Elizabeth River TMDL Action Plan

Norfolk State University

Project No. 183484

DRAFT
5/14/2025

Elizabeth River TMDL Action Plan

prepared for

Norfolk State University

Norfolk, Virginia

Project No. 183484

DRAFT
5/14/2025

prepared by

Burns & McDonnell Engineering Company, Inc.
Chesapeake, Virginia

TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION 1-1
1.1 Background 1-1
1.2 Regulated Areas 1-1
1.3 Permit Compliance Crosswalk 1-1

2.0 APPLICABLE TMDL REPORT, POLLUTANT OF CONCERN, AND WASTE LOAD ALLOCATION 2-1

3.0 SIGNIFICANT SOURCES OF THE POLLUTANT OF CONCERN 3-1

4.0 BEST MANAGEMENT PRACTICES 4-1
4.1 Strategies for Bacteria Reduction Stormwater Control/ Management Strategy .. 4-1

5.0 ENHANCED EDUCATION, OUTREACH, AND TRAINING 5-4

6.0 TMDL ACTION PLAN PROGRESS 6-6
6.1 Schedule of Anticipated Actions Planned for Implementation 6-6

7.0 PUBLIC COMMENTS RECEIVED 7-1

APPENDIX A - EXISTING CONDITIONS MAP

LIST OF TABLES

Page No.

Table 1-1: Action Plan and Permit Compliance Crosswalk 1-1
Table 2-1. Elizabeth River TMDL Enterococcus Waste Load Allocation (WLA) 2-1
Table 3-1: Estimated Bacterial Contribution by Source and Percent Reduction Required as Shown in the Elizabeth River TMDL 3-1
Table 4-1 General Permit Table 5 on Reduction Strategies 4-1

LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BMP	Best Management Practice
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
MS4	Municipal Separate Storm Sewer System
NSU	Norfolk State University
POC	Pollutant of Concern
SSO	Sanitary Sewer Overflow
SWBC	State Water Control Board
TMDL	Total Maximum Daily Load
University	Norfolk State University
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Waste Load Allocation

1.0 INTRODUCTION

1.1 Background

This Bacterial Total Maximum Daily Load (TMDL) Action Plan has been developed by Norfolk State University (NSU) for the approved local TMDL report for the Elizabeth River Watershed, as required by the University's Small Municipal Separate Storm Sewer System (MS4) Permit (VAR040097). The MS4 Permit was issued by the Virginia Department of Environmental Quality (DEQ) with an effective date of November 5, 2018 and expired on October 31, 2023. The permit was then renewed and is valid through October 1, 2028. This Plan was developed to address pollutants of concern (POC) in accordance with Permit requirements where the University has been assigned a waste load allocation (WLA) in an approved TMDL. NSU drains to the Lower Eastern Branch segment of the Elizabeth River and is therefore subject to the approved bacteria TMDL for the Elizabeth River.

1.2 Regulated Areas

NSU is located within the City of Norfolk, and the regulated area for the University's MS4 Permit is limited to the University's State-owned property to-date, which is approximately 138 acres. Although offsite properties drain through the campus via a closed storm sewer system, properties not owned by the State are not accounted for in the Permit. These other properties are addressed under the City's MS4 Permit. The extent of the regulated MS4 service area is shown on the *Existing Conditions Map* included in **Appendix A**.

1.3 Permit Compliance Crosswalk

The MS4 Permit lays out specific requirements that are to be addressed in this local TMDL Action Plan. **Table 1-1** lists the Local TMDL Action Plan requirements set forth in the MS4 permit, the MS4 Permit reference section, and the corresponding Action Plan section where the requirement is addressed.

