gov>
Subject: Town Branch Public Involvement

Patricia -- Please what you are planning for involvement so we can consider.

Jay Roberts
Stormwater / VWP Programs Manager
Department of Environmental Quality
Blue Ridge Regional Office
901 Russell Drive
Salem, VA 24153
Direct: 540-562-6785
jesse.roberts@deq.virginia.gov
www.deq.virginia.gov

Towne Branch Exotic Invasive Plant survey list compiled by Master Naturalists

This list is not complete, but a good start. Composed by Mary Rhoades, Suzie Leslie and Beth Umberger
*Abutilon theophrasti VELVETLEAF
**Alliaria petiolata GARLIC MUSTARD
**Arctium sp. BURDOCK
***Centaurea maculosa SPOTTED KNAPWEED
*Cichorium intybus COMMON CHICORY
**Clematis terniflora SWEET AUTUMN CLEMATIS
*Conium maculatum POISON HEMLOCK
***Coronilla aria CROWN VETCH
**Euonymus alatus BURNING BUSH (Located in the holding pond will seed into creek habitat)
*Hesperis matronalis DAME'S ROCKET
*Lamium purpureum PURPLE DEAD NETTLE
**Lathyrus odoratus PERENNIAL SWEET PEA
***Lespedeza cuneta CHINESE BUSH CLOVER
**Ligustrum sp. PRIVET
**Lonicera sp. BUSH HONEYSUCKLE
**Lonicera japonica JAPANESE HONEYSUCKLE
**Rosa multiflora MULTIFLORA ROSE
**Rumex crispus CURLY DOCK
***Pyrus calleryana CALLERY PEAR (Planted in the parking lot and will seed into creek habitat)
*Sherardia arvensis BLUE FIELDMADDER
**Veronica hederifolia IVY-LEAVED SPEEDWELL
*Easy to remove and not as harmful.
**Crowd out natives and with determination can be removed.
***Harmful and difficult to remove.

From: fredandbeth@verizon.net <fredandbeth@verizon.net>
Sent: Monday, February 3, 2020 9:33 PM
To: Patricia Colatosti <pcolatosti@christiansburg.org>; mrhoades@vt.edu; mailto:sleslie@vt.edu; cwomble@vt.edu; mailto:debra.graff@hotmail.com
Subject: Invasive plants in Depot Park along the creek 2/20
Hi Patricia,
Mary Rhoades, Suzie Leslie, and I spent about an hour identifying as many plants as we could now. Suzie used an app on her phone which was helpful. Hope this helps. If I get approval to start, my husband and I would be willing to start once we get approval from the Master Naturalist to add this project.
Thanks,
Beth

Christiansburg Aquatic Center FINS summer camp benthic macroinvertebrate session

From: Terry Caldwell
Sent: Friday, August 2, 2019 11:44 AM
To: Cole Hammonds; Hudson Chase
Cc: Patricia Colatosti; Wayne Nelson
Subject: thank you

Cole and Hudson, thank you so very much for taking time yesterday to visit with the children at Fins camp. Your demonstrations are so interesting and informative for the kids. Thanks for the blowing maneuver to quite them down, our counselors liked that.
The children may never get a chance to study the bug experiment again so thank you! You guys did an excellent job!

Terry Caldwell, CPRP, AFO
Director of Aquatics, Town of Christiansburg
595 North Franklin Street
Christiansburg, VA 24073
540-381-7665
www.cacpool.com

From: Terry Caldwell <tlcaldwell@christiansburg.org>
Sent: Thursday, September 17, 2020 2:16 PM
To: Patricia Colatosti <pcolatosti@christiansburg.org>
Subject: RE: MS4 permit FIns Camp documentation

Hi Patricia, we missed you this year!
50 campers per week.
Hope all is well, take care.
Terry

From: Patricia Colatosti <pcolatosti@christiansburg.org>
Sent: Thursday, September 17, 2020 2:14 PM
To: Terry Caldwell <tlcaldwell@christiansburg.org>
Subject: MS4 permit FIns Camp documentation

Hi Terry,

I am looking for an approximate number of campers who would have attended the Fins camp on 8/1/2019, which was the date Hudson and Cole brought them down to the creek to look for macroinvertebrates.

Approximate number is fine, I know it was over a year ago.

Thanks,

Patricia

Patricia Colatosti
Environmental Program Supervisor
Town of Christiansburg
100 East Main Street
Christiansburg, VA 24073
(540) 382-6120 x1157

October 2019 Montgomery County Public Schools 6th grade Stormwater Days wrap up

Thank you for participating! Our Fall 2019 Stormwater Day for Blacksburg Middle School was on October 18th.

October 18, 2019 – Blacksburg Middle School 6th grade at Izaak Walton League Park.

Everyone spoke to approximately half the attendees.

Total Students: 300

Total Adult chaperones/teachers: 14

Presenters: 31 at 13 stations

Virginia Tech students: 14

from the groups:

Water for Kids (College of Engineering)

VT Site and Infrastructure Development Department

Biological Systems Engineering Department

College of Natural Resources

Other presenters + organizers: 17

VA Department of Environmental Quality

Virginia Tech Site and Infrastructure Development

VA Department of Conservation and Recreation – Karst Program

Montgomery County Engineering and Regulatory Compliance

Montgomery County Planning and GIS

Town of Blacksburg

Virginia Cooperative Extension 4-H

Virginia Cooperative Extension

Town of Christiansburg

Montgomery County Public Schools

Izaak Walton League of America – Christiansburg/Montgomery Chapter

Virginia Floodplain Management Association

You don't need a Google account to see any of these, but the forms are live. If a window pops up asking you to sign in just hit the back button on your browser.

Pre evaluation link
https://forms.gle/UJUwFYLZ1mT8KyWQ9

Pre evaluation results

https://docs.google.com/forms/d/1LL-s0If3JFu057SnsjalSpI7JJnkNzocLiOh-yB72w4/viewanalytics

If you hover over the bars on the bar graphs or the slices on the pie charts the corresponding response will appear.

Post evaluation link https://forms.gle/9MGvrcCNi8pkjBUp7

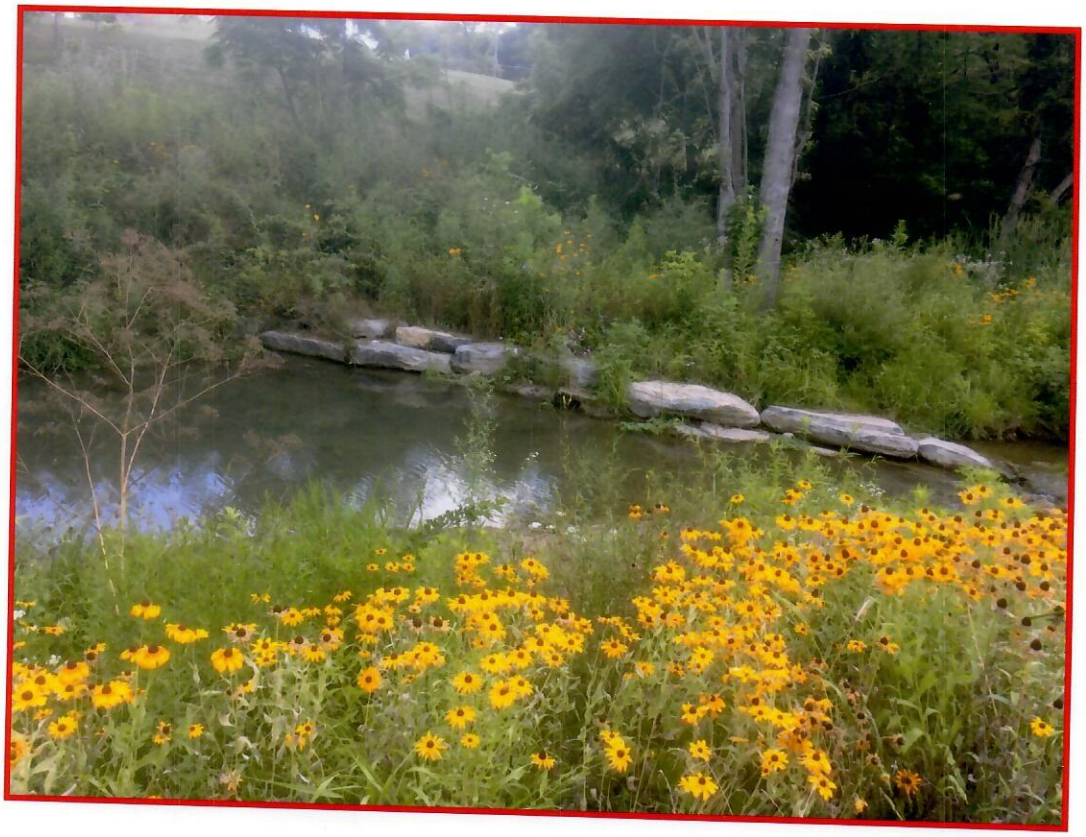
Post evaluation results

https://docs.google.com/forms/d/1UQpNkxE9aRSR1E2dqKnVbnA5U8nPVRJA3TfEiZtT2UU/viewanalytics

If you hover over the bars on the bar graphs or the slices on the pie charts the corresponding response will appear.

