MS4 STORMWATER PERMIT

MILL CREEK - POWHATAN CREEK

TMDL ACTION PLAN

WILLIAM & MARY

CHARTERED 1693

Prepared For:

William & Mary

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APPENDICES

1.0 2020 UPDATE

The Phase 2 Municipal Separate Storm Sewer System (MS4) General Permit issued in 2018 requires the William & Mary (university) to update local TMDL Action Plans. Below is the information required by Part II, B.1a of the latest permit to be included in this TMDL Action Plan. Much of this information was included in the previous Action Plan, but has been consolidated below.

Part II, B3: Each local TMDL action plan developed by the permittee shall include the following:

a. The TMDL project name: **Bacteria Total Maximum Daily Load Development for Mill Creek and Powhatan Creek**

b. The EPA approval date of the TMDL: **April 28, 2009**

c. The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable: **This TMDL assigns a bacteria WLA to the City of Williamsburg and specifies that the load from the City of Williamsburg includes the university. The WLA assigned jointly to the City of Williamsburg and the university for Powhatan Creek is shown in the table below. The university's property is approximately 8.7% of the combined City and university drainage area to Powhatan Creek and less than 0.2% of the total drainage area to Powhatan Creek, which includes James City County.**

Table 1 - Powhatan Creek TMDL WLA Jointly Assigned to William & Mary and City of Williamsburg

Waterbody	Segment	Impairment	WLA
Tidal Powhatan Creek	VAT-G10E-01	*Enterococci* Bacteria	0.2×10^{12} cfu/yr
Non-Tidal Powhatan Creek	VAT-G10R-02	*E. coli* Bacteria	0.4×10^{12} cfu/yr

d. Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 and that are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in

the TMDL**: See Section 3.0. After the implementation of pet waste control measures, the expected pollutant loading is no greater than the average pollutant loading for the land use identified in the TMDL.**

The non-tidal segment of Powhatan Creek was determined to be meeting water quality standards during the 2008 Water Quality Assessment and was not listed as impaired. James City County performed additional monitoring upstream of the non-tidal DEQ station 2-POW006.77 which showed it was fully supporting water quality standards. The non-tidal segment of Powhatan Creek has since remained delisted in the 305(b)/303(d) Water Quality Assessment Integrated Report.

e. The BMPs designed to reduce the pollutants of concern in accordance with Parts II B 4, B 5, and B 6: **None.**

f. Any calculations required in accordance with Part II B 4, B 5, or B 6: **None.**

g. For action plans developed in accordance with Part II B 4 and B 5, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants: **The City of Williamsburg provides public education concerning pet waste to the larger City of Williamsburg community including university students and faculty.**

h. A schedule of anticipated actions planned for implementation during this permit term: **Continue to restrict access to the Dillard Complex Athletic Fields and monitor pet waste outside the fields.**

Part II, B4: Bacterial TMDLs

a. Not applicable

b. If the permittee is not an approved VSMP authority, the permittee shall select at least one strategy listed in Table 5 (from permit) designed to reduce the load of bacteria to the MS4 relevant to sources of bacteria applicable within the MS4 regulated service area. Selection of the strategies shall correspond to sources identified in Part II B 3 d.

The university is implementing the following measures in accordance with Table 5, of the MS4 permit under the category "Domestic pets (dogs and cats)":

Enforce the existing policy of no pets on the athletic fields.

Continue to protect the riparian buffer along the north side of the Dillard Complex by not mowing or removing vegetation.

Part II, B5: Local sediment, phosphorus, and nitrogen TMDLs **Not applicable**

Part II, B6: Polychlorinated biphenyl (PCB) TMDLs. **Not applicable**

Part II, B7: Public Comment **15 day public comment period to start May 20. This document will be posted to the university's website for public comments by email.**

2.0 INTRODUCTION

Since 2003, the College of William & Mary (university) has been subject to the Municipal Separate Storm Sewer System (MS4) General Permit under the small, Phase 2 category. In general, the MS4 regulations provide requirements for operating existing storm sewer systems in a way that reduces the potential for stormwater pollution. The permit also requires compliance for systems discharging to a waterbody with a Total Maximum Daily Load (TMDL) that assigns a Waste Load Allocation (WLA) to the permit holder. This requires the permit holder to create a TMDL Action Plan to reduce the applicable pollutants, through the construction of structural stormwater BMPs, through non-structural operational measures, or a combination of the two.