Table 1-1: Action Plan and Permit Compliance Crosswalk

Action Plan Section	MS4 Permit Requirement	MS4 Permit Requirement Reference Section
Section 2.0	TMDL Project Name	Section II.B.4.a
Section 2.0	EPA approval date of the TMDL	Section II.B.4.b
Section 2.0	Waste load allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable	Section II.B.4.c

Action Plan Section	MS4 Permit Requirement	MS4 Permit Requirement Reference Section
Section 3.0	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	Section II.B.4.d
Section 4.0	The BMPs designed to reduce the pollutants of concern in accordance with Parts II.B.4, B.5, and B.6	Section II.B.4.e
Section 4.0	Traditional permittees shall select and implement at least three of the strategies listed in Table 5 designed to reduce the load of bacteria to the MS4. Selection of the strategies shall correspond to sources identified in Part II B 4 d.	Section II.B.5.a
Section 5.0	For action plans developed in accordance with Part II.B.4 and B.5, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants	Section II.B.4.g
Section 6.0	A schedule of anticipated actions planned for implementation during this permit term	Section II.B.4 .h
Section 7.0	Prior to submittal of the action plan required in Part II.B.1, the permittee shall provide an opportunity for public comment proposed to meet the local TMDL action plan requirements for no less than 15 days.	Section II.B.9

2.0 APPLICABLE TMDL REPORT, POLLUTANT OF CONCERN, AND WASTE LOAD ALLOCATION

In 2008, the Elizabeth River was listed on Impaired Waters – 303(d) List for Recreation, due to exceedances of the criteria for *enterococcus* bacteria for primary contact. In accordance with Section 303(d) of the Clean Water Act and the US Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130), a TMDL for the POC *enterococcus* bacteria in the Elizabeth River has been developed by Virginia DEQ and the University has been assigned a WLA. The April 2010 *"Bacterial Total Maximum Daily Load (TMDL) for the Elizabeth River Watershed"*, herein referred to as the Elizabeth River TMDL, was approved by the EPA on July 20, 2010 and by the State Water Control Board (SWCB) on September 30, 2010.

Norfolk State University is subject to one (1) TMDL that assigns a WLA for discharges of bacteria to impaired waters. The WLAs are assigned in aggregate to multiple MS4 permit holders within the City of Norfolk's geographic boundary. MS4 permit holders include the City of Norfolk (VA0088650) and Norfolk State University.

Table 2-1 Summarizes the Approved TMDL WLA for *Enterococcus*.

Table 2-1. Elizabeth River TMDL Enterococcus Waste Load Allocation (WLA)

TMDL Watershed	Existing Load (counts/day)	Allocated Load (counts/day)	Required Reduction	Aggregated Permittee
Lower Eastern Branch – Elizabeth River	2.48E+14	1.18E+13	95%	City of Norfolk (VA0088650)

3.0 SIGNIFICANT SOURCES OF THE POLLUTANT OF CONCERN

As identified in the Elizabeth River TMDL, non-point sources of bacteria include livestock, wildlife, pets, and failed septic systems. The TMDL also identified sanitary sewer overflows (SSOs) as a point source load of bacteria. The SSO bacteria loads were included in the Load Allocation and not the WLA for several reasons, as outlined in the Elizabeth River TMDL.

Table 3-1 outlines the estimated bacterial contribution by source and the corresponding percent reduction required as shown in the Elizabeth River TMDL.

Table 3-1: Estimated Bacterial Contribution by Source and Percent Reduction Required as Shown in the Elizabeth River TMDL

Bacterial Source	Percent of Existing Load	Required Reduction
Livestock	33.1%	100%
Wildlife	16.9%	68%
Failed Septic System	<0.1%	100%
Pets	45.3%	100%
SSOs	5.7%	100%

The University does not consider livestock, failed septic systems, pets, or SSOs to be a significant source of bacteria within the MS4 service area for the following reasons:

- There is no livestock present within the University's MS4 service area
- Pets are not allowed on campus grounds
- There are no septic systems within the service area
- The University does not experience SSOs

Therefore, wildlife is considered to be the primary source of bacteria-laden runoff for the University's MS4 service area. The most notable wildlife present on campus is waterfowl. These animals are a large contributor to this source of bacteria as they are attracted to open spaces and wet areas present on the campus. Research with staff members has indicated that waterfowl are also attracted to the campus by individuals feeding them. While having these birds gather in grassy areas may allow for some treatment of runoff to occur through landscaped and turf areas, areas of pavement drain runoff carrying bacteria directly into the storm system and ultimately to the Elizabeth River without treatment.