2019 Annual Master Gardener Project Report
Depot Park, Town Branch Creek

David M. Orcutt



Progress Report on Town Branch Stream, Christiansburg, Va

Goal of Study: To determine if diatoms can be used as bioindicators of organic/inorganic pollution in Town Branch and if stream remediation had an impact on the diatom species present.

Benthic species of diatoms have been used for years as bio-indicators of various forms of water pollution including pollution from organic waste, pesticides, eutrophication, salinity, pH, and heavy metals. Some species are tolerant while others are sensitive to these pollutants. Species that reside in a body of water will inform as to salinity, temperature, pH, water velocity, shading, depth, substrate preferences, and water chemistry.

Diatoms are good indicators because they are relatively easy to identify, easy to collect and store, ecological requirements of many diatoms are known, they reproduce readily and quickly, benthic forms are stationary, are readily dispersed and occupy many habitats, respond to changing environmental conditions quickly, sensitive to subtle changes in the environment, and are cost effective (# of species make information content of diatom assemblages greater than other organisms).

Species indices have been developed for diatoms that use the relative abundance of species in assemblages and their ecological preferences, sensitivities or tolerances to infer environmental conditions in an ecosystem. About 28 different indices have been developed mostly for organic pollution some of which can be very detailed with as many as 1500 species or simplified only to genera of a few species. One such simple index was developed by Palmer (J. Phycol. 5,78-82, 1969). This index was selected for this project because of its relative simplicity using identification to either genus or species as a basis for the index.

Methods

On September 9, 2018 sampling of Town Branch Stream (TBS) began. Four sampling sites were selected, one below the Kroger parking lot runoff input into the stream, two above the Kroger input but below a natural spring that empties into TBS located near the lower end of the soccer field and one above the natural spring. The entire length of the sample area was about 150 meters. Five rocks were collected across the stream at each of 4 sites, working upstream, and placed into gallon buckets of water collected from each site to prevent dehydration of periphyton on the rocks. Dissolved oxygen, water temperature and light conditions at each site were recorded. Separate water samples were collected at each site to determine, pH, salinity, conductivity, and total dissolved solids (TDS). A WaterSafe® Test Kit manufactured by Silver Lake Research and EPA approved was used to test for NO_3/NO_2, NO_2, pH, hardness, Cl, Pb, pesticides and bacteria. The latter tests were only done on site 1 water samples collected below the Kroger input.

The 5 rock samples from each site were scrubbed with a tooth brush to remove algae and diatoms, combined into a single sample for each site and the volume of the liquid in each collection bucket measured. The samples were homogenized with a small blender.

After homogenization a subsample was removed for cell counts using a hemacytometer and a microscope at a magnification of 400X. The cell counts were used to determine the total number of cells in each sample collected. Surface areas of each of the 5 rocks from each site

were determined. This was done by molding the scrubbed surface of each rock with thin aluminum foil, and cutting the foil to correspond to scrubbed surface of the rock. The foil from each of the five rocks was flattened and each foil piece photocopied on pre-weighed paper, the images were cut out and weighed and a ratio of area of the whole paper sheet is to its weight as the weight of the cut out images is to X. Solving for X gives the area of the rock surface. Cell counts were then based on numbers of cells/cm^2 of rock surface.

Live sub samples from each site were observed microscopically and photographed. Samples were preserved as permanent slides by treating aliquots of cells with Clorox 1:1 for 1hr, washing with distilled water 6 times and centrifuging for 10 minutes after each washing. A drop of cleaned diatom frustules was applied evenly to a clean cover slip and allowed to air dry. After the samples air dried, a drop of Naphrax synthetic resin (refractive index 1.74) was applied to a clean microscope slide and the coverslip inverted (diatom side down) onto the resin. The coverslip was gently pressed down to force excess resin out from under the coverslip and the slide was placed on a hot plate until the resin boiled. Boiling and pressing on the slide gently with a dental tool helped to remove air bubbles from under the coverslip. The slides were allowed to dry and excess resin removed from around the coverslip edges with a single edge razor blade and the coverslip was then sealed with clear fingernail polish around the edges. The slides were then viewed under a microscope with oil immersion (microscope 1000x with computer program for camera appox. 4000x). Slides were photographed and stored. Diatom identification was based on several internet sources one of which was very helpful (https://diatoms.org/genera). Also, the book "Freshwater Algae of North America" Second edition, 2015 Elsevier, by J.D. Wehr, R. G. Sheath, and J. Patrick Kociolek was used.

Results:

Figures 1-7 shows the relative percentage of diatoms collected and identified to genus. Samples were collected for 7 months beginning November 2018 and ending on October 2019. Species composition varied by site and month. Rhoicospheria was observed in November 2018, February, April and May 2019. The highest relative percentage was February 2019 (Fig. 1-4). Rhoicospheria declined considerably during the months of July, August and October 2019 (Fig 5-7). Gomphonema was prevalent in November 2018 and February, April 2019 but was absent or in low percentages in the rest of the months (Fig. 1-3). Navicula species were most abundant in November 2018 and February, April, and May of 2019 (Fig. 1-4). Relative percentages were lower for the remaining months (Fig. 5-7). Cymbella was observed in November 2018 (Fig. 1), and May, July, August, and November 2019 (Fig.5-7).

In May of 2019 an unknown very small diatom (possibly *Eolimna sp.*) started to appear in all sites and became the dominant organism for the following 3 months that samples were collected (Fig. 4-7). Several species of Navicula appear to be present in all samples.

Figure 14 shows the number of cells/cm^2 rock surface area. Number of cells varied by site and by month. The greatest number of cells was observed on November 2018 and July 2019. Site 4 in November could be an anomaly. August and October 2019 samples had generally fewer cells than other months. This study concentrated mainly on diatoms that were abundant and easily identified to genus. There were other species present in the samples such as some occasional filaments of blue-green algae (probably Oscillatoria), species of Nitzschia, Synedra, Cyclotella, Cocconeis, Diatoma, Amphora, Meridion, Surirella, and Gyrosigma. None of these were observed in large numbers except for Nitzschia. This lack of diversity may be indicative of

polluted water. Flagellates were not abundant nor were protozoans in the samples which according to Palmer are associated with polluted water. Also, the most abundant organisms observed in this study have been associated with organically polluted water in other studies.

Water Measurements

Water temperature varied seasonally being coldest in the winter months and warmer during the summer (Fig. 8). Site 5 was the most consistent in temperature not rising above 15°C. This was because the water came from a fresh water spring. None of the sites rose above 20°C which falls within a range of acceptable temperatures for most aquatic organisms, although the summer months approached the upper tolerance limits. Higher temperatures also reflect the shallow nature of the stream and changes in daily sun exposure due to trees and other vegetation along the stream.

Water pH ranged from 6.5-8 with the highest values occurring in the months of February, April, and May but all pH values were within an acceptable range for most aquatic organisms (Fig. 9).

Total dissolved solids were all above an acceptable range for most organisms with the highest levels observed in April, May and July. August and October were lower than the former months but still above acceptable levels (Fig. 10).

Salinity varied by site and month and ranged from .2 to .3 ppt all within an acceptable range for fresh water organisms. Site 5 was the most consistent most likely because it was spring fed (Fig. 11).

Dissolved oxygen was within acceptable limits for all sites (Fig. 12). Site 5 was always lower most likely because the water originated from a spring and was not in the main flow pattern of the stream, thus less turbulence and oxygenation. DO levels were lower in warmer months due to O_2 being less soluble at higher temperatures.

Conductivity was near or above acceptable limits for most sites (Fig. 13). Site 5 was lower than the other sites except for the month of May where site 4 was lower. Again, this is likely a result of water coming from a spring and not the stream proper.

WaterSafe® test strips were used to test for nitrate/nitrite (N), nitrite (N), pH, hardness, Cl, lead, pesticides, and bacteria (Fig. 15). Cl, lead and pesticides (atrazine/simazine) were always negative while bacteria (coliform) were always positive. The bacteria test may or may not indicate harmful levels of bacteria. Testing with WaterSafe® test strips was conducted only on Site 1, which was down-stream from the other sampling sites.

Nitrate/nitrite levels were at the lower end of the polluted water level (1-3ppm) on 5/15/19 and 7/1/19 but above what is considered to be clean water (<1ppm) and polluted water (3 ppm) on 8/20/19 and 10/10/19. On 11/26/19 levels were within an acceptable range for clean water. Nitrite levels were always within the range of acceptable drinking water standards of 1 ppm.

Water hardness tests indicate "very hard" (>200 ppm) water except for 7/1/19 where hardness levels were less but still considered "hard" (100-200 ppm). Hard water is not normally considered to be detrimental to aquatic life and may be beneficial in that it may protect organisms from toxic levels of heavy metals. Other studies suggest that soft water may be detrimental to reproduction in some gastropods.

pH was in an acceptable range for most aquatic life as is more precisely shown in Fig. 9

Conclusions

Algae Identification: There were several genera of diatoms and other algae in this study that are on Palmer's list of algae species that are indicative of organic pollution. Those present in this study include: Gomphonema, Cymbella, Navicula, Nitzschia, Synedra, Melosira, Cyclotella, Surirella, Diatoma, Cocconeis, Oscillatoria and Stigeoclonium.