Currently, there are two TMDLs that directly imposes requirements on the university; the Chesapeake Bay TMDL and the Powhatan/Mill Creek TMDL. Compliance with the Chesapeake Bay TMDL is documented by the *College of William & Mary Stormwater Management Plan*. The TMDL for Mill Creek and Powhatan Creek, *"Bacteria Maximum Daily Load for Mill Creek and Powhatan Creek"* is attached at Appendix 1. This TMDL assigns a bacteria WLA to the City of Williamsburg, and specifies that the load from the City of Williamsburg includes the university. Based on conversations with DEQ, since the university is specifically mentioned in the TMDL as included in the aggregate load, the university has an assigned WLA and must submit an individual Action Plan.

DEQ has issued a guidance document for compliance with local TMDLs. "*Local TMDL MS4 Guidance*" was issued May 29, 2015 as a draft. This document provides a summary of permit requirements with guidance on developing TMDL Action Plan. DEQ has not issued a schedule for the issuance of the final document. This document is included at Appendix 2.

3.0 WATERSHED ANALYSIS

The TMDL addresses the watershed for both Mill Creek and Powhatan Creek. The TMDL watershed and its relation to the university is shown in Figure 1 below:

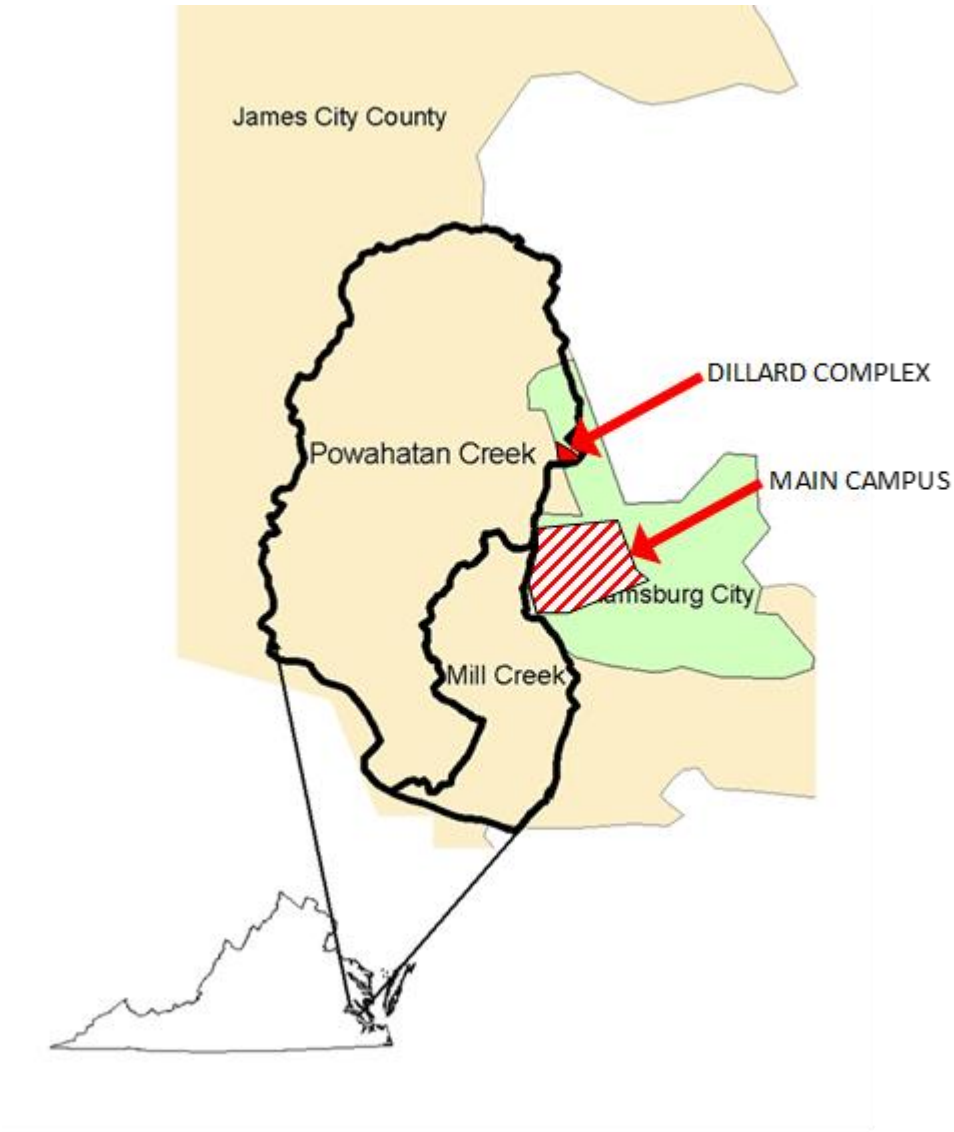

Figure 1 – TMDL Watershed

A map of the university's property and MS4 service area within the TMDL watershed is attached at Appendix 3. The only area of university property located within the TMDL watershed is the Dillard Complex which is approximately 33.1 acres total of which 24.1 acres is in the university's MS4 service area. The Dillard Complex is located in the extreme upper reach of the Powhatan Creek watershed. The portion of the Dillard Complex that drains to Powhatan Creek is approximately 0.7% of the TMDL combined watershed.