4.0 BEST MANAGEMENT PRACTICES

4.1 Strategies for Bacteria Reduction Stormwater Control/ Management Strategy

As required in the general permit, the University must select and implement at least three strategies listed in Table 5 in the permit which is also shown below as Table 4-1. These strategies are designed to reduce the load of bacteria to the MS4.

Table 4-1 General Permit Table 5 on Reduction Strategies

Table 5 Strategies for Bacteria Reduction Stormwater Control/Management Strategy	
Source	Strategies (provided as an example and not meant to be all inclusive or limiting)
Domestic pets (dogs and cats)	Provide signage to pick up dog waste, providing pet waste bags and disposal containers. Adopt and enforce pet waste ordinances or policies, or leash laws or policies. Place dog parks away from environmentally sensitive areas. Maintain dog parks by removing disposed of pet waste bags and cleaning up other sources of bacteria. Protect riparian buffers and provide unmanicured vegetative buffers along streams to dissuade stream access.
Urban wildlife	Educate the public on how to reduce food sources accessible to urban wildlife (e.g., manage restaurant dumpsters and grease traps, residential garbage, feed pets indoors). Install storm drain inlet or outlet controls. Clean out storm drains to remove waste from wildlife. Implement and enforce urban trash management practices. Implement rooftop disconnection programs or site designs that minimize connections to reduce bacteria from rooftops. Implement a program for removing animal carcasses from roadways and properly disposing of the same (either through proper storage or through transport to a licensed facility).
Illicit connections or illicit discharges to the MS4	Implement an enhanced dry weather screening and illicit discharge, detection, and elimination program beyond the requirements of Part I E 3 to identify and remove illicit connections and identify leaking sanitary sewer lines infiltrating to the MS4 and implement repairs. Implement a program to identify potentially failing septic systems. Educate the public on how to determine whether their septic system is failing. Implement septic tank inspection and maintenance program. Implement an educational program beyond any requirements in Part I E 1 though E 6 to explain to citizens why they should not dump materials into the MS4.
Dry weather urban flows (irrigations, car washing, powerwashing, etc.)	Implement public education programs to reduce dry weather flows from storm sewers related to lawn and park irrigation practices, car washing, powerwashing and other nonstormwater flows. Provide irrigation controller rebates. Implement and enforce ordinances or policies related to outdoor water waste. Inspect commercial trash areas, grease traps, washdown practices, and enforce corresponding ordinances or policies.

Birds (Canadian geese, gulls, pigeons, etc.)	Identify areas with high bird populations and evaluate deterrents, population controls, habitat modifications and other measures that may reduce bird-associated bacteria loading. Prohibit feeding of birds.
Other sources	Enhance maintenance of stormwater management facilities owned or operated by the permittee. Enhance requirements for third parties to maintain stormwater management facilities. Develop BMPs for locating, transporting, and maintaining portable toilets used on permittee-owned sites. Educate third parties that use portable toilets on BMPs for use. Provide public education on appropriate recreational vehicle dumping practices.

4.2 Strategies Utilized for Bacterial Reduction by NSU

Urban Wildlife

To educate the public on how to reduce food sources accessible to urban wildlife, NSU provides training to all new hire employees on Stormwater Pollution Prevention training during on-boarding that covers the topic of reducing food sources to wildlife on campus. Additionally, NSU also runs two information tables twice per semester during high profile events on campus with information on reducing food sources available to urban wildlife.

In order to clean out storm drains to remove waste from wildlife, the University Grounds Department currently performs routine cleaning of all storm drains before and after rainfall events.

The NSU Grounds Department also routinely cleans the campus roadways using street sweepers and street cleaning machines to remove animal carcasses from roadways.