Rhoicosphenia was also present but was not listed on Palmer's list of genera associated with organic pollution but others have included this genus as being present in polluted water. From 11/5/18 until 4/9/19 the three major genera present in the 4 sites studied were Gomphonema, Rhoicosphenia, Cymbella and Navicula (Appendix A-D). From 5/15/19 to 10/10/19 these genera declined relative to a more abundant, very small diatom, possibly in the genus Eolimna. Although Palmer does not include this genus in his index either, it has been found to be associated with organic pollution by other authors.

Palmer's organic pollution index: Palmer, after reviewing 165 authors, developed an index of 80 species of algae that were ranked based on the number of times they were cited by the authors. The top 20 species were identified as indicators of organic pollution and were assigned a pollution index factor to each based on the relative number of total points credited to each listed alga. If a listed genus or species occurs at a rate of 50 cells/ml the genus or species is counted as being present and assigned an index number. The numbers are totaled for each alga and if the total is 20 index points or more the water is considered organically polluted, 15-19 points probable high organic pollution and lower values as not being polluted. The question is how does the cell counting method apply to benthic algae removed from rocks or other substrates and plankton forms that are suspended in the water column? The issue of total volumes and/or substrate surface areas would have to be considered to make an accurate determination.

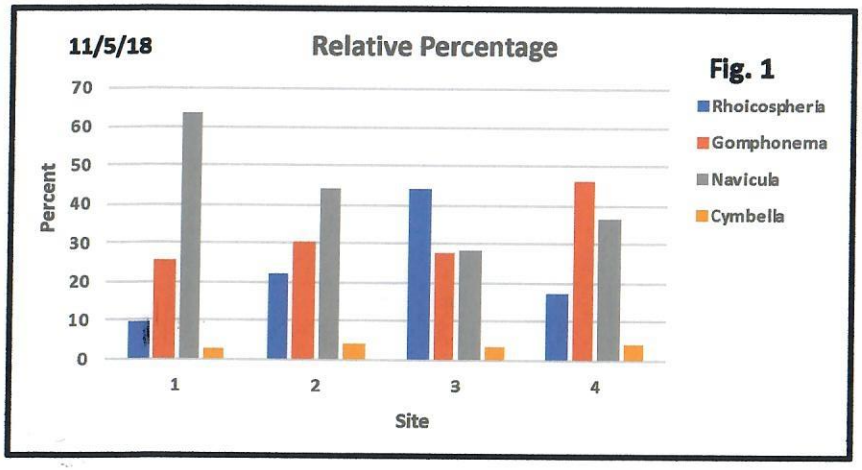
It was not clear as to how to apply Palmer's index for the purposes of this study relative to cell counts. Therefore, based only on the genera present and relative abundance of cells (Gomphonema>Navicula>Nitzschia>Synedra>Oscillatoria>Melosira>Cyclotella>Stigeoclonium) in this study and using Palmer's pollution index points for the top 20 genera it is possible that Town Branch falls in the category of probable evidence of organic pollution (15-19 points). See table below. (* indicates genera present in this study.)

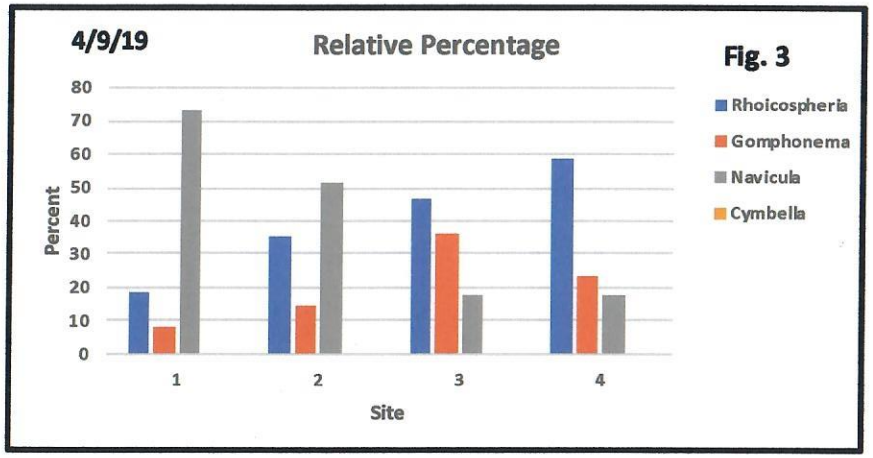
Algal genus pollution index (Palmer, 1969)

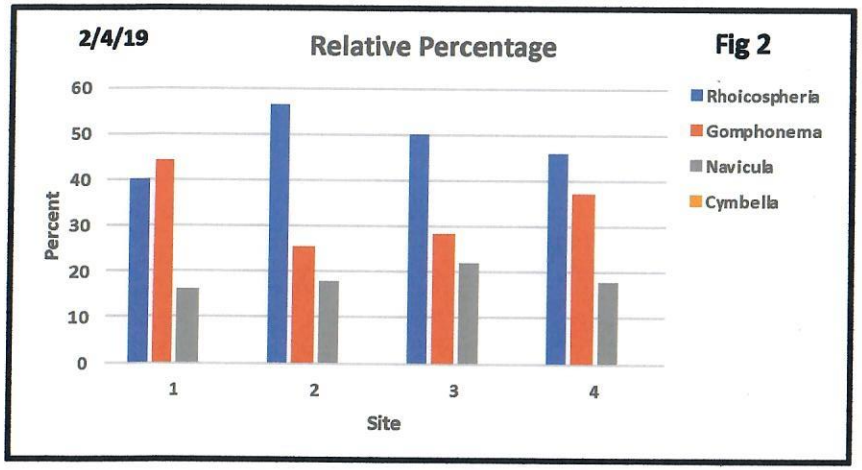
Pollution Index		Pollution Index	
Anacystis	1	Micractinium	1
Ankistridesmus	2	Navicula*	3
Chyamydomonus	4	Nitzschia*	3
Chlorella	3	Oscillatoria*	5
Closterium	1	Pandorina	1
Cyclotella *	1	Phacus	2
Euglena	5	Phormidium	1
Gomphonema*	1	Scenedesmus	4
Lepocinclis	1	Stigeoclonium*	2
Melosira*	1	Synedra*	2

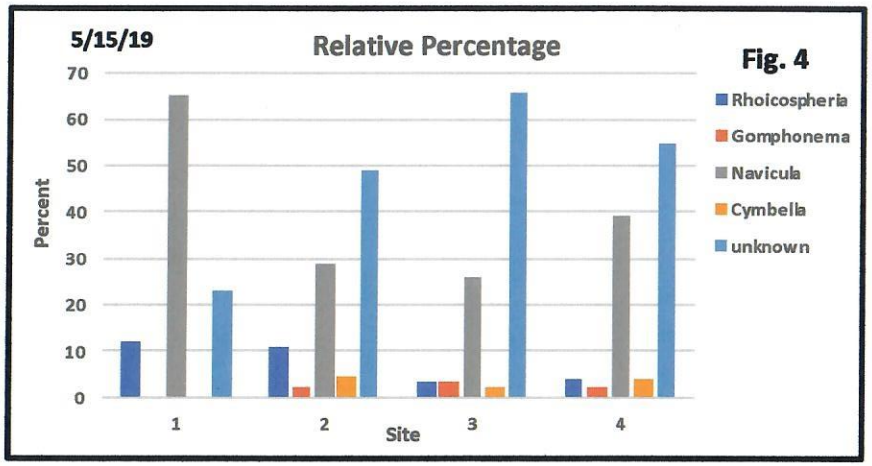
Other indicators of pollution in this study include lack of diversity in diatom communities, high nitrate/nitrite(N) levels, high conductivity and total dissolved solids and positive tests for coliform bacteria.

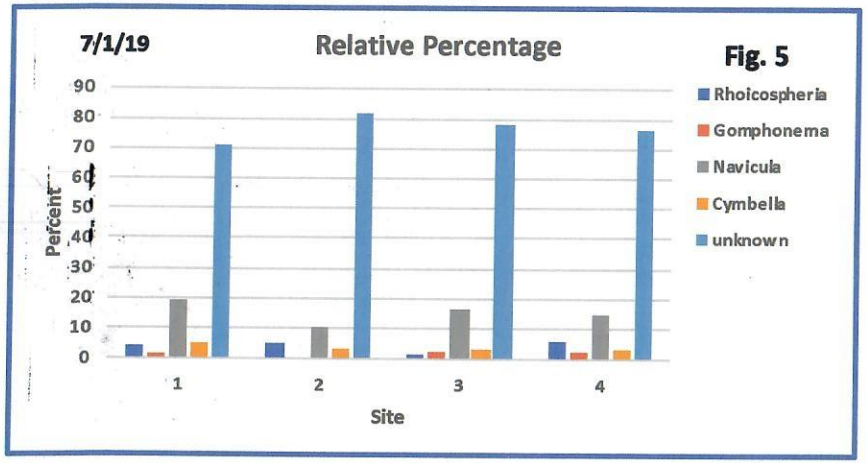
Future goals: More data is required in order to determine if remediation of Town Branch has been beneficial to the health of the stream. Additional methods and indices will be explored in an effort to find a better means of quantitating and identifying the benthic diatoms of the stream. The stream will continue to be monitored with respect to diatom communities and water parameters on a monthly basis beginning in March and through the summer months.
Community outreach: To date I have presented the findings of this study to Blacksburg Master Naturalists (approx. 30 participants), Radford Democrats (approx. 25 participants), and a discussion group I belong to (approx. 13 participants) and I have been invited to make a presentation to the Life Long Learning program at Virginia Tech this Spring. I will also be presenting my findings to Patricia Colatosti, the Environmental Program Supervisor for the Town of Christiansburg and the Christiansburg Town Council.
Now that I have developed some of the procedures for this project and have been collecting data for over a year, I would like to get some Master Gardeners interested in this project, and possibly, some high school students as a science project.

