MASTER PLAN

Chesapeake Bay TMDL Master Plan

Christopher Newport University

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CHRISTOPHER NEWPORT UNIVERSITY

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List of Abbreviations

Title	Abbreviation
Best Management Practice	BMP
Chesapeake Bay Preservation Act	CBPA
Capital Improvement Project	CIP
Christopher Newport University	CNU
Virginia Department of Conservation and Recreation	DCR
Virginia Department of Environmental Quality	DEQ
Department of General Services	DGS
Division of Engineering & Buildings	DEB
Edge of Stream	EOS
Environmental Protection Agency	EPA
Intensely Developed Area	IDA
Leadership in Energy and Environmental Design	LEED
Low Impact Design	LID
Minimum Control Measure	MCM
Minimum Standard	MS
Municipal Separate Storm Sewer Systems	MS4
National Pollution Discharge Elimination System	NPDES
Pollutant of Concern	POC
Resource Protection Area	RPA
Stormwater Improvement Project	SIP
Stormwater Management	SWM
Stormwater Management Masterplan	SWMP
Stormwater Pollution Prevention Plan	SWPPP
Total Maximum Daily Load	TMDL
Total Nitrogen	TN
Total Phosphorus	TP
Total Suspended Solids	TSS
Vanasse Hangen Brustlin	VHB
Virginia Erosion and Sediment Control Program	VESCP
Virginia Pollution Discharge Elimination System	VPDES
Virginia Stormwater Management Handbook	VSMH
Virginia Stormwater Management Program	VSMP
Watershed Implementation Plan	WIP

1. Introduction

Purpose

This Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan was written to describe the means and methods by which Christopher Newport University (CNU) intends to meet the Special Condition for the Chesapeake Bay TMDL. This Special Condition is located in the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems which was effective as of July 1, 2013, and states that Small Municipal Separate Storm Sewer Systems (MS4) must create a TMDL Action Plan and submit the plan to the Virginia Department of Environmental Quality (DEQ).

The University's MS4 permit (VAR040090) requires action plans to be implemented for the impaired bodies of water to which CNU discharges stormwater runoff. The ultimate discharge point for CNU is the Chesapeake Bay. The CNU campus has four (4) major outfalls which discharge to Lake Maury and Cooper Creek. A TMDL is assigned to determine a waste load allocation to the University that establishes the maximum amount of pollutant that can enter an impaired water without violating water quality standards.

The TMDL for the Chesapeake Bay was established by the EPA in 2010 and targets specific Pollutants of Concern (POCs). POCs included in the TMDL are total nitrogen (TN), total phosphorous (TP), and total suspended solids (TSS). Virginia developed a Chesapeake Bay TMDL Watershed Implementation Plan (WIP) that implements an outline for meeting the Chesapeake Bay TMDL. The WIP requires a phased approach over three five-year permit cycles for meeting required POC reductions for the final TMDL target goal. The reductions include:

- 5% first permit cycle reduction, met at the end of the first permit cycle (June 30, 2018)
- 35% second permit cycle reduction, which will need to be accomplished by the end of the second permit cycle (June 30, 2023)
- 60% third permit cycle reduction which will need to be accomplished by the end of the third permit cycle (June 30, 2028). The total reduction thus is 100% of the TMDL requirement.

Reductions are applied to 2009 Edge of Stream (EOS) loading rates for each POC as defined by the Chesapeake Bay Program Watershed Model Phase 5.3.2 for the James River Basin. A target reduction percent in the 2009 EOS loading rates must be met in order meet the TMDL target goal at the end of the third permit cycle. The reduction target percent is defined for each POC by the Chesapeake Bay WIP. Target reduction percentages are further broken into two categories for impervious and pervious cover. Impervious areas must show a reduction of 9.0% for nitrogen loads, 16% for phosphorous loads, and 20% for total sediment loads.

Pervious areas must show a reduction of 6.0% for nitrogen, 7.25% for phosphorous, and 8.75% for total sediment loads.

This plan establishes how CNU intends to meet the 35% and 60% reduction requirements by the end of the second and third permit cycles to stay in compliance with their MS4 Permit and the Chesapeake Bay TMDL Special Condition Guidance developed by DEQ. This report follows the order specified in Guidance Memo No. 15-2005 set forth by DEQ and dated May 18, 2015.

The following elements are included within this Action Plan:

1. Current Program and Existing Legal Authority
2. New or Modified Legal Authority
3. Means and Methods to Address Discharges from New Sources
4. Estimated Existing Source Loads and Calculated Total Pollutant of Concern Required Reductions
5. Means and Methods to Meet the Required Reductions and Schedule
6. Means and Methods to Offset Increased Loads from New Sources Initiating Construction Between July 1, 2009 and June 30, 2014
7. Means and Methods to Offset Increased Loads from Grandfathered Projects that Begin Construction After July 1, 2014
8. List of Future Projects and Associated Acreage that Qualify as Grandfathered
9. An Estimate of the Expected Cost to Implement the Necessary Reductions
10. Public Comments on Draft Action Plan

MS4 Permit Compliance

Table 1 provides the requirements of CNU's MS4 permit and the specific section of this report where the requirement is met by CNU's MS4 Program Plan. Additionally, *Table 1* describes actions CNU has taken to meet the MS4 permit requirements.

Table 1: MS4 Permit Compliance

CNU TDML Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 General Permit Section	MS4 Permit Requirement
2	Part VI.1 - Current Program and Existing Legal Authority	I.C.2.a(1)	A review of the current MS4 program implemented as a requirement of this state permit including a review of the existing legal authorities and the operator's ability to ensure compliance with this special condition

2	Part VI.2 - New or Modified Legal Authority	I.C.2.a(2)	The identification of any new or modified legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition
3	Part VI.3 - Means and Methods to Address Discharges from New Sources	I.C.2.a(3)	The means and methods that will be utilized to address discharges into the MS4 from new sources
4	Part VI.4 - Estimated Existing Source Loads and Calculated Total Pollutants of Concern (POC) Required Reductions	I.C.2.a(4) and I.C.2.a(5)	An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009, based on the 2009 progress run. The operator shall utilize the applicable versions of Tables 2 a-d in this section based on the river basin to which the MS4 discharges by multiplying the total existing acres served by the MS4 on June 30, 2009, and the 2009 Edge of Stream (EOS) loading rate. A determination of the total pollutant load reductions necessary to reduce the annual POC loads from existing sources utilizing the applicable versions of Tables 3 a-d in this section based on the river basin to which the MS4 discharges. This shall be calculated by multiplying the total existing acres served by the MS4 by the corresponding permit cycle required reduction in loading rate. For the purposes of this determination, the operator shall utilize those existing acres identified by the 2000 U.S. Census Bureau urbanized area and served by the MS4
5	Part VI.5 - Means and Methods to Meet the Required Reductions and Schedule	I.C.2.a(6)	The means and methods, such as management practices and retrofit programs that will be utilized to meet the required reductions included in subdivision 2 a (5) of this subsection, and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the ongoing progress in meeting those reductions

Summary

In accordance with the MS4 Permit, the University must calculate required permit cycle reductions and offsets for the following:

- Existing sources as of June 30, 2009
- Sources beginning construction between July 1, 2009 and June 30, 2014,
- Grandfathered sources beginning construction after July 1, 2014

The additional treatment provided by existing best management practices (BMPs) that were constructed to meet project development goals met the offset for the required first permit cycle reductions.