In order to enforce urban trash management practices, the Sustainability Department at NSU has installed recycling bins and compact trash cans. Recyclable items are transported via Bay Disposal.

One instance of where a site design minimizes connections to reduce bacteria from rooftops is at Brown Hall. Currently, Brown Hall utilizes roof drains by sending roof runoff to the structural BMPs on site so that the bacteria can be filtered out.

Birds

Several years ago, NSU attempted to reduce bacteria caused by waterfowl by placing cutouts of dogs and alligators in areas where geese tended to concentrate on campus in an effort to ward them off. Unfortunately, this effort did not have the desired effect, as the geese were unbothered by the cutouts. Since then, NSU has contracted with a group of expert dog handlers from Flyaway Geese to scare the geese off in an attempt to create the sense that the area is inhospitable to the geese during the goose

mating season. Flyaway Geese comes to campus daily during the peak geese mating season and upon request during all other times of the year.

Other Sources

To enhance maintenance of stormwater management facilities owned or operated by NSU, the Phase 1 Chesapeake Bay TMDL BMP project involved the construction and maintenance of an underground infiltration BMP and two Bioretentions in front of the Student Center. Maintenance of these BMPs is performed by a third-party contractor, Brightview Landscaping Services, LLC.

In order to enhance the requirements for this third party to maintain the stormwater management facilities, NSU and Brightview Landscaping Services continually hold discussions on updates and expectations for the maintenance of these facilities.

5.0 ENHANCED EDUCATION, OUTREACH, AND TRAINING

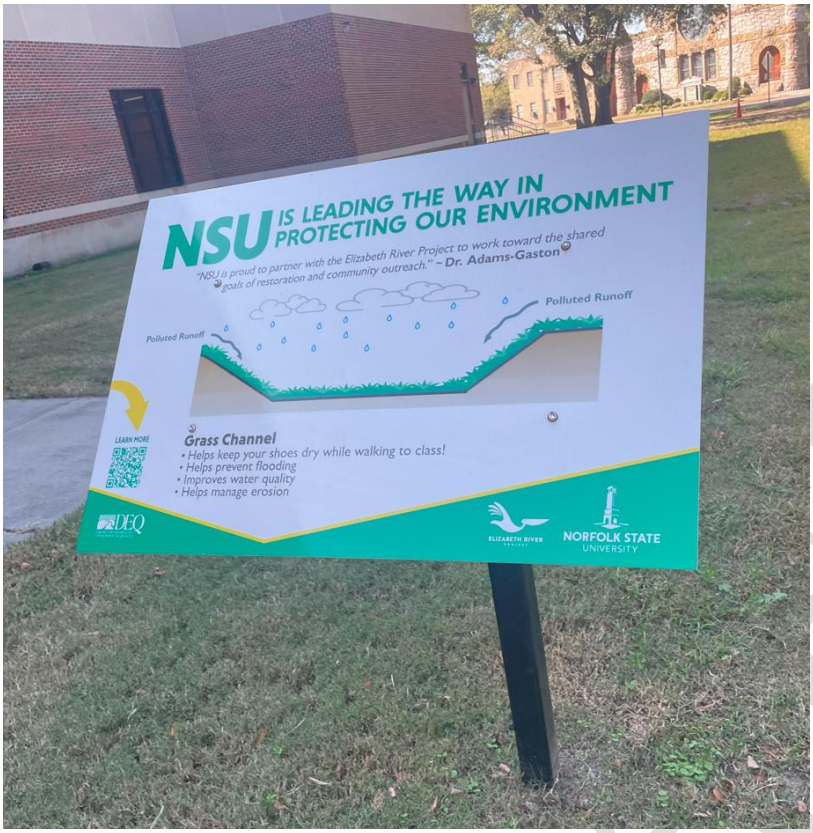
Norfolk State University continues to implement a public education and outreach program as part of its MS4 Program Plan. The public is considered to be all members of the campus community along with contractors and visitors to academic and athletic events. This program includes making the public aware of the impacts of polluting the stormwater system and educating the public on ways to decrease the amount of pollution that is entering the area's waterways.