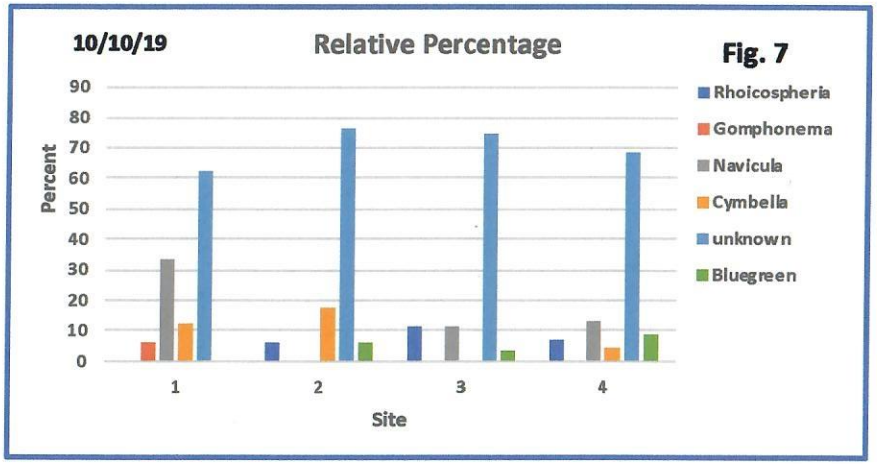

11/5/18
Relative Percentage
Fig. 1
Percent
70
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella

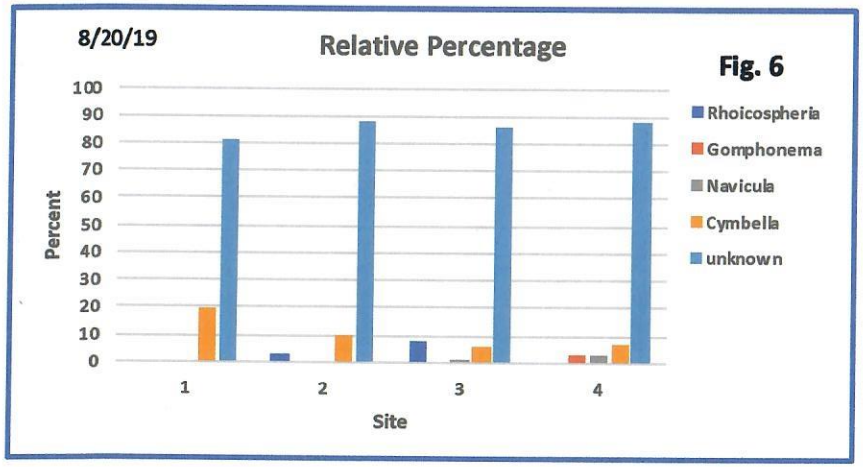

4/9/19
Relative Percentage
Fig. 3
Percent
80
70
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella

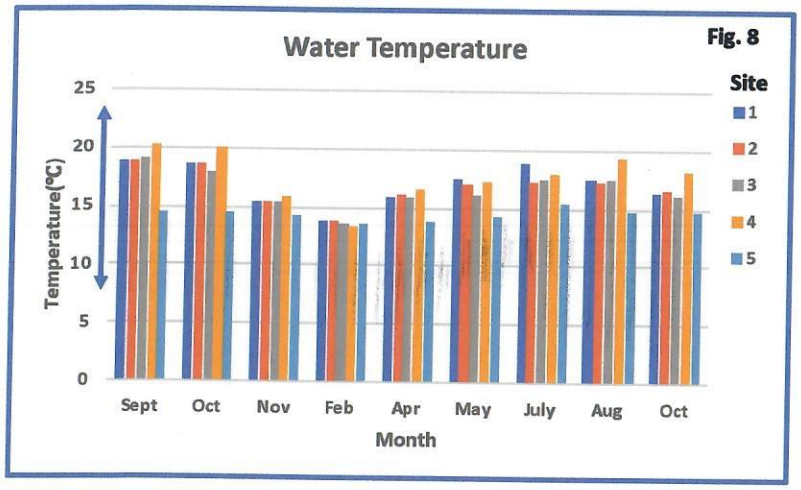

2/4/19
Relative Percentage
Fig 2
Percent
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella

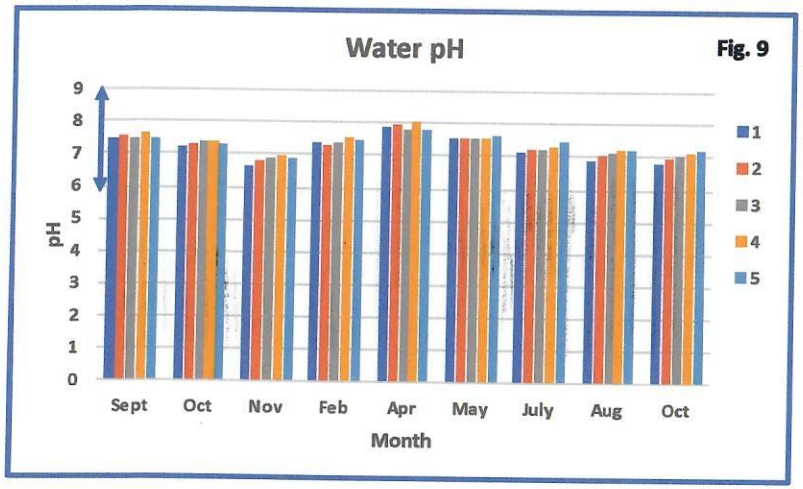

5/15/19
Relative Percentage
Fig. 4
Percent
70
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella
unknown

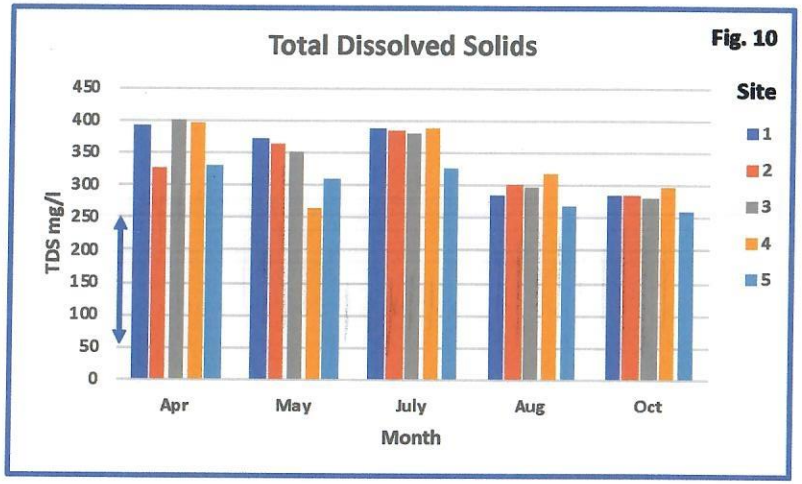

7/1/19
Relative Percentage
Fig. 5
Percent
90
80
70
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella
unknown

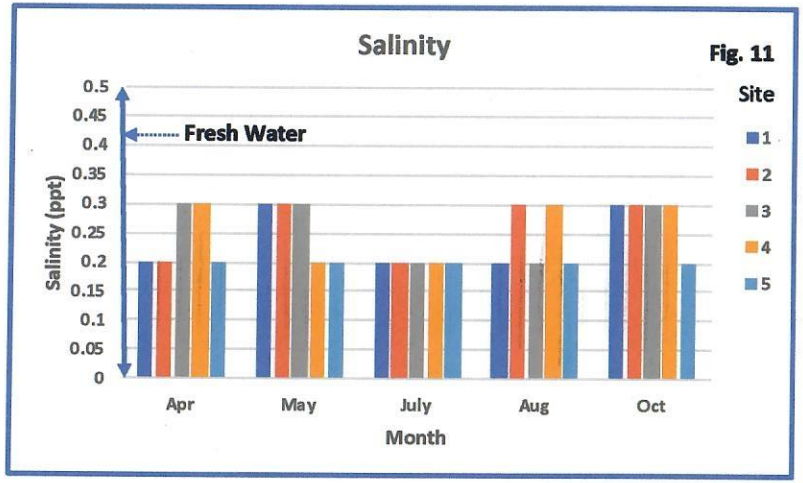

10/10/19
Relative Percentage
Fig. 7
Percent
90
80
70
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella
unknown
Bluegreen