Two of the Stormwater Improvement projects outlined in the 2019 CNU Stormwater Master Plan, if implemented, will provide the pollutant offset required for the third permit cycle reductions.

Total POC Load Reductions required by the permit cycles and associated offsets can be found in *Table 2*. A breakdown of total phosphorus removal provided by the existing BMPs and project requirements can be found in *Appendix B*.

2. Current Program and Legal Authority

Current Program and Existing Legal Authority

As an operator of an MS4, Christopher Newport University must develop, implement, and enforce an MS4 Program Plan as stated in Phase II MS4 regulations. CNU has created an MS4 Program Plan that is continually updated and monitored to ensure CNU meets MS4 regulations. This MS4 Program Plan ensures the CNU is acting in the most effective manner to reduce pollutant discharge, protect water quality, and ensure compliance with water quality standards. Additionally, the MS4 Program Plan ensures that CNU is adhering to the Clean Water Act, the MS4 permit regulations, and other associated regulations.

The CNU MS4 Program Plan is managed by the Grounds Department and includes updating the MS4 Program Plan and the MS4 General Permit Annual Report. Six minimum control measures (MCMs) are outlined in the Phase II MS4 General Permit:

- Public Education and Outreach on Stormwater Impacts
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post Construction Stormwater Management
- Pollution Prevention and Good Housekeeping for Municipal Operations

Best Management Practices have been integrated into these six MCMs to assist in protecting the water quality within the regulated acreage that ultimately discharges into the Chesapeake Bay. The University's MS4 Program Plan lists each of the six MCMs and activities that CNU is pursuing to meet them.

Stormwater policies have been implemented by CNU within the MS4 Program Plan to administer the Program and comply with the MCMs. These policies can be found on CNU's Stormwater Management Webpage.

- Stormwater Management Master Plan, June 2019
- Illicit Discharge Detection and Elimination Program, August 2022
- Stormwater Pollution and Prevention Plan (SWPPP), June 2016
- Standard Operating Procedures (SOPs), September 2016
- Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management, December 2019

New or Modified Legal Authority

New or modified legal authorities are not required for compliance with the Special Condition for the Chesapeake Bay TMDL. CNU possesses the authorities necessary to meet pollution reduction goals.

CNU and neighboring MS4 jurisdictions are responsible for the drainage within their boundaries. If an agreement is made with a neighboring MS4 operator (City of Newport News) to meet pollution reduction goals, this TMDL Action Plan will be updated.

On January 19, 2005, CNU established a Lake Maury Watershed Plan with The Mariners' Museum and the City of Newport News to detail the maintenance of the Lake as well as shoreline stabilization and cost-effective water quality measures. Any maintenance or stormwater upgrades to the Lake will be required to be discussed with both The Mariners' Museum and the City of Newport News.

3. Means and Methods to Address Discharges from New Sources

The University must introduce and implement means and methods to offset pollutant loads from new sources. To offset pollutant loads, provisions of the Virginia Stormwater Management Handbook (VSMH), as of the 2014 revisions, require that if a redevelopment project site is less than 1 acre, phosphorus loadings from that site be reduced by 10% as compared to the existing developed conditions. Phosphorous loadings must be reduced by 20% when the project area is greater than 1 acre. Virginia Stormwater Management Program (VSMP) Regulations identify phosphorus loading as the "keystone" indicator of runoff water quality. As phosphorus is present in stormwater runoff in both particulate and soluble form, its concentration in stormwater runoff is considered indicative of the presence of other pollutants (nitrogen, TSS) that exist in either form. VSMP regulations requires all new

developments to remove 0.41 pounds of phosphorus per acre per year. The VSMH evaluates BMP pollutant removal performance in terms of percentage of Total Phosphorus (TP) removed. Total phosphorus removal loads are used to determine TN and TSS removal loads through use of pollutant loading ratios found in *Table 4* of the MS4 General Permit regulations.

For the plan approval and application process, refer to CNU Annual Standards and Specifications. Construction documents are developed by a design team hired by CNU which includes surveyors, engineers, and landscape architects. Plans are designed to the Virginia Standards and to comply with the MS4 General Permit regulations.

Following plan approval, general contractors are responsible for obtaining the necessary land disturbance permits and attending preconstruction meetings with CNU officials. A purpose of the preconstruction meeting is to review all erosion and sediment controls once they are installed on site and to confirm they comply with the approved plans. The contractor is also responsible for maintaining the latest approved set of plans and the SWPPP on-site for each project during the extent of construction. A certified inspector is responsible for making sure each inspection is completed for the site.

A preconstruction meeting is also held prior to installation of any permanent water quality BMPs. Following construction, permanent stormwater facilities are inspected for conformance with plans, specifications, and standards. Annual inspection of stormwater facilities will be conducted with maintenance being performed as required by the contractor, or CNU Facilities Management & Grounds Department staff.

In addition to measures discussed within this TMDL Action Plan, CNU has completed a Stormwater Master Plan in 2019. This Master Plan outlines several Stormwater Improvement and Capital Improvement projects that can be implemented on campus to meet future Permit Cycle pollutant reduction goals. Campus wide Stormwater Pollution Prevention Plans are to be submitted as part of the University's MS4 Program Plan to assist in facilitating the measures for maintaining current and future best management practices.

4. Estimated Existing Source Loads and Calculated Total Pollutant of Concern (POC) Required Reductions

MS4 Area Delineation

In order to estimate the existing source loads within CNU's regulated area, an MS4 boundary for the campus must be outlined. The MS4 area delineation as well as areas of pervious and impervious regulated land were determined based on data from the 2019 Stormwater Master Plan (SWMP). Area delineation was calculated in the SWMP using GIS data and survey for the CNU campus that was generated from previous CAD files and the City of Newport News GIS system. GIS data was supplemented by various record drawings of completed projects on the

CNU campus. If CNU expands or reduces its current campus area, the MS4 area delineation will need to be revised. A map of CNU's MS4 boundary can be found in *Appendix A*.

In accordance with DEQ's Chesapeake Bay TMDL Special Guidance, the University may exclude from its MS4 service area land regulated under any general VPDES permit that addresses industrial stormwater or forested land one half contiguous acre or more that meets specific criteria. The University has not identified any property with a VPDES industrial stormwater permit or forested area within its MS4 boundary. In the event that a property within the CNU campus obtains an industrial stormwater permit, further analysis would be necessary to determine if this property meets specific criteria to be excluded from the MS4 service area delineation.

Existing Source Loads

Existing source loads for phosphorus, nitrogen, and total suspended solids were calculated using 2009 Edge of Stream (EOS) loading rates specified in the MS4 General Permit. Since the CNU campus is the James River watershed, 2009 EOS rates were taken from *Table 3* of the MS4 General Permit. Loading rates were applied to impervious and pervious cover and summed in order to determine total existing source loads.

Refer to *Figure 2: TMDL Reduction Requirements* for existing source load calculations.