Drainage to Powhatan Creek is through a stream tributary to the north of the Dillard Complex which forms the northern property line. This stream tributary collects drainage from a portion of the Dillard Complex and a portion of Kiwanis Park, which is owned by the City of Williamsburg. Downstream of the Dillard Complex, the stream tributary crosses under Longhill Connector Road. The university has two storm sewer outfalls that define the MS4 service area and discharge to this stream tributary. The majority of the drainage area is conveyed by a 24" pipe which discharges to a channel connected to the stream tributary. The other discharge is through an infiltration type stormwater BMP (Library Storage BMP) which provides partial bacteria removal. Additional area drains by sheet flow and is not included in the MS4 service area.

The southern portion of the Dillard Complex discharges to a storm sewer in Ironbound Road which eventually discharges into Lake Matoaka and College Creek.

4.0 SOURCE ANALYSIS

The TMDL included data from three sampling points (Section 2.6 and Figure 2.1). Two sampling points are located at the extreme lower end of the Mill Creek and Powhatan Creek watersheds. The third point is located at approximately the mid-point of the Powhatan Creek watershed. None of these sampling points necessarily reflect conditions in the extreme upper reaches of the Powhatan Creek watershed where the Dillard Complex is located.

The TMDL (section 5.2.2) states that for the non-tidal section of Powhatan Creek, contributions from wildlife direct deposit and residential areas are the primary sources of bacteria. The Dillard Complex includes the following:

- Two unoccupied dormitory buildings constructed in the 1940's as part of Eastern State Hospital, which are planned to be demolished in the next 5-10 years.

- Three former residences constructed in the 1940's as part of Eastern State Hospital. Two are unoccupied and one is partially occupied by an office that operates part time. These three buildings are planned to be demolished in the next 5-10 years.

- Martin Family Stadium, constructed in 2006, is the university's soccer venue with the capacity to seat approximately 1,000 spectators. The stadium is served by a sanitary pump station.

- Library Storage Building, constructed in the 1980's which is occupied by one full time employee. The sanitary flow from this building is collected by the pump station at the Martin Family Stadium.

- A portion of the baseball field at the Plumari Baseball Stadium drains to this area, but sanitary sewers are not in the TMDL drainage area.

- The soccer practice field located adjacent to Ironbound Road.

- Roads and parking areas.

The following are possible bacteria sources and analyses of the potential for these sources at the portion of the Dillard Complex within the Powhatan Creek watershed:

4.1 Sewage

Leaks, overflows, and illicit connections from sanitary sewers are a potential source of observed bacteria. There is no direct evidence that these conditions exist at the Dillard Complex.

The sanitary sewer system at the Dillard Complex is connected to the City of Williamsburg sanitary sewer in Ironbound Road. Building service lines for the original buildings are not in use, except for one former residence, which will be vacated in the next 12 months. All other building service lines are gasketed pipe with a lower potential for leaks.

There are no sanitary sewer overflows recorded at the Dillard Complex. Minor backups may have occurred within buildings, but none have resulted in a discharge to the environment. There is a sanitary pump station at Martin Family Stadium which serves the stands at the stadium and the Library Storage Building. This pump station is approximately four years old and is included in the university's maintenance and inspection program.

The university's sanitary sewer mapping is complete and there is no indication of either sanitary outfalls directly to the environment or sanitary connections to the storm sewer. Additionally, the storm sewer inspection program required by the university's MS4 permit has not shown any evidence of cross connection of sanitary pipes to the storm sewer.

4.2 Pet Waste

Improper disposal of pet waste can be a potential source of observed bacteria in the watershed. The Dillard Complex is occasionally used by the public to walk dogs.

The university has taken steps to restrict access to athletic fields in the Dillard Complex. The fields at the Plumeria Baseball Stadium and Martin Family Stadium are fenced with controlled/limited access. The university is in the process of constructing fencing around the soccer practice field and installing signage within the Dillard Complex to ask people to clean up pet waste.

4.3 Wildlife

The TMDL specifically cites wildlife as a potential source of observed bacteria in the watershed. Geese are generally not present at the Dillard Complex due to the lack of ponds or lakes. The northern edge of the Dillard Complex is located within a forested area that is a potential habitat for a variety of other wildlife. This wooded area is an RPA stream buffer which is protected by Virginia regulations. The university collects waste in covered dumpsters to avoid attracting wildlife.