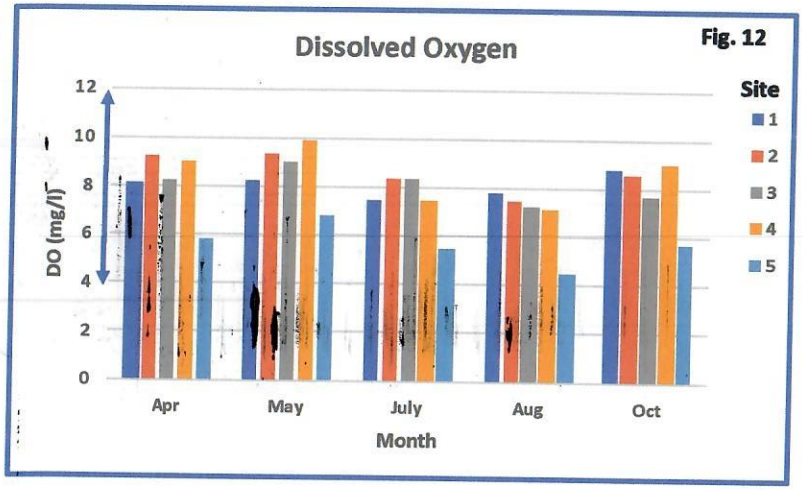

8/20/19
Relative Percentage
Fig. 6
Percent
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
Site
Rhoicospheria
Gomphonema
Navicula
Cymbella
unknown

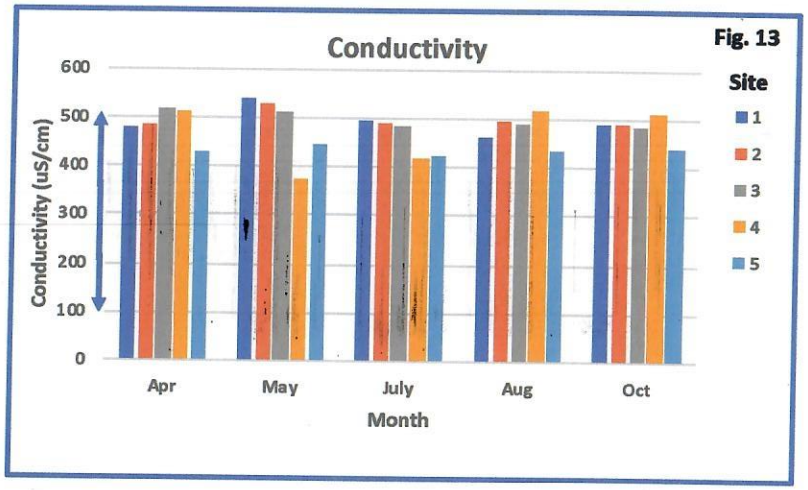

Water Temperature
Fig. 8
Site
1
2
3
4
5
Temperature(°C)
25
20
15
10
5
0
Sept
Oct
Nov
Feb
Apr
May
July
Aug
Oct
Month


Water pH
Fig. 9
1
2
3
4
5
pH
9
8
7
6
5
4
3
2
1
0
Sept
Oct
Nov
Feb
Apr
May
July
Aug
Oct
Month


Total Dissolved Solids
Fig. 10
Site
1
2
3
4
5
TDS mg/l
450
400
350
300
250
200
150
100
50
0
Apr
May
July
Aug
Oct
Month


Salinity
Fig. 11
Site
1
2
3
4
5
Fresh Water
Salinity (ppt)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Apr
May
July
Aug
Oct
Month


Dissolved Oxygen
Fig. 12
DO (mg/l)
12
10
8
6
4
2
0
Apr
May
July
Aug
Oct
Month
Site
1
2
3
4
5


Conductivity
Fig. 13
Conductivity (uS/cm)
600
500
400
300
200
100
0
Apr
May
July
Aug
Oct
Month
Site
1
2
3
4
5

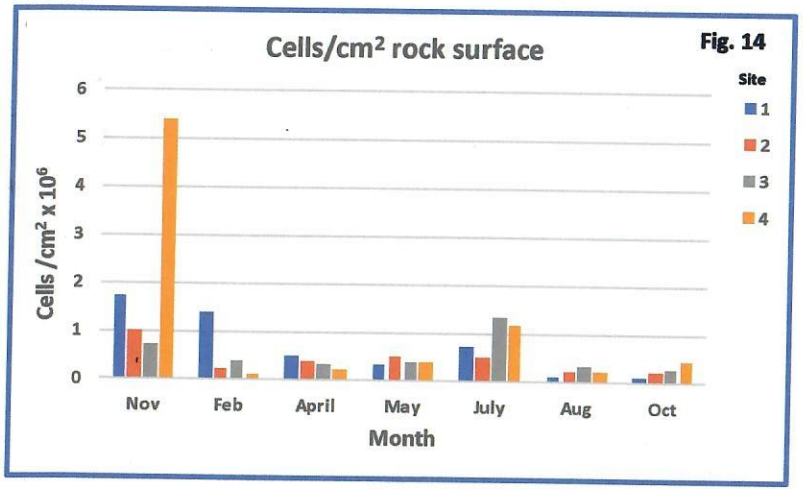

Cells/cm² rock surface
Fig. 14
Cells /cm² x 10⁶
6
5
4
3
2
1
0
Nov
Feb
April
May
July
Aug
Oct
Month
Site
1
2
3
4

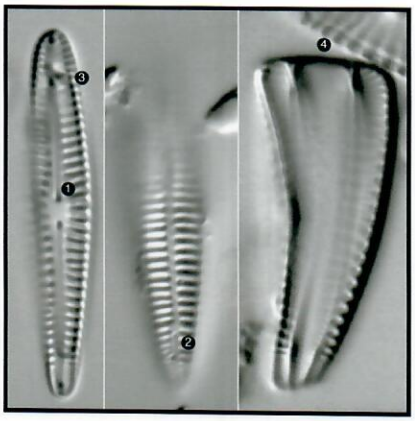
Fig. 15 WaterSafe Test Kit (Silver Lake Research)

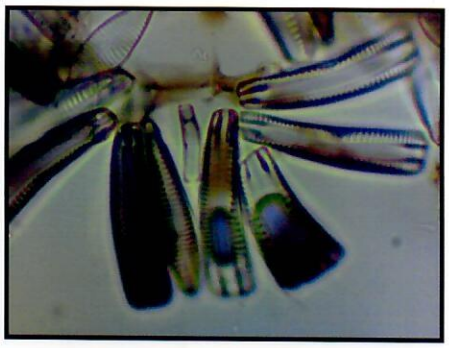
	5/15/19	7/1/19	8/20/19	10/10/19	11/26/19
NO_3/NO_2 (ppm total N)	0.5-2	0.5-2	2.0-5.0	2.0-5.0	0.5-1.0
NO_2 (ppm total N)	0.15	0.15	0.15-.3	0.15-0.3	0.15-.2
pH	7.5	7.5	7.5	7.5-8.5	7.5
Hardness (ppm)	425	120	425	425	425
Cl	Neg	Neg	Neg	Neg	Neg
Lead	Neg	Neg	Neg	Neg	Neg
Pesticides	Neg	Neg	Neg	Neg	Neg
Bacteria	Pos	Pos	Pos	Pos	Pos

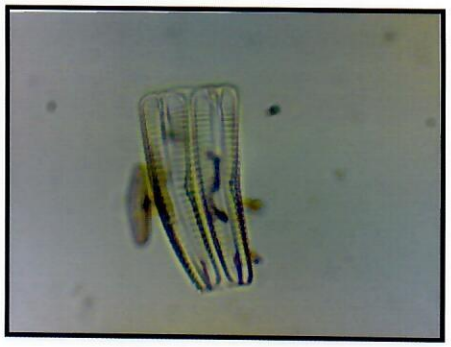
Nitrate levels > 3ppm indicative of pollution, 10-20 ppm aquatic diversity declines, > 30ppm very polluted, clean water < 1ppm.

Appendix A

Rhoicosphenia

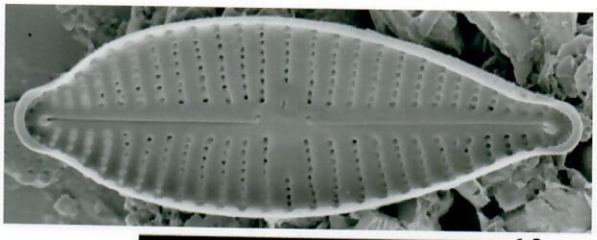


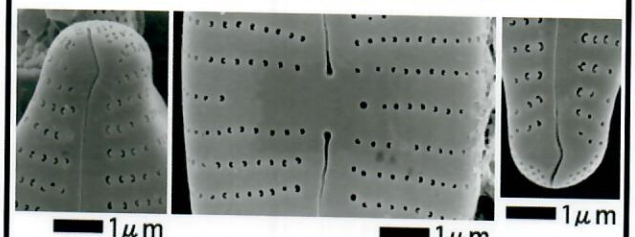


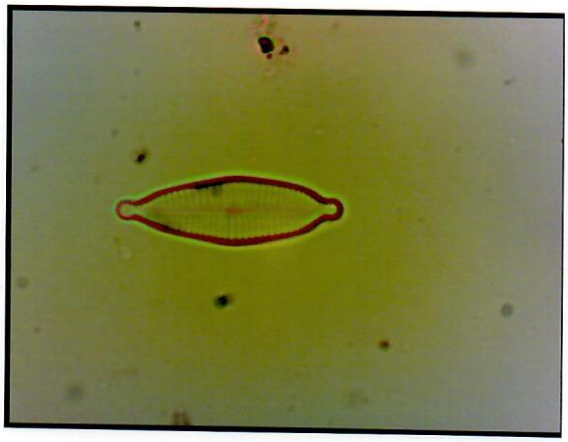


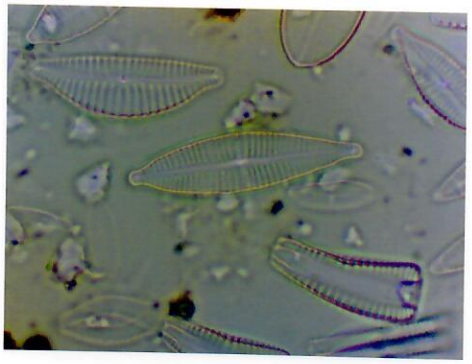
Spaulding, S. and Edlund, M. (2008).Rhoicosphenia. In Diatoms of North America. Retrieved Jan. 11, 2019 from https://diatoms.org/genera/rhoicosphenia