Total POC Reduction Requirements

Total pollutant of concern (POC) reduction requirements were calculated using 2009 EOS loading rates that were reduced to meet the final TMDL target goals as required by the Chesapeake Bay Watershed Implementation Plan (WIP). Loading rates for the James River watershed can be found in *Table 3* of the MS4 Permit. The loading rate reduction percentage is defined by the Chesapeake Bay WIP for each specific POC and land cover type. MS4 Impervious areas must show a reduction of 9.0% for nitrogen loads, 16% for phosphorous loads, and 20% for total sediment loads. MS4 Pervious areas must show a reduction of 6.0% for nitrogen, 7.25% for phosphorous, and 8.75% for total sediment loads. Reduced loading rates were then used to determine reduced final POC loads required at the end of the third permit cycle.

After determining the total net reduction required to meet TMDL target goals, the percent reduction for each POC for each permit cycle was calculated. Reduction required for pervious and impervious cover were summed to determine a total reduction required for each POC for each permit cycle. *Table 2* summarizes POC reduction requirements.

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Table 2: TMDL Reduction Requirements

Table 3a

		A	B	C	D	E	F	G	H	I	J
Pollutant	Subsource	Loading Rate (lbs/ac/ yr)[1]	Existing developed lands as of 6/30/09 served by the MS4 wihtin the 2010 CUA (acres)[2]	Loads (lbs/yr) [3]	Percentage of MS4 required Chesapeake Bay Total L2 loading	Percentage of L2 Required by 6/30/2023 (lbs/yr)	40% Cumulative reduction required by 6/30/2023 (lbs/yr) [4]	Sum of 40% cumulative reduction (lbs/yr) [5]	Percentage of L2 Required by 6/30/2028 (lbs/yr)	100% Cumulative reduction required by 6/30/2028 (lbs/yr)[6]	Sum of 100% cumulative reduction (lbs/yr)[7]
Nitrogen	Regulated Urban Impervious	9.39	76.90	722.09	9%	40%	26.00	39.79	100%	**64.99**	99.47
	Regulated Urban Pervious	6.99	82.22	574.72	6%	40%	13.79		100%	**34.48**	
Phosphorus	Regulated Urban Impervious	1.76	76.90	135.34	16%	40%	8.66	9.85	100%	**21.66**	24.64
	Regulated Urban Pervious	0.5	82.22	41.11	7.25%	40%	1.19		100%	**2.98**	
Sediment	Regulated Urban Impervious	676.94	76.90	52,056.69	20%	40%	4164.53	4455.41	100%	**10411.34**	11138.53
	Regulated Urban Pervious	101.08	82.22	8,310.80	8.75%	40%	290.88		100%	**727.19**	

1. Edge of stream loading rate based on the Chesapeake Bay Watershed Model Progress Run 5.3.2
2. To determine the existing developed acres required in column B, permittees should first determine the existing of their regualted service area based on the 2010 Census urbanized
3. Column C= Column A x Column B
4. Column F= Column C x Column D x Column E
5. Column G= The sum of subsource cumulative reduction required by 6/30/23 (lbs/yr) as calcaulted in Column F
6. Column I= Column C x Column D x Column H
7. Column J= The sum of subsource cumulative reduction required by 6/30/28 (lbs/yr) as calcaulted in Column I

Note: From Christopher Newport University- Municipal Separate Storm Sewer System (MS4) Annual Report- Reporting Year July 1, 2017-June 30, 2018. Revised for property on Shoe Lane, University Place, Sweetbriar Drive, Yoder Barn, President's House, and 232 Prince Drew Road.

Table 3a

		A	B	C	D	E	F	G	H	I	J
Pollutant	Subsource	Loading Rate (lbs/ac/ yr)[1]	Existing developed lands as of 6/30/09 served by the MS4 wihtin the 2010 CUA (acres)[2]	Loads (lbs/yr) [3]	Percentage of MS4 required Chesapeake Bay Total L2 loading	Percentage of L2 Required by 6/30/2023 (lbs/yr)	40% Cumulative reduction required by 6/30/2023 (lbs/yr) [4]	Sum of 40% cumulative reduction (lbs/yr) [5]	Percentage of L2 Required by 6/30/2028 (lbs/yr)	100% Cumulative reduction required by 6/30/2028 (lbs/yr)[6]	Sum of 100% cumulative reduction (lbs/yr)[7]
Nitrogen	Regulated Urban Impervious	9.39	2.65	24.88	9%	40%	0.90	1.08	100%	**2.24**	2.70
	Regulated Urban Pervious	6.99	1.10	7.69	6%	40%	0.18		100%	**0.46**	
Phosphorus	Regulated Urban Impervious	1.76	2.65	4.66	16%	40%	0.30	0.31	100%	**0.75**	0.79
	Regulated Urban Pervious	0.5	1.10	0.55	7.25%	40.00%	0.02		100.00%	**0.04**	
Sediment	Regulated Urban Impervious	676.94	2.65	1,793.89	20%	40%	143.51	147.40	100%	**358.78**	368.51
	Regulated Urban Pervious	101.08	1.10	111.19	8.75%	40.00%	3.89		100.00%	**9.73**	

Note: Shenandoah Hall transfer from real estate foundation to campus property.

5. Means and Methods to Meet the Required Reductions and Schedules

Best Management Practices

Best Management Practices (BMP) are used extensively by CNU to offset sources of pollutant loads. The University presently has a total of 2 BMPs to meet these offsets. The existing James River Residence Hall – Extended Detention Basin and Track Complex Stadium Seating – Extended Detention Basin are not included within the TMDL phosphorous loading as they were replaced by the Lake Maury BMP. It is a common CNU practice to construct BMPs as part of Capital Improvement Projects located on the University campus. These BMPs are intended to provide water quality treatment and to offset increases in pollutant loads that are associated with new developments. Additionally, these BMPs provide surplus treatment that can be used to offset permit cycle reduction requirements. The sum offset provided by existing condition BMPs provides enough pollutant removal credit to meet the 5% first permit cycle reduction requirements. In addition, existing BMPs provide surplus pollutant removal credits that can be applied to the second and third permit cycles. BMPs that are planned to be constructed with future CIPs and SIPs will provide additional credit towards the second and third permit cycle reduction requirements. Since phosphorus is considered a "keystone" pollutant, reduction calculations were performed to target solely phosphorus. Pollutant loading ratios found in *Table 4* of the MS4 General Permit regulations were used to calculate required TN and TSS reductions. Refer to *Appendix B* for a summary of the BMPs and associated pollutant offsets.

2019 Christopher Newport University Master Plan

The latest CNU Stormwater Master Plan (SWMP) is dated June 2019. One of the goals of the SWMP was provide a "menu" of Capital Improvement Projects, and Stormwater Improvement Projects that could be implemented to meet TMDL reduction goals through the use of a variety of BMPs. Of these projects, CNU is considering Stream Restoration of the Lake Maury Outfall Tributary and the installation of the Lot E1 Water Quality Structure. These projects provide the majority of the pollutant offset required to meet the University's TMDL goals. The remaining requirement will be met by the purchasing of offsite nutrient credits. An agreement with City of Newport News (neighboring MS4 operator) would be required with the stream restoration as it would treat both City and State property.

Stream Restoration of the Lake Maury Tributary is located on the southeast boundary of the CNU campus. Restoring the stream will provide significant pollutant reduction while also reestablishing heavily eroded stream banks. The restored stream channel will improve sediment and biological processes within the stream as well as the receiving Lake Maury.

Table 3 of this report summarize the means and methods to meet the required reductions.