The University's website is a source of information on other local programs (conducted through private interest groups and the City of Norfolk), like the Chesapeake Bay TMDL, and is aimed at improving water quality. The website, which will be updated annually, also provides public access to information on stormwater regulations, pollution prevention, the MS4 Program Plan, and illicit discharge information and reporting. The website link where this information can be found is Stormwater Pollution Prevention - MS4 Program | Norfolk State University - Norfolk State University.

The University also erected signage near the structural BMPs on campus to educate the public on what they are and how they help with stormwater pollution prevention. See an example of the signs below in Figure 1.

Figure 1. NSU Structural BMP Educational Signage

Figure 2. NSU Structural BMP Educational Signage 2



6.0 TMDL ACTION PLAN PROGRESS

As permitted in the MS4 General Permit, the University is proposing to implement this Action Plan in multiple stages over multiple permit cycles using an adaptive iterative approach.

6.1 Evaluation of Results Achieved by Previous Action Plan

The University public has reported a noticeable decrease in geese observations on campus since the hiring of the expert dog handlers. In light of this, the University will continue to utilize this strategy to minimize bacteria from birds on campus.

The BMPs implemented from Phase 1 and Phase 2 of the Chesapeake Bay TMDL Action Plan have also contributed to the decrease in pollutants, especially the ones near Brown Hall where the roof drains lead into the BMPs. NSU will continue on with the construction of additional BMPs as part of Phase 3.

The University employees have stated that they feel they have a better understanding of the University's practices surrounding stormwater pollution prevention, so NSU will continue with the new hire orientation training.

For public outreach, the students and the public who have attended the high priority events on campus where the information tables are set up have mentioned being previously unaware of the issues with stormwater pollution until they saw the information tables set up.

Since the University purchased a new Street Sweeper after the previous one broke, the University reported that the street cleaner picks up a lot of debris and makes the streets on campus noticeably cleaner looking.

During the annual dry and wet weather BMP inspections, it was noted that the BMP maintenance was improved since the hiring of Brightview Landscaping Services. Brightview will continue to be responsible for the maintenance of BMPs on campus along with cleaning out the outfalls and inlets.

The University stated that students have been pleased with the installation of recycle bins and trash compactors around campus. Students on one of the environmentally focused committees stated that the students seem less likely to litter since the installation of the recycle bins and trash compactors.

6.2 Schedule of Anticipated Actions Planned for Implementation

Below is the schedule of anticipated actions planned for implementation during this permit term, ending on October 1, 2028. The actions that will be implemented are ones that have worked in the past for the

University or ones that show promise and their results will be evaluated in the following action plan or annual report.

- Flyaway Geese Dog Handlers to come to campus to scare off the geese- daily during the peak geese mating season and upon request during all other times of the year.
- New structural BMPs will be installed during the FY2025 and FY2026 for Phase 3 of the BMP restoration projects which will aid in the reduction of bacteria getting into the stormwater
- Provide new hires with stormwater pollution prevention training- when applicable
- Run an information table to educate the public on reducing food sources to urban wildlife- twice per semester, every semester
- Street sweeping to remove pollutants and any animal carcasses from roadways- weekly schedule includes all campus roadways where each day of the week a separate section of campus is swept.
- Stormwater Management Facilities maintenance- Brightview Landscaping Services employees are on campus everyday to deal with landscaping and maintain stormwater facilities.
- Recycle bins and trash compactors cleaning- Bay Disposal empties out and disposes of the recyclable items once a week and the University consistently cleans out the trash compactors as needed.