Gomphonema parvulum



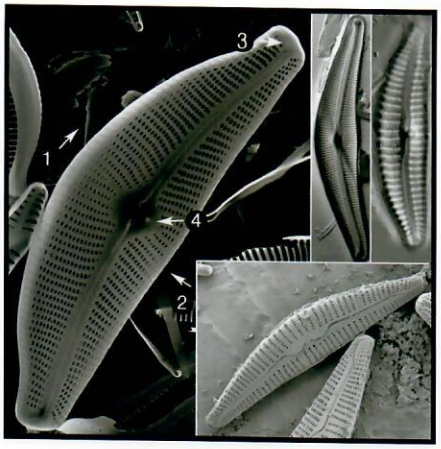




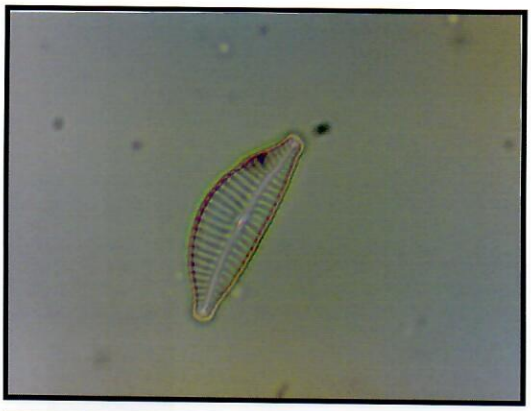


Appendix B

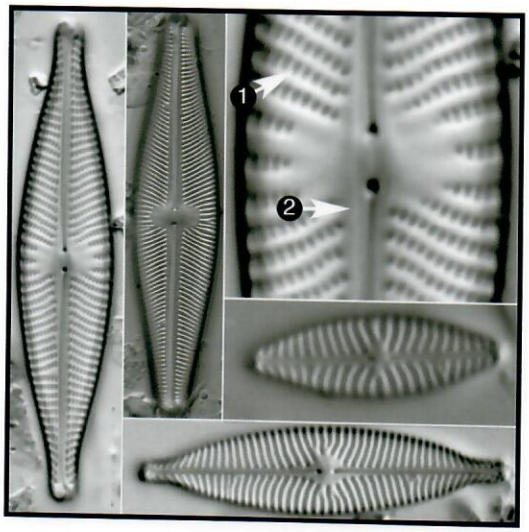
Cymbella sp.



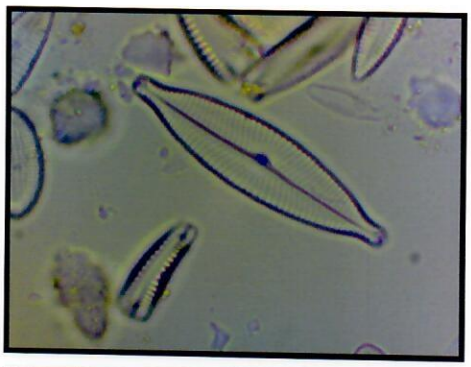
Spaulding, S. and Edlund, M. (2008).Cymbella. In Diatoms of North America. Retrieved Jan. 11, 2019 from https://diatoms.org/genera/cymbella

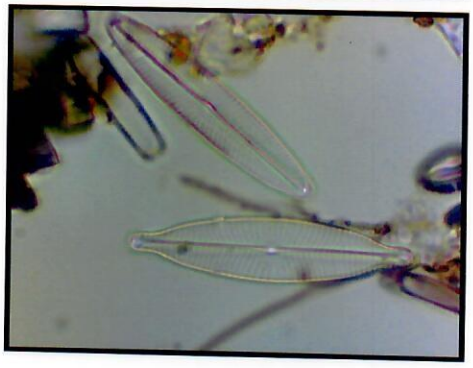


Navicula sp.



Spaulding, S. and Edlund, M. (2008).Navicula In Diatoms of North America. Retrieved Jan. 11, 2019 from https://diatoms.org/genera/navicula

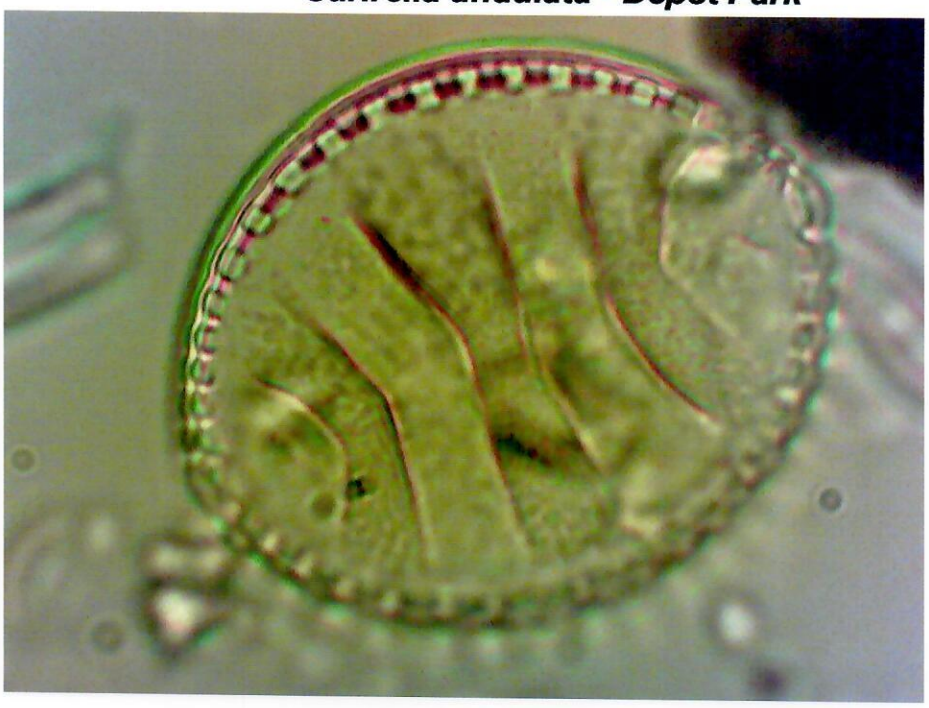




Navicula sp.