Table 3: Means and Methods to Offset Increased Loads

Permit Cycle	Removal	POC Removal		
		TP	TN	TSS
TMDL (40%)	Removal Required	9.84	39.63	4,452.06
2023	**Total Removal Required**	**9.84**	**39.63**	**4,452.06**
	2018 Removal Achieved	1.76	7.70	84.51
	2023 Removal Achieved by Projects	-1.63	-13.35	-2,232.85
	2023 Offsite SWIFT Credit Purchase	8.61	34.68	3,895.55
2023	**Total Removal Achieved**	**8.74**	**29.03**	**1,747.21**
2023	**TMDL Excess Removal***	**-1.10**	**-10.60**	**-2,704.85**
TMDL (60%)	Removal Required	14.76	59.44	6678.08
2023 Prop Addition	Removal Required	0.79	2.70	368.51
	Subtotal Removal Required	**15.55**	**62.14**	**7,046.59**
Lake Maury (60%)	Removal Required	0.88	4.58	370.42
2028	**Total Removal Required**	**16.43**	**66.72**	**7,417.01**
Removal Achieved by SIP Projects	Lake Maury Outfall- Stream Restoration	24.55	33.31	110,133.58
	Lot E1- Water Quality Structure	3.32	19.00	1,633.97
2028	**Total Removal Achieved**	**27.87**	**52.31**	**111,767.54**
2028	**TMDL Excess Removal***	**11.44**	**-14.41**	**104,350.53**
*Deficit to be supplemented by the purchase of offsite nutrient credits (from HRSD SWIFT)				
**2028 Total Removal Required includes 2028 Property Addition				
Note: Negative values indicate a deficit in the POC				

Table 3a: BMPs contributing to achieving campus TMDL goals

Completed Year	Name/Description	Reduction Means/Methods
2018	Parking Lot A	Bioretention Basin
2021	Fine Arts Center	Nutrient Credits
2022	Captains Turf Field Replacement	Bioretention Basin – Dry Swale
		Nutrient Credits
2021	C2 Parking	Stormkeeper Filtering Practice
		Nutrient Credits
2023	Offsite SWIFT Credit Purchase	Nutrient Credits

2028 Compliance Options

CNU is planning to purchase SWIFT nutrient credits to meet the campus wide 2028 goals from the above Table 3. CNU may also choose to implement a few stormwater improvement projects from the 2019 SWMP, such as the Stream Restoration at the Lake Maury outfall and the Lot E1 Water Quality Structure as described in the 2019 Christopher Newport University Master Plan section. These stormwater improvements projects will further the Campus's compliance and can be utilized towards future post-2028 TMDL goals.

Table 3b: Installation Schedule of BMPs

Fiscal Year to be installed	Name/Description	Reduction Means/Methods
2025	Integrated Science Center Phase III	Isolator Row (Filtering Practice)
		Isolator Row (Filtering Practice)

Offsite Nutrient Credit Purchases

In addition to using nutrient credits to aid CIPs in meeting their development goals the "General VPDES Permit for Discharges or Stormwater from Small Municipal Separate Storm Sewer Systems" effective November 1, 2018 allows the use of nutrient credits to meet TMDL requirements. Refer to the CNU MS4 permit (VAR040090) including nutrient credit requirements. A combination of Stormwater Improvement Projects and offsite nutrient credits will be required to meet the requirements of the 2028 permit cycle. CNU plans to purchase offsite nutrient credits for the 2028 cycle. These credits will be either HRSD SWIFT credits or water quality nutrient credits from an offsite nutrient credit bank. The approximate rate of nutrient trading for the James River watershed is $15,000- $18,000 per pound phosphorus. This is a one-time fee.

6. Means and Methods to Offset Increase Loads from New Sources Initiating Construction between July 1, 2009 and June 30, 2014

Between July 1, 2009 and June 30, 2018, a number of projects were constructed on the CNU campus. Projects constructed between July 1, 2009 and June 30, 2014 were subject to Technical Criteria IIC under the VSMP regulations and the technology-based criteria. Capital improvement projects typically offset increased pollutant loads on a project by project basis using BMPs. Projects during this time created a surplus of pollutant removal that was used for smaller projects and maintained to aid in campus requirements. To determine the deficit pollutant requirement for Lake Maury, the campus CBPA (technology-based criteria) was used to define the BMP credit and impervious area change from 36% to 16%. If project areas were not available an area was assumed based on the design plans.

7. Means and Methods to Offset Increased Loads from Grandfathered Projects Beginning Construction after July 1, 2014

CNU does not have any projects that qualify for grandfathering under 9VAC25-870-48. The Lake Maury BMP was designed based on the old CBPA technical criteria and constructed in 2009 and has been utilized for many of CNU's past development projects. However, according to CNU Athletics Expansion II- New Tennis Courts (Eyre Tennis Courts Phase II) the water quality capacity of the Lake Maury BMP has been met. Therefore, the Lake Maury BMP cannot be used for any future projects and does not provide treatment credit towards the TMDL Reductions goals.

8. List of Future Projects Qualifying as Grandfathered

CNU has not identified any projects that qualify to be grandfathered under 9VAC25-870-48.

9. Estimated Cost of Compliance

Since existing BMPs provided first permit cycle pollutant offsets, estimated costs include only operation and maintenance that are required to keep existing BMPs functioning. These costs are summarized in *Table 4* of this report.

Table 4: Costs of Compliance (Operations and Maintenance)

BMP Type	Typical Cycle (years)	Cycle Cost ($)		Qty	Total Cost ($/year)
Bioretention Basin	1	1,000	per basin	4	$ 4,000
Detention Basins	1	750	per basin	1	$ 750
Water Quality Structure	1	2,500	per structure	1	$ 2,500
Stream Restoration	1	5	per LF	570	$ 2,850
Underground Detention	1	2,000	per pond	1	$ 2,000
Permeable Pavers	1	1,500	per acre	0.50	$ 750
Lake Maury*	1	10,000		1	$ 10,000
Total BMP's				10	
Yearly Cost					$ 22,850

*Based on the Lake Maury Watershed Management Plan dated May 9, 2003

**Includes existing and proposed BMPs listed in Appendix B for the 2023 permit cycle

Projects including the construction of stream restoration and the Lot E1 water quality structure are expected to provide pollutant offsets in the third permit cycles. Estimated construction costs are summarized in *Table 5* of this report. Cost breakdowns of the Lake Maury Outfall Stream Restoration can be found in *Appendix C*.

Table 5: Costs of Compliance (New Projects)

Name/Description	Reduction Means/Methods	Estimated Total Cost ($)	Phosphorus Removed (lbs.)	Estimated Cost per Pound of Phosphorus Removed ($/lb.)
Lake Maury Outfall	Stream Restoration	$1,017,750	38.76*	$26,258
Lot E1- Water Quality Structure	Water Quality Structure	$565,800	3.32	$170,422

*Note: Total Phosphorous Removed includes both City of Newport News and CNU credit. The anticipated CNU credit is 24.55 lbs./yr.

10. Public Comment

Part of the University's MS4 program includes Public Education and Outreach to students, faculty and staff. As part of this program, this TMDL Action Plan will be available on the University's Stormwater Management webpage. A 15-day public comment period will take place which will provide an opportunity the CNU community to provide feedback. Public comments and feedback will be considered and incorporated into this Action Plan before final completion.