7.0 PUBLIC COMMENTS RECEIVED

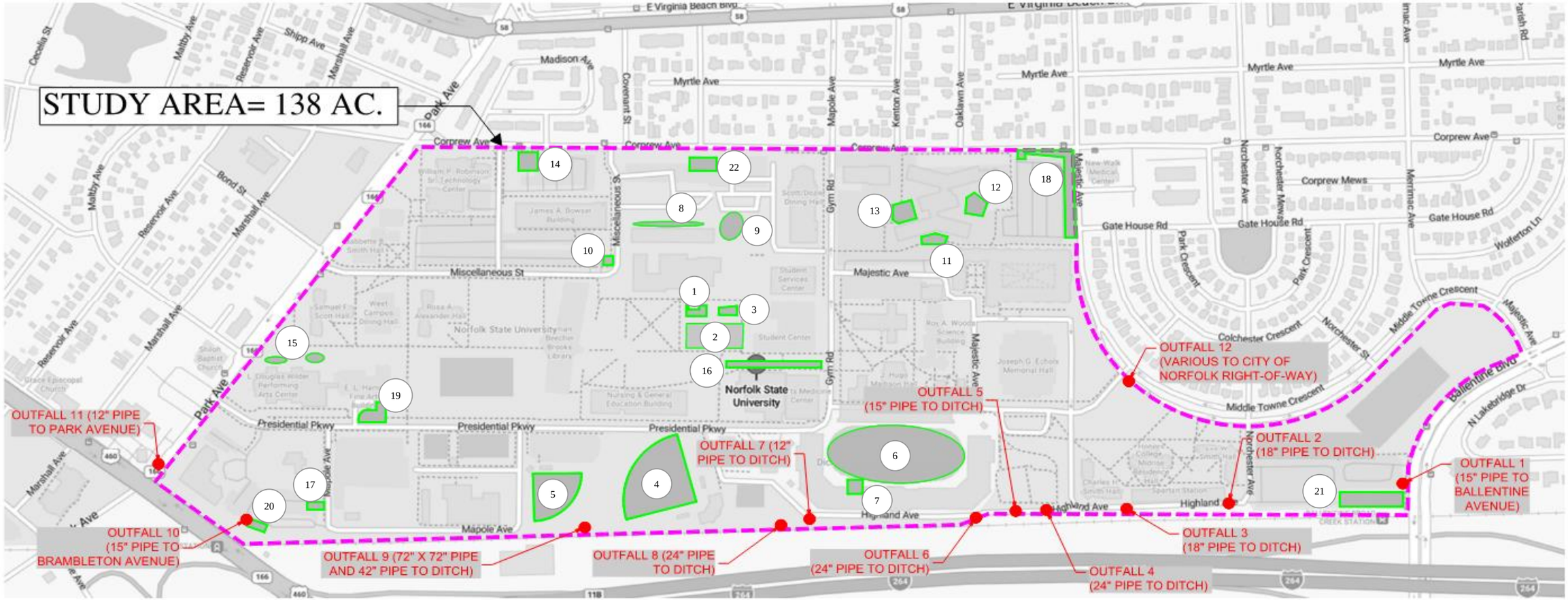
This TMDL Action Plan will be subjected to public notification and review for a minimum of 15-days as required in the MS4 Permit. Once the public comment period has ended, any comments received will be reviewed, responded to, and the Action Plan will be updated accordingly, if applicable. Then all public comments will be incorporated into the Action Plan.

The public commenting period for this revision of the Action Plan began May 14, 2025, and ended May 29, 2025.

Any comments received from the public are listed below.

Date	Comment	Action Items

APPENDIX A - EXISTING CONDITIONS MAP



OUTFALLS TIE TO CITY OF NORFOLK STORM NETWORK THAT DISCHARGE TO THE ELIZABETH RIVER TO THE SOUTH.

MAP 1:
NORFOLK STATE UNIVERSITY OUTFALL AND BMP MAP

Revised: May 2025

GRAPHIC SCALE

SCALE: 1" = 200' 0 200' 400'

LEGEND

- LIMITS OF STUDY AREA
- EXISTING BMPs
- (X) BMP NUMBER ID

BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell World Headquarters
1317 Executive Blvd, Suite 300
Chesapeake, VA 23320
O 757-548-2056
www.burnsmcd.com