Appendix C

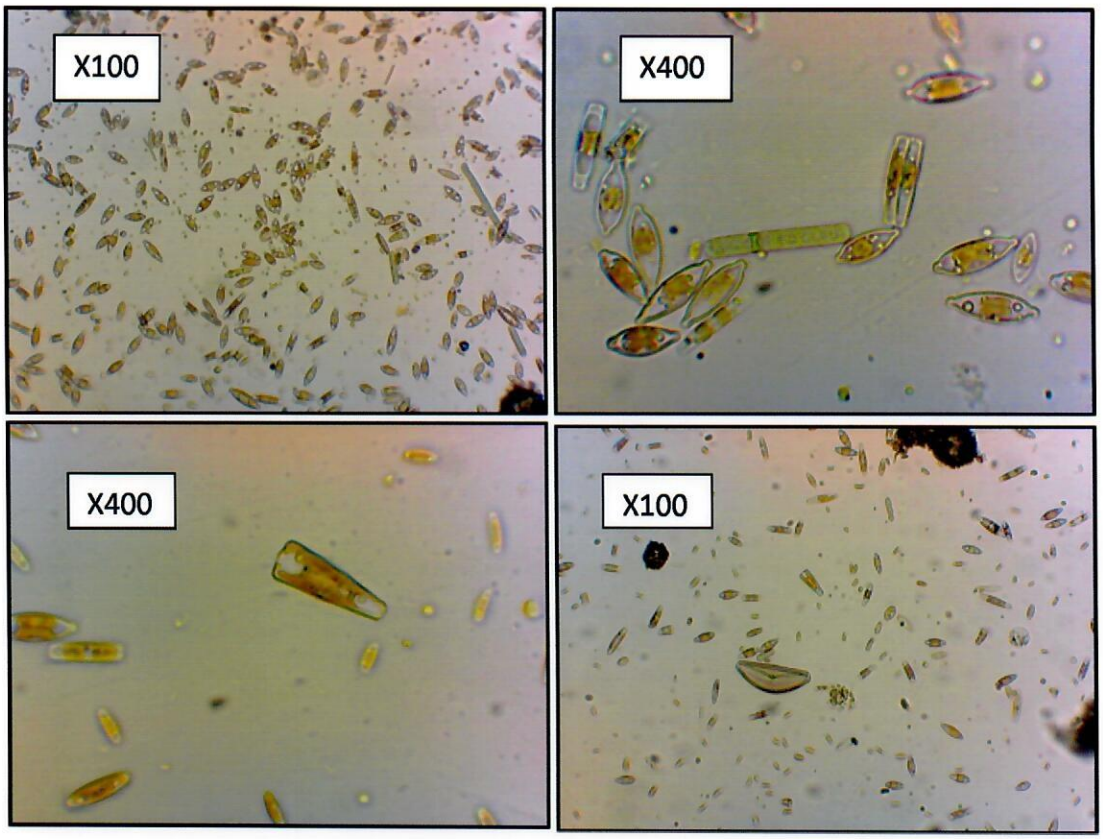
Surirella undulata - Depot Park



Cymbella mexicana ? - Depot Park

Appendix D

Live samples from different sites



Appendix C: List of Illicit Discharges

Table 6: Illicit Discharges						
Illicit Discharge	Part I.E.3.e(3)(a) Source	Part I.E.3.e(3)(b) Date Observed & Date Reported:	Part I.E.3.e(3)(c) Detected during Screening, Reported by Public or Other (Describe):	Part I.E.3.e(3)(d) Investigation Resolution:	Part I.E.3.e(3)(e) Description of Follow-up Activities:	Part I.E.3.e(3)(f) Date Investigation Closed:
Petroleum odor from storm drains in vicinity of 3/5/7 Roanoke St down stream to 107 N Franklin St	107 N Franklin St	8/23/2018, 5/28/2020	Reported by Public, additional reports from Town Hall parking lot by Town Employees	Occasional reports of diesel/petroleum smell from double grated inlets in Town Hall parking lot over the winter 2019. All seemed to have dissipated upon investigation. On 5/28/2020 Town employee Alan Shaw reported the petroleum smell from two inlets in the Town parking lot. The Fire Department was called to check the area with the gas meter and did not detect petroleum fumes.	Underground oil tank behind 7 Roanoke St and some associated soil was removed by a private contractor on 08/07/2019. Reports from this area will continue to be investigated as a continuation of the same issue.	ongoing as of 6/30/2020

Mulch moving in quantity into storm drain system in Oak Tree Phase I and II. Expanded to all phases 10/2019	Oak Tree Development	7/9/2018, 10/24/2019, 3/20/2020	Originally reported by Public Works employee, 2019-20 reports by Public	Investigation of all phases of Oak Tree development noted multiple areas where mulch could be moving into the storm drain. No evidence of dumping mulch	Continue to talk to HOAs about alternative ground covers and edging for mulch beds.	ongoing as of 6/30/2020
Sewage odor coming from storm drain inlet	8 Radford St	7/19/2019 11/4/2019	Reported by Public	TOC Public Works confirmed the sanitary sewer was not leaking into the storm drain.	No further reports of odor	11/8/2019
Resident reported large number of dead crayfish in stream at rear of yard	535 Arrrowhead Dr.	09/04/2019	Reported by Public	Engineering and Public Works personnel inspected area storm drains for illicit discharges. Steve Woodyard at DEQ was notified. No illicit discharge found.	No further reports of dead crayfish or fish. This stream runs through numerous yards and a park.	09/06/2019

Complaint of oil drums being spilled at the property	3390 Midway Dr, NW	01/08/2020	Reported by Public	TOC Building Official Jerry Heinline called the Fire Department. Fire Department cleaned up spill. Some of the spill reached the road but all was cleaned up. Allen Linkenhoker at DEQ was notified of the spill.	Patricia Colatosti checked area during rain on 01/10/2020. No evidence of oil entering or in storm drain. Follow up sent to Allen Linkenhoker on 1/21/2020	01/13/2020
Complaint of trash in UT to Crab Creek at the Blue Leaf Stream Restoration	Stream at end of Blue Leaf Dr and behind Red Leaf Court	01/31/2020	Reported by Public	Public Works employees cleaned up the trash on the TOC owned sections of the stream on 2/05/2020	Follow-up determined that the Stormwater Management and Conservation easement held by the Town may make the Town responsible for trash that affects the vegetation	02/12/2020

Trash in UT to Slate Branch behind NRV Mall	Between Huckleberry trail and NRV Mall parking lot north of pedestrian bridge over Peppers Ferry Rd.	02/18/2020	Reported by Public	Town employees on site correctly responded that the UT was on NRV Mall property and they are responsible for trash.	The Town is considering holding a dispersed stream / trash clean up event this fall in response to rising reports of trash in streams and may target commercial areas.	Ongoing as of 06/30/2020
Trash and brush in UT to Crab Creek	Behind 350 College St NW	03/26/2020	Reported by Public	Resident asking whether he could clean up the trash in the stream and associated loose brush. Resident told since stream is on his property the Town welcomes the help cleaning up trash.	Followed up with resident after investigation for drainage easements. The Town does not hold a drainage easement on this section of stream and trash removal falls on the property owner.	04/09/2020

Dumping oil and antifreeze into a drain that leads to water	910 Radford St.	05/06/2020, 05/08/2020	Reported by Public to EPA. EPA forwarded to DEQ who forwarded it to TOC.	Environmental Inspector Cole Hammonds investigated. No evidence of oil or antifreeze found in downgradient ditches or the ditch outfall to UT to Crab Creek.	No further complaints. Area was investigated again with 05/22/2020 investigation of gasoline odor at Silver Lake Pump Station	05/22/2020
Gasoline-like odor in and around sanitary sewer pump station	Across from 1205 Silver Lake Rd	05/22/2020	Reported by Public and Town Staff	Investigated by Wastewater Treatment Facility staff since associated with sanitary sewer pump station. Samples of wastewater flow were analyzed. No impact or harm was seen to the UT to Crab Creek downstream of the overflow.	Routine follow-up inspections of the pump station and surrounding areas	Onlgoing as of 06/30/2020

Trash, furniture and bonfires in stormwater management facility	275 Epperly Drive	06/24/2020	Reported by Public	Public Works staff investigated. There was furniture and litter in the pond as well as brush in front of the inlets. Brush and furniture/litter removed and gate repaired	No further complaints. Dumping issue was turned over to Patrick Saunders in Code Enforcement.	06/30/2020

Appendix D: Documentation of COVID 19 Inspection and Maintenance Adjustments for Stormwater Management Facilities

Documentation of attempt to correct Construction Stormwater General Permit database stormwater management facility reporting errors.

From: Patricia Colatosti
Sent: Thursday, July 2, 2020 5:40 PM
To: constructiongp@deq.virginia.gov
Subject: VSMP/ MS4 stormwater management facilities reporting error

Hello,

As part of the Town of Christiansburg's MS4 reporting requirements, we have to certify that all Stormwater management facility information for stormwater facilities installed after July 1, 2014 were submitted through the Virginia Construction Stormwater General Permit database for land disturbing activities requiring a General VPDES Permit for Discharges of Stormwater from Construction Activities.

In the last reporting year we discovered that this had not happened on four permit terminations. Those permits were: VAR 104690, VAR10G089, VAR10H079, and VAR10L193.

Would it be possible to correct this error?

Thank you,

Patricia

Patricia Colatosti
Environmental Program Supervisor
Town of Christiansburg
100 East Main Street
Christiansburg, VA 24073
(540) 382-6120 x1157

From: Danz, Emma <emma.danz@deq.virginia.gov>
Sent: Friday, June 5, 2020 3:05 PM
To: Patricia Colatosti
Cc: Roberts, Jesse
Subject: Re: Town of Christiansburg MS4 permit compliance delays COVID-19

Hi Patricia,

We appreciate your proactive approach and reaching out to keep us updated. Glad to see you were able to adapt some of your program components to make them work.

Have a nice weekend!

Sincerely,

Emma

Emma Danz
MS4 Coordinator/ Stormwater Inspector
Department of Environmental Quality
Blue Ridge Regional Office
901 Russell Drive
Salem, VA 24153
540-988-3684
emma.danz@deq.virginia.gov
www.deq.virginia.gov

On Fri, Jun 5, 2020 at 12:52 PM Patricia Colatosti <pcolatosti@christiansburg.org> wrote:
Emma,

Most of what is listed in the attached letter are MS4 related delays in permit compliance, so I am sending this to you. I addressed the letter to Jay.

The Town is working towards staying in compliance and meeting all actions required in the permit reporting year, however our COVID-19 response plan has affected scheduling and completion of certain activities.

Please let me know if you have any questions,

Thanks,

Patricia

Patricia Colatosti
Environmental Program Supervisor
Town of Christiansburg
100 East Main Street
Christiansburg, VA 24073
(540) 382-6120 x1157

THE PLACE TO BE.
CHRISTIANSBURG VA
Established November 10, 1792

100 East Main Street
Christiansburg, VA 24073
p: (540) 382-6128
f: (540) 382-7338

June 5, 2020

Mr. Jay Roberts
Department of Environmental Quality
Blue Ridge Regional Office
901 Russell Drive
Salem, VA 24153

Dear Mr. Roberts,

Due to COVID-19 restrictions implemented by the Town of Christiansburg, the following MS4 permit and VMSP program requirements have been delayed. The Town is working towards staying in compliance by completing the required activities within the required timeframe, but these circumstances may prevent that and push the completion of the activities beyond the required time frame.