Appendix A: Figures

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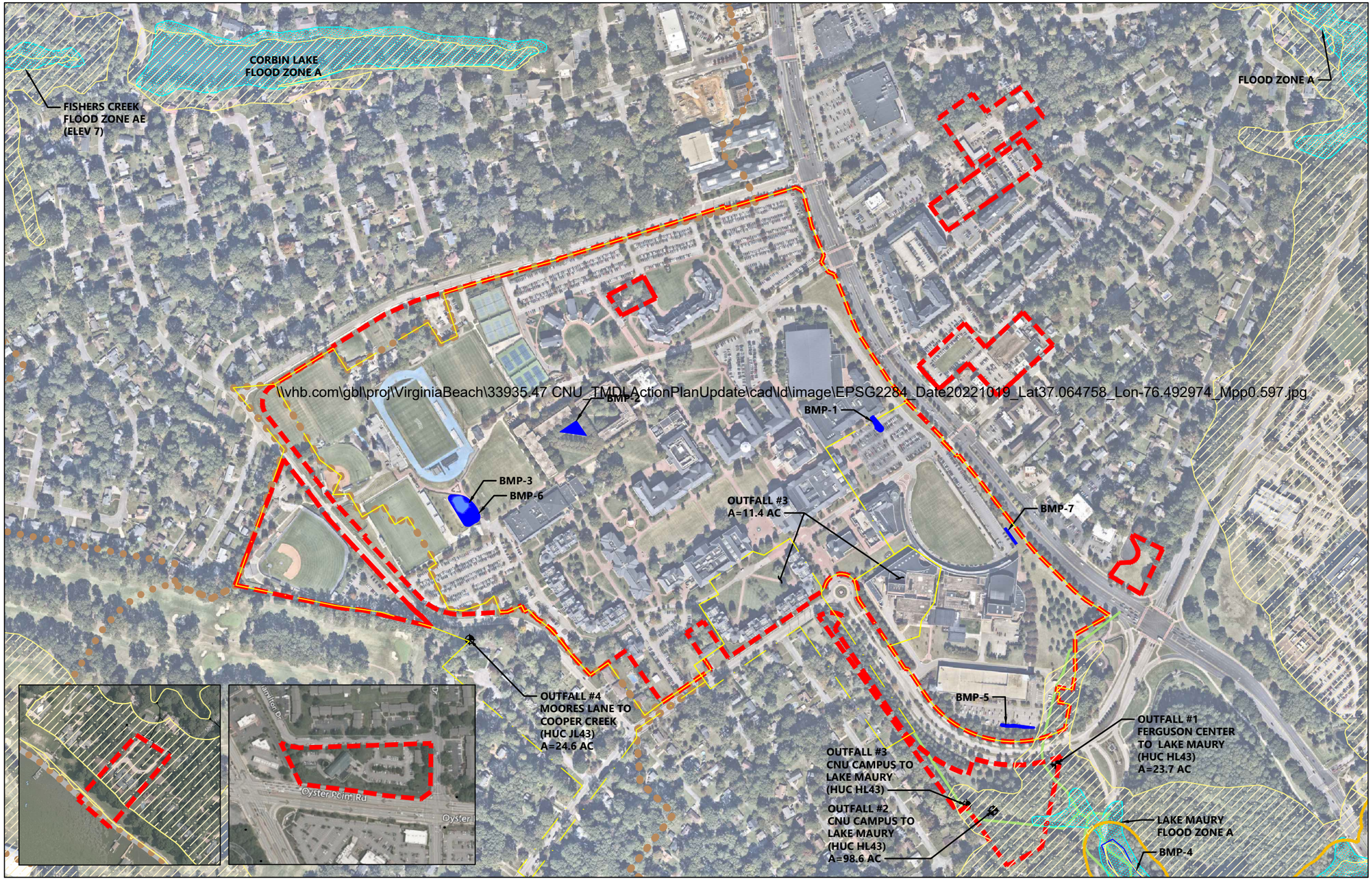


CHRISTOPHER NEWPORT UNIVERSITY

Legend

- CAMPUS AREA
- HUC DIVIDES
- DRAINAGE AREA
- WETLAND
- RESOURCE PROTECTION AREA (RPA)
- RESOURCE MANAGEMENT AREA (RMA)
- FLOOD ZONE
- EXISTING BMP
- DRAINAGE OUTFALL

EXISTING BMP

BMP-1	CONVOCATION, SPORTS & WELLNESS CENTER- WET POND (REMOVED)
BMP-2	JAMES RIVER RESIDENCE HALL- EXTENDED DETENTION BASIN
BMP-3	TRACK COMPLEX STADIUM SEATING- EXTENDED DETENTION BASIN (REMOVED)
BMP-4	LAKE MAURY
BMP-5	LOT A- BIORETENTION (LEVEL 1)
BMP-6	CAPTAINS TURF FIELD REPLACEMENT - BIORETENTION (LEVEL 1)
BMP-7	C2 PARKING - STORMKEEPER

OFFSITE CAMPUS AREA

YODER BARN- 660 HAMILTON DR

PRESIDENT'S HOUSE- 1205 RIVERSIDE DR

0 250 500 1000Feet

Figure 1: Existing Conditions

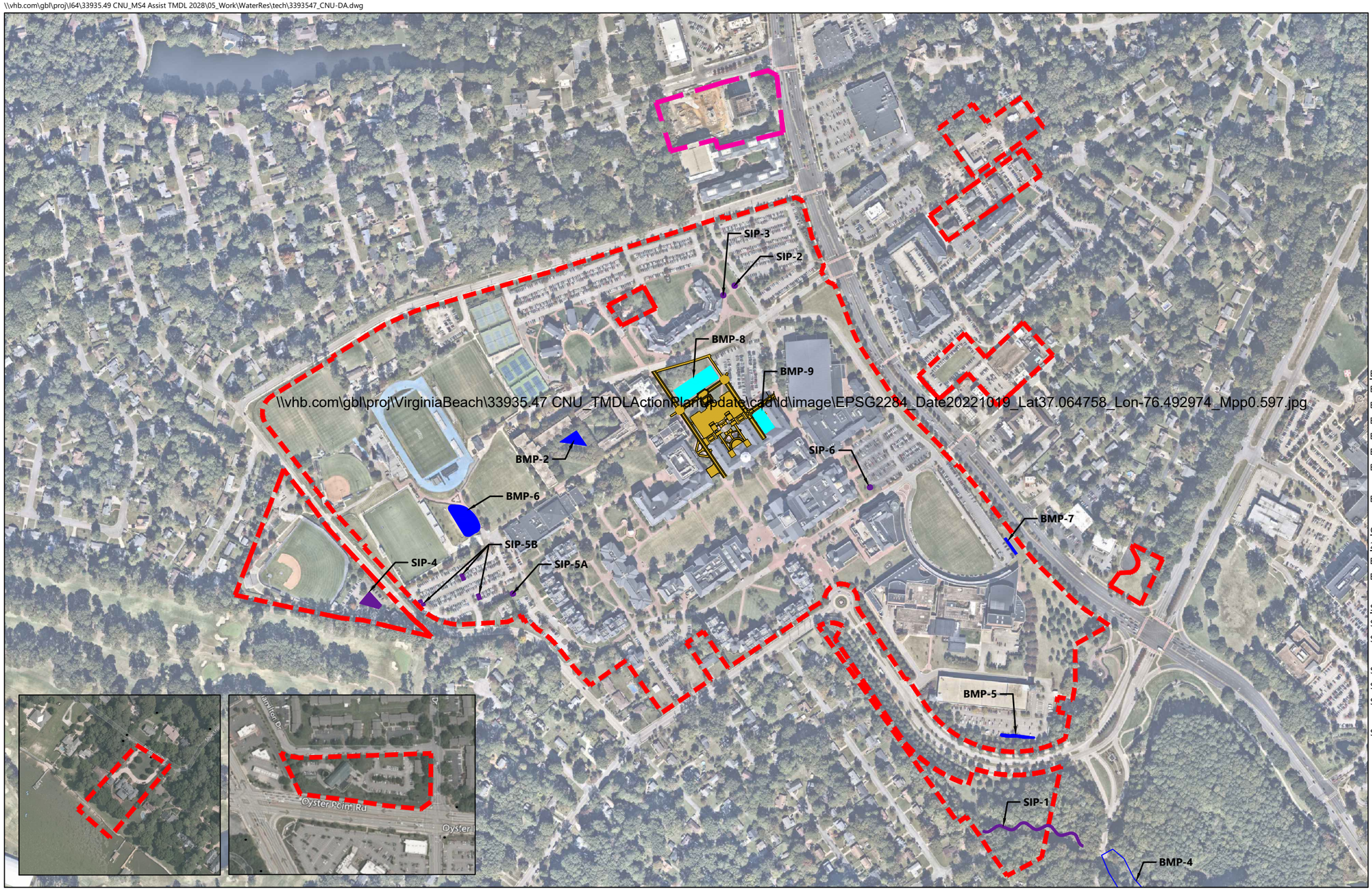
Stormwater Managment Master Plan

Christopher Newport University

Source:
Prepared for: **CNU**
Date: **January 2023**

vhb

\\vhb.com\gbl\proj\l64\33935.49 CNU_MS4 Assist TMDL 2028\05_Work\WaterRes\tech\3393547_CNU-DA.dwg



CHRISTOPHER NEWPORT UNIVERSITY

Legend

- CAMPUS AREA
- NEW CAMPUS AREA
- CAPITAL IMPROVEMENT PROJECT
- EXISTING BMP
- CAPITAL IMPROVEMENT BMP
- STORMWATER IMPROVEMENT BMP

EXISTING BMP

BMP-1	REMOVED
BMP-2	JAMES RIVER RESIDENCE HALL- EXTENDED DETENTION
BMP-3	REMOVED WITH BMP-6
BMP-4	LAKE MAURY
BMP-5	LOT A- BIORETENTION (LEVEL 1)
BMP-6	CAPTAINS TURF FIELD REPLACEMENT- BIORETENTION (LEVEL 1)
BMP-7	C2 PARKING- STORMKEEPER

CIP PROJECTS

2028 BMP

BMP-8	ISCIII - WATER QUALITY STRUCTURE
BMP-9	ISCIII - WATER QUALITY STRUCTURE

SIP PROJECTS

SIP-1	LAKE MAURY OUTFALL- STREAM RESTORATION
SIP-2	LOT E1- (A) HYDRODYNAMIC DEVICE/ (B) WATER QUALITY STRUCTURE
SIP-3	LOT E2/E3- HYDRODYNAMIC DEVICE
SIP-4	LOT H- BIORETENTION (LEVEL 1)
SIP-5	LOT I- (A) WATER QUALITY STRUCTURE/ (B) LOT I- WATER QUALITY INLETS
SIP-6	LOT C1- HYDRODYNAMIC DEVICE

Figure 2: Proposed Conditions

Stormwater Managment Master Plan

Christopher Newport University

Source:
Prepared for: **CNU**
Date: **April 2025**

0 250 500 1000Feet

vhb

Appendix B:
Load Pollutant Offsets

CHRISTOPHER NEWPORT UNIVERSITY

Campus TMDL Summary
Dated April 2025

vhb

			Site Area						BMP Information										TMDL					
Permit Cycle	Year	Project	Area (Acres)	Pre Impervious Area (acres)	Post Impervious Area (acres)	TP Removal Req (1)	TN Removal Req (2)	TSS Removal Req (2)	BMP Name	BMP Type	Location	Drainage Area	Impervious Area	P Percent Removal (1)	P Removal Provided (1)	N Percent Removal (3)	N Removal Provided (4)	TSS Percent Removal (3)	TSS Removal Provided (4)	TP	Campus	TN	Campus	TSS	Campus
		2018 Requirements - Permit 1				**1.23**	**4.95**	**556.51**													1.23		4.95		556.51
	Lake Maury	Lake Maury- Includes Folloiwng Projects	147.24	59.00	72.22	39.43	205.04	16597.40	Lake Maury			153.73	78.73	0.29	39.45	-	-	-	-	-	-	-	-	-	-
2018	2015	Student Success Center (Christopher Newport																						
	2013	New Hall Parking Lot Demo and Walkway Design (Luter Hall Lawn- Phase 1)																						
		CNU Bell Tower/ Hoinkes Plaza																						
	2014	CNU Tennis Center/ Eyre Tennis Courts Phase II																						
		Greek Housing Project - Phase 1																						
		Lake Maury Deficit (36-16%)- Permit 1				0.07	0.36	29.47												-0.07		-0.36		-29.47	
		David Student Union- Regattas																		0.00		0.00		0.00	
	2012	Grounds Maintenance Facility				1.14	5.93	479.86		Nutrient Credits				-	1.14	-	0.00	-	0.00	0.00		-5.93		-479.86	
	2012	Demo Moores Lane	0.36	0.15	0.00	-0.20	-1.04	-84.19												0.20		1.04		84.19	
	2016	Demo 72 Shoe Lane	0.76	0.16	0.00	-0.19	-0.99	-79.98												0.19		0.99		79.98	
	2017-2018	Trible Library Expansion																		0.00		0.00		0.00	
	2018	BMP at Parking Lot A	1.69	1.06	1.06	0.00	0.00	0.00	BMP-5	Bioretention (Level 1)	Lot A	1.69	1.06	0.25	1.44	0.40	11.96	0.55	429.68	1.44		11.96		429.68	
																			SUM	**1.76**		**7.70**		**84.51**	
																			2018 Surplus		**0.53**		**2.75**		**-472.00**
		2023 Requirements - Permit 2				**8.61**	**34.68**	**3895.55**													8.61		34.68		3895.55
		Lake Maury Deficit (36-16%)- Permit 2				0.51	2.65	214.68												-0.51		-2.65		-214.68	
	2019	E4 Parking (gravel)	0.90	0.00	0.63	1.12	5.82	471.45												-1.12		-5.82		-471.45	
	2021	Fine Arts Center	4.00	2.06	2.44	1.74	9.05	732.42	-	Nutrient Credits				-	1.74	-	3.83	-	0.00	0.00		-5.22		-732.42	
	2019	Captains Turf Field Replacement	5.30	1.33	1.87	1.92	9.98	808.19	-	Nutrient Credits				-	0.54	-	1.19	-	0.00	-1.38		-8.80		-808.19	
2023									BMP-6	Bioretention (Level 1)- Dry Swale		2.18	0.88	0.20	1.38	0.25	10.41	0.55	399.91	1.38		10.41		399.91	
	2021	C2 Parking	2.13	0.48	1.54	2.14	11.13	900.80	-	Nutrient Credits				-	1.29	-	2.84	-	0.00	-0.85		-8.29		-900.80	
									BMP-7	StormKeeper (Filtering Practice)		1.39	0.83	0.40	0.85	0.60	7.02	0.80	494.77	0.85		7.02		494.77	
	2023	Offsite SWIFT Credit Purchase							-	Nutrient Credits					8.61		34.68		3895.55	8.61		34.68		3895.55	
																			SUM	**6.98**		**21.33**		**1662.70**	
																			2023 Surplus/Deficit		**-1.10**		**-10.60**		**-2704.85**
		2028 Requirements - Permit 3				**14.76**	**59.44**	**6678.08**													14.76		59.44		6678.08
		Lake Maury Deficit (36-16%)- Permit 3				0.88	4.58	370.42												-0.88		-4.58		-370.42	
		Added Property for Shenandoah River Hall				**0.79**	**2.70**	**368.51**												-0.79		-2.70		-368.51	
	2024	Indoor Batting Cages	0.22	0.04	0.15					Less than 10,000 SF of disturbance, no VESMP requirements										0.00		0.00		0.00	
2028	2025 / under construction	Integrated Science Center Phase III	3.80	1.30	2.30	2.49	12.95	1048.12		Nutrient Credits				-	0.39	-	4.06	-	0.00	-2.10		-8.89		-1048.12	
									BMP-8	Isolator Row (Filtering Practice)		1.85	0.76	0.40	0.91	0.60	8.85	0.80	499.72	0.91		8.85		499.72	
									BMP-9	Isolator Row (Filtering Practice)		1.55	1.31	0.40	1.19	0.60	8.39	0.80	728.84	1.19		8.39		728.84	

Notes

(1) From Runoff Reduction Spreadsheet

(2) TP * Ratio of Phosphorous Loading Rate to Nitrogen and Total Suspended Solids Loading Rates for Chesapeake Bay Basins

(3) From Guidance Memo 15-2005 Table V.C1- Chesapeake Bay Program BMPs, Established Effciencies

(4) BMP: Based on Loading Rates from Table 2a: Calculation Sheet for Estimating Existing Source Loads for the James River Basin Provided

Removal= (Impervious * Loading Rate + Pervious * Loading Rate) * BMP Effceiency

(4) Nutrient Credit: Based on Bank ratio of Phosphors to Nitrogen Removal (Cranston Mill Pond LLC bank ratio N= 2.2 *P)

Permit Cycle TMDL Requirements

Adjustments to Permit Cycle TMDL Requirements

No information provided

Based on Established Efficiences and Loading Rates

Nitrogen Removal based on Cranston Mill Pond LLC bank ratio to P of 2.2

Assumes removal based on "Ratio of Phosphorus to Nitrogen and Total Suspended Solids Loading Rates for Chesapeake Bay Basins" for purchased Phosphorus nutrient credits.

No TSS credit provided for purchasing Phosophorus Credits for permit cycles after

Based on Runoff Reduction

Table 2 a: Calculation Sheet for Estimating Existing Source Loads for the James River Basin (* Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)

Subsource	Pollutant	Total Existing Acres Served by MS4 (06/30/09)	2009 EOS Loading Rate (lbs/acre/yr)	Estimated Total POC Load Based on 2009 Progress Run (lbs/yr)
Regulated Urban Impervious	Nitrogen		9.39	
Regulated Urban Pervious			6.99	
Regulated Urban Impervious	Phosphorus		1.76	
Regulated Urban Pervious			0.5	
Regulated Urban Impervious	Total Suspended Solids		676.94	
Regulated Urban Pervious			101.08	

Table 4: Ratio of Phosphorous Loading Rate to Nitrogen and Total Suspended Solids Loading Rates for Chesapeake Bay Basins

Ratio of Phosphorous to Other POCs (Based on All Land Uses 2009 Progress Run)	Phosphorous Loading Rate (lbs/acre)	Nitrogen Loading Rate (lbs/acre)	Total Suspended Solids Loading Rate (lbs/acre)
James River Basin	1.0	5.2	420.9
Potomac River Basin	1.0	6.9	469.2
Rappahannock River Basin	1.0	6.7	320.9
York River Basin	1.0	9.5	531.6

Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies

BMP	Nitrogen Percent Effectiveness	Phosphorus Percent Effectiveness	Sediment Percent Effectiveness
Bioretention/raingardens	70	75	80
Bioswale	70	75	80
Dry Detention Ponds and Hydrodynamic Structures	5	10	10
Stormwater to the Maximum Extent Practicable (SW to the MEP)	50	60	90
Erosion and Sediment Control	25	40	40
Erosion and Sediment Control on non-regulated pervious urban	25	40	40
Erosion and Sediment Control on extraction land use	25	40	40
Dry Extended Detention Ponds	20	20	60
Urban Filtering Practices	40	60	80
*Urban Forest Buffers	*	*	*
Urban Infiltration Practices - no sand/veg no underdrain	80	85	95
Urban Infiltration Practices - with sand/veg no underdrain	85	85	95
Permeable Pavement - no sand/veg with underdrain with AB soils	45	50	70
Permeable Pavement - with sand/veg with underdrain with AB soils	50	50	70
MS4 Permit-Required Stormwater Retrofit	25	35	65
*Street sweeping 25 times a year	*	*	*
Urban Nutrient Management	17	22	0
Vegetated Open Channel – Urban	45	45	70
Wet Ponds and Wetlands	20	45	60

* See most recent expert panel reports

Performance Based Water Quality Calculations Appendix 5D - VSMH

WORKSHEET 1

Project CNU Lake Maury PRJ #- Date : 5-Nov-19

1 Determine the Applicable Area (A) and the post-developed Impervious Cover (I_{post}):

Applicable Area (A) = 147.24 acres

Post-Development Impervious Cover:

I_a of structures = acres

I_a of parking lots = acres

I_a of site = 72.22 acres

Total I_{post} = 72.22 acres

I_{post} = (total I_{post} / A) x 100

I_{post} = 49.05 %

2 Determine the average land cover condition ($I_{watershed}$) or the existing impervious cover:

$I_{watershed}$ = 16.00 % (Default $I_{watershed}$ = 16%)

Existing Impervious Cover($I_{existing}$): Existing Served by a BMP? n

I_a of structures = acres

I_a of parking lots = acres

I_a of roadways = acres

I_a of site = 59.00 acres

Total I_{exist} = 59.00 acres

I_{exist} = (total I_{post} / A) x 100

I_{exist} = 40.07 %

3 Determine the appropriate development situation:

Situation 1 -
Situation 2 -
Situation 3 - X - Go to worksheet 3
Situation 4 -

Performance Based Water Quality Calculations Appendix 5D - VSMH

Worksheet 3 : Situation 3

Project CNU Lake Maury PRJ #- Date : 5-Nov-19

Summary of values from Worksheet #1:

Applicable Area (A) =	147.24	acres
I_{post} =	*49.05*	%
$I_{watershed}$ =	*16.00*	%
$I_{existing}$ =	*40.07*	%

4 Determine the relative pre-development load(L_{pre}):

Based on existing Impervious cover:

$L_{pre(existing)}$ = 137.85 lbs/year

Based on average land cover condition:

$L_{pre(watershed)}$ = 65.13 lbs/year

5 Determine the relative post-development load(L_{post}):

$L_{post)}$ = 164.98 lbs/year

6 Determine the relative pollutant removal requirement(RR):

RR = L_{post} - $L_{pre(watershed)}$

RR = 99.85 lbs/year

OR

RR = L_{post} - (0.9*$L_{pre(existing)}$)

RR = 40.91 lbs/year

Use the lesser of the two values:

RR = **40.91** lbs/year

7 Indentify best management practice(BMP) for the site:

A. Determine the required pollutant remoal efficiency for the site:

EFF = (RR/Lpost)*100

EFF = *24.80* %

B. Select BMP from Table 5-15 and give location on site:

BMP 1: Lake Maury	A_{bmp1}= 153.73	EFF_{bmp1}= 0.2929	I_{bmp1}= 51.2
BMP 2:	A_{bmp2}=	EFF_{bmp2}=	I_{bmp2}=
BMP 3:	A_{bmp3}=	EFF_{bmp3}= 0	I_{bmp3}= 0.0

A_{bmp} = Drainage area of proposed BMP(acres)

EFF_{bmp} = Pollutant removal efficiency of BMP(decimal form)

I_{bmp} = impervious percentage of A_{bmp} (expressed as a whole number)

Performance Based Water Quality Calculations Appendix 5D - VSMH

Worksheet 3 : Situation 3

Project CNU Lake Maury PRJ #- Date : 5-Nov-19

C. Determine the pollutant load entering the proposed BMP(s), l_{bmp}:

$$L_{bmp} = (0.05+(0.009*I_{bmp}))*A_{bmp}*2.28$$

L_{bmp1} =	179.07	lbs/year
L_{bmp2} =	0.00	lbs/year
L_{bmp3} =	0.00	lbs/year

D. Calculate the pollutant load removed by the proposed BMP(s)

$$L_{removed} = EFF_{bmp} * L_{bmp}$$

$L_{removed/bmp1}$ =	52.45	lbs/year
$L_{removed/bmp2}$ =	0.00	lbs/year
$L_{removed/bmp3}$ =	0.00	lbs/year

E. Calculate the **total** pollutant load removed by the BMP(s)

$L_{removed/total}$ =	**52.45**	lbs/year

F. Verify Compliance

COMPLIANCE

$L_{removed/total}$	≥	RR	
52.45	≥	**40.91**	
		13.00	**VDOT REQUIREMENT**
		53.91	**TOTAL REQUIREMENT**
		1.46	**DEFECIT FROM 36% TO 16%**
		0.07	5% REQUIRED 1ST PERMIT CYCLE
		0.51	35% REQUIRED 1ST PERMIT CYCLE
		0.88	60% REQUIRED 1ST PERMIT CYCLE

Appendix C: References

VHB - Stormwater Group

2019 CNU Stormwater Master Plan

Construction Cost Opinion

PROJECT/PROJECT # : 33935.04

LOCATION : Newport News, VA

CLIENT: Christopher Newport University

DATE PREPARED : May 22, 2019

BASIS FOR ESTIMATE:

X STUDY

PRELIMINARY DESIGN

FINAL DESIGN

FILE NAME: \\vhb\gbl\proj\VirginiaBeach\33935.04 CNU SWMP\tech\Stormwater\FINAL\Cost Opinion\[Cost Opinion SIP.xls]Stream

4500 Main Street Suite 400
Virginia Beach, VA 23462
P 757.490.0132
F 757.490.0136

ITEM NO	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST	COMMENTS
	LAKE MAURY OUTFALL - STREAM RESTORATION					
1	MOBILIZATION	1	LS	$10,000	$10,000	
2	DEMOLITION	1	LS	$15,000	$15,000	
3	STREAM RESTORATION (MATERIALS, INSTALLATION, & MONITORING)	570	LF	$1,250	$712,500	
						Pounds Phosphorus Removed
						38.76
						Initial Cost per Pound of Phosphorus Removed
						$26,258
				TOTAL	**$737,500**	
				15% Design Contingency	$110,625	
				8% General Conditions	$59,000	
				15% Construction Contingency	$110,625	
				TOTAL	**$1,017,750**	

VHB - Stormwater Group

2019 CNU Stormwater Master Plan
Construction Cost Opinion

PROJECT/PROJECT # : 33935.04

LOCATION : Newport News, VA

CLIENT: Christopher Newport University

DATE PREPARED : May 22, 2019

BASIS FOR ESTIMATE:
X STUDY
PRELIMINARY DESIGN
FINAL DESIGN

FILE NAME: \\vhb\gbl\proj\VirginiaBeach\33935.04 CNU SWMP\tech\Stormwater\FINAL\Cost Opinion\[Cost Opinion SIP.xls]Lot E1- WQS

vhb
4500 Main Street Suite 400
Virginia Beach, VA 23462
P 757.490.0132
F 757.490.0136

ITEM NO	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST	COMMENTS
	LOT E1 - WATER QUALITY STRUCTURE					
1	MOBILIZATION	1	LS	$10,000	$10,000	
2	DEMOLITION	1	LS	$15,000	$15,000	
3	UTILITY ADJUSTMENTS	1	LS	$25,000	$25,000	
4	WATER QUALITY STRUCTURE	1	EA	$360,000	$360,000	
						Pounds Phosphorus Removed
						3.32
						Initial Cost per Pound of Phosphorus Removed
						$170,422

TOTAL	**$410,000**
15% Design Contingency	$61,500
8% General Conditions	$32,800
15% Construction Contingency	$61,500
TOTAL	**$565,800**

Christopher Newport University
Campus Map

BUILDINGS/AREAS

1. Christopher Newport Hall
   a. Admission Welcome Center
2. CNU Apartments
   a. Harrison
   b. Monroe
   c. Madison
   d. Jefferson
   e. Washington
3. CNU Landing
4. CNU North
5. CNU Village
   a. Taylor
   b. Tyler
   c. Wilson
6. Commonwealth Hall
7. David Student Union
   a. Captains Locker
   b. Regattas
8. Ferguson Center for the Arts
   a. Diamonstein Concert Hall
   b. Peebles Theatre
   c. Studio Theatre
9. Ferguson Center Parking Deck
   a. Parking Services
10. Forbes Hall
11. Freeman Center
    a. Field House
    b. Gaines Theatre
    c. Trieshmann Health & Fitness Pavilion
    d. Windsor Health & Counseling Center
12. Great Lawn
13. Greek Village
14. Grounds Department
15. Hiden-Hussey Commons
16. Hoinkes Plaza/Bell Tower
17. James River Hall
18. Klich Alumni House
19. Luter Hall
20. Mary M. Torggler Fine Arts Center
21. McMurran Hall
22. Military Science Building
23. Plant Operations Warehouse
24. Pope Chapel
25. Potomac River Hall
    a. North
    b. South
26. Presidents Hall
27. Rappahannock River Hall
28. Ratcliffe Hall
29. Santoro Hall
30. Saunders Plaza
31. Trible Library
    a. Einstein's Cafe
32. University Police
33. Warwick River Hall
34. York River Hall
    a. East
    b. West

ATHLETICS FIELDS

A1. Belk Track
A2. Captains Field - Soccer
A3. Captains Park - Baseball
A4. Captains Park - Softball
A5. Jennings Family Stadium - Field Hockey/Lacrosse
A6. Eyre Tennis Courts
A7. TowneBank Football Stadium
A8. Practice Fields

PARKING: (Lots are named by letter)