5.0 ACTION PLAN COMPONENTS

5.1 General

The following is a summary of the required Chesapeake Bay TMDL Action Plan components as provided in the latest DEQ guidance document (Guidance Memo 14-2012, revised 3/19/2015). Following each requirement is a summary of the means of compliance by the university.

1. The name(s) of the Final TMDL report(s)

- The TMDL document "*Bacteria Maximum Daily Load for Mill Creek and Powhatan Creek*" is attached at Appendix 1.

2. The pollutant(s) causing the impairment(s)

- The TMDL lists bacteria as the impairment of concern.

3. The WLA(s) assigned to the MS4 as aggregate or individual WLAs

- The TMDL lists a WLA for the City of Williamsburg. The TMDL aggregates the load from the College of William & Mary with the load assigned to the City of Williamsburg.

4. Significant sources of POC(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES permit. A significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL.

- The land use identified in the TMDL (Figure 2.5) for the subject area is mostly low density residential with a few pockets of high density residential. Based on an analysis of the university property located within the TMDL watershed, there are no significant sources where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL.

5. Existing or new management practices, control techniques, and system design and engineering methods, that have been or will be implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA

- The university will continue existing maintenance and inspection programs for sanitary pump stations and sanitary sewers. The university will also continue to manage garbage collection to avoid attracting wildlife and efforts to prohibit dog walking at the Dillard Complex.

- The university has conducted an analysis of pet waste at the Dillard Complex. Pet waste has been deposited when members of the public bring their dogs to the athletic fields to play. The university has instituted a program of fencing off athletic fields to prevent public access. To date, there has been no evidence of pet waste in other areas on the Dillard Complex. The university will continue to monitor and take action, if required.

- Other measures have been evaluated, but have been deemed as not effective in addressing this TMDL.

6. Legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements applicable to reducing the POCs identified in each respective TMDL

- The university fully controls all the property it owns within the TMDL watershed. There is no need for any legal authorities. The university cooperates with the City of Williamsburg on a continuous basis for stormwater issues.

- Operations of this property are controlled by the university Athletics Department with assistance provided by university operations & Maintenance within the Facilities Management Department. The list of directives issued by the university affecting grounds maintenance at the Dillard Complex is maintained by the Associate Director of Grounds.

- The Dillard Complex is platted partially in James City County and partially in the City of Williamsburg. As such, the Dillard Complex is subject to stormwater ordinances issued by these two localities and the university can use these ordinances to assist in controlling actions by the general public that affect stormwater quality. The City of Williamsburg ordinance is contained in Section 7-14 of the Code of the City of Williamsburg. The James

City County ordinance is contained in Section 18A-22 of the Code of James City County. At this time, neither locality has a "poop scoop" law.

- On January 13, 2016, the university held a coordination meeting with the City of Williamsburg to discuss MS4 coordination issues, including the Powhatan and Mill Creek TMDL. Meeting minutes are attached. Efforts to coordinate public outreach will continue as the City develops their TMDL Action Plan.

7. Enhancements to public education, outreach, and employee training programs to also promote methods to eliminate and reduce discharges of the POC(s) for which a WLA has been assigned

- The fence around the soccer field is complete and the Athletics Department procedure is to lock the gates when not in use. Employees have been trained to lock the gates and any new employees are provided this training.

8. A schedule of interim milestones and implementation of the items in 5, 6, and 7

- Fencing of Soccer practice field: In December 2015, 1,734 linear feet of 6' high chain link fence was installed to prevent pet waste deposition on the field. Six signs stating "No Trespassing" will be installed at the gates and along the fence as part of this project.

- The manholes and ground area associated with approximately 400 feet of sanitary force main, 2400 feet of gravity drain sanitary and a sanitary pump station are visually inspected weekly. Manhole lids are lifted to inspect for evidence of clogs or leakage. Proper operation of the pump station is verified. Any spills, indications of overflow or other problems identified during inspections are addressed promptly.

9. Methods to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs

- The university will continue existing programs to limit bacteria sources and install signage as described in item 7.

- Regular visual inspections of the soccer field and other areas within the complex for excessive pet waste will be conducted and the findings evaluated. If excessive amounts are discovered, further action such as additional "No Trespassing" signs may be installed.

10. Measurable goals and the metrics that the permittee and Department will use to track those goals (and the milestones required by the permit). Evaluation metrics other than monitoring may be used to determine compliance with the TMDL(s).

The following items are provided as measurable goals of permit compliance:

- Fencing of Soccer practice field: In December 2015, 1,734 linear feet of 6' high chain link fence was installed to prevent pet waste deposition on the field. Six signs stating "No Trespassing" will be installed at the gates and along the fence as part of this project.

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