Specific contributing factors due to COVID 19 restrictions are listed with each bullet point below.

1) VAR040025 Part 1.E.2.c (MCM 2): Five planned public participation events for March and April were cancelled. We previously sent our proposed substitutions for scheduled public participation events to Emma Danz and Jay Roberts at DEQ's Blue Ridge Regional Office. The substitute activities will bring the Town up to the required minimum of 4 activities per reporting year.

2) VAR040025 Part 1.E.4.a.1, 1.E.4.b, 1.E.5.a.1 (MCM 4 and 5) and VAR040025 Part 1.E.5.b (MCM 5): Christiansburg Dept. of Public Works went to rotating shifts on April 1, 2020 and restricted activities to emergencies and basic services such as trash collection. Full shifts were resumed on April 27th, 2020. This pushed the following scheduled activities at least a month off schedule.

- Operator SWPPP inspections for VAR10L731 Wades Lane Landfill Staging and Stockpile Area were not conducted on schedule for approximately 8 business days. The site is back in compliance in reference to operator SWPPP inspections as of April 30, 2020.
- Scheduled significant maintenance and repair, routine maintenance, and yearly inspections on Town owned and/or operated stormwater management facilities are delayed. Due to the above staffing safety changes this was delayed until May. This has also led to a delay in the yearly inspections of the stormwater management facility due to inspecting the facilities post maintenance.

3) VAR040025 Part 1.E.6.m (MCM 6): Training – The Town had a pending contract with a third party to conduct an in-person training session in June 2020. Due to the COVID-19 restrictions, this contract was not executed since gatherings of over 10 people are not allowed. Each training session would have had 50 + people in attendance. We are currently re-working the training to be delivered electronically, and should have some staff trained by June 30, 2020, but we may run beyond the June 30 date for all required staff to attend the electronic training. Not all required staff have computer access, and the training will need to be done in small groups of 10 or less.

Again, the Town is currently in compliance and working towards staying in compliance, but per the DEQ guidance of March 31, 2020, is communicating possible non-compliance due to COVID-19 impacts and our actions to mitigate and minimize the effects and duration of any non-compliance.

Thank you,

Patricia Colatosti
Environmental Program Supervisor

cc: Wayne Nelson, P.E., Director of Engineering
Michael Kelley, P.E., Assistant Director of Engineering
James Lancianese, Director of Public Works
Travis Moles, Streets Superintendent
file

Appendix E: Documentation of Staff Training and Nutrient Management Plan Updates

Documentation of Staff Training:

From: Devon Eckstein
Sent: Tuesday, June 16, 2020 10:02 AM
To: Patricia Colatosti
Subject: RE: MS4 training recording location

Patricia,

I've placed it there.

Attendees list:

Patricia Colatosti
Devon Eckstein
Travis Moles
Alan Shaw
Bryce Young
Cole Hammonds
Dayton Poff
Don Cole
Justin St. Clair

From: Jared Crews
Sent: Tuesday, June 16, 2020 4:33 PM
To: Patricia Colatosti
Subject: RE: MS4 Training Recording

Hi Patricia,

I just finished watching the training. Thank you for the information.

Best,
Jared Crews
Planner II
Town of Christiansburg

From: Mike Kelley
Sent: Tuesday, June 16, 2020 11:07 AM
To: Patricia Colatosti
Subject: RE: MS4 Training Recording

Categories: To reply or do ASAP

Thanks.

Mike

From: Patricia Colatosti <pcolatosti@christiansburg.org>
Sent: Tuesday, June 16, 2020 11:06 AM
To: Engineering <Engineering@christiansburg.org>; BuildingInspectors <BuildingInspectors@christiansburg.org>; Planning <Planning@christiansburg.org>; Brad Epperley <bepperley@christiansburg.org>
Subject: MS4 Training Recording

Hi all,

If you missed the training this morning, it is located here: T:\Public\MS4 Documents\2019-2020 Training\zoom_0.mp4

It starts at minute 2:03 and runs about 25 minutes. Please send me any questions and I will try to find you answers.

Please, all field personnel need to view this. All field personnel means everyone who visits sites, whether they are public or privately owned.

Please send me an email once you have viewed it, I have to include attendance lists in the annual report I send to DEQ. The actual email will be included in the report so short is good.

Thanks,

Patricia

Patricia Colatosti

Environmental Program Supervisor
Town of Christiansburg
100 E. Main St
Christiansburg, VA 24073
540.382.6120 ext. 1157

From: Will Drake
Sent: Tuesday, June 16, 2020 11:51 AM
To: Patricia Colatosti
Subject: RE: MS4 Training Recording

Categories: To reply or do ASAP

Hi Patricia,

I just watched the video.

Thanks,
Will Drake

From: Patricia Colatosti
Sent: Tuesday, June 16, 2020 11:06 AM
To: Engineering; BuildingInspectors; Planning; Brad Epperley
Subject: MS4 Training Recording

Hi all,

If you missed the training this morning, it is located here: T:\Public\MS4 Documents\2019-2020 Training\zoom_0.mp4

It starts at minute 2:03 and runs about 25 minutes. Please send me any questions and I will try to find you answers.

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Thanks,

Patricia

Patricia Colatosti

Environmental Program Supervisor
Town of Christiansburg
100 E. Main St
Christiansburg, VA 24073
540.382.6120 ext. 1157

FY 2019-2020 MS4 Training Sign-in Sheet		
Date: 6-23-2020		
Employee Name Print		**Employee Name Signature**
C. GOAD		
Cody mounts		
Grant Hoover		
Jacob Woods		
JOEY GLEASON		
Tim ALLEN		
Dale Lee		
Corey Smith		
Lucas Kerns		
James Ward		
JERRY Colvin		
Timothy Tucker		
Michael Price		
Travis Moles		

FY 2019-2020 MS4 Training Sign-in Sheet

Date: 6-24-2020

Employee Name Print		Employee Name Signature
Steven Dalton		
Robert L. Lewis SR		
Roger Howell		
Tony Pina		
Obey Morris		
Jeff Bishop		
Rosa Pistory		
Kevin Poff		
Kenny Franklin		
Roger Leonard		
Maxwell Braun		
KENNY CUSTER		

FY 2019-2020 MS4 Training Sign-in Sheet		
Date: 6-25-2020		
Employee Name Print		**Employee Name Signature**
Dwight J Price		Dwight J Price
Greg Dunn		
Matt Gillispie		
Cody Sauder		
Steven Witt		
Brad Phillips		
chris wright		Chris Wright
Chance Dooley		
John moore		John Moore
Freddie Price		FC Price
Dewayne Gilmore		

FY 2019-2020 MS4 Training Sign-in Sheet		
Date: 6-26-2020		
Employee Name Print		**Employee Name Signature**
Timothy Bowman		
Michael Wiley		
Evan Phillips		
Joey Griffith		
Josh Dickerson		
Michael Huesman		
Jamie Epperly		
Justin Ayers		
Ron Goodson		
Jim Lanciaiese		

Weekly Safety Meeting

MS. 4

Date: 6/29/20

Department: new

Instructor: (print)

Instructor: (sign)

Time Spent: 30 min

Topic: MS4 Training Annual Video Training

Key Points:

Print Name	Sign Name
PAPPY	Darrell Farmer
Cody Calon	Cody Calon
RAY Willis	Ray Willis
BRUCE HARRIS	Bruce Harris
Byron Vaught	Byron Vaught
Patrick Polly	Dan Polly
Gary moore	Gary moore
Brian Bagley	Brian Bagley
Richard webb	Richard webb
Chris Martin	Chris Martin
Dandi Robinson	Dandi Robinson
Curtis williams	Curtis Williams
Travis Lester	Travis Lester
John Burton	J Kirtner
Tyler Shipley	Tyler Shipley
Tommy Sullivan	Tommy Sullivan

Print Name	Sign Name
Billy Woolwine	Billy Woolwine
Don Cole	Don Cole
Leon Martin	Leon Martin
Carl Light	Carl Light
David Maskins	David Maskins
Lloyd Lopez	Lloyd Lopez

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

Patricia Colatosti
100 E Main St.
Christiansburg, VA 24073

5/21/2020

Subject: Town of Christiansburg Nutrient Management Plan Review

The following nutrient management plan has been reviewed by Nick Yakish and confirmed by the Virginia Department of Conservation & Recreation to be developed in accordance with the Code of Virginia 10.1-104.2. Please note that this plan has not been reviewed for compliance with more restrictive requirements from other specific legislative, regulatory or incentive programs.

Plan Name	Planner	Acres	Start Date	Expiration Date
Town of Christiansburg	Robert Habel	7	7/1/2020	7/1/2023

A copy of this letter should be kept with your nutrient management plan. Initiation of plan revision is recommended by the Department to occur at least six months prior to the expiration date. If you have any questions concerning this letter or reviews, please contact me via phone or email.

Sincerely,

Nick Yakish
Urban Nutrient Management Coordinator
Department of Conservation and Recreation
600 East Main St., 24th Floor
Richmond, Virginia 23219
(804) 389-5439
nicholas.yakish@dcr.virginia.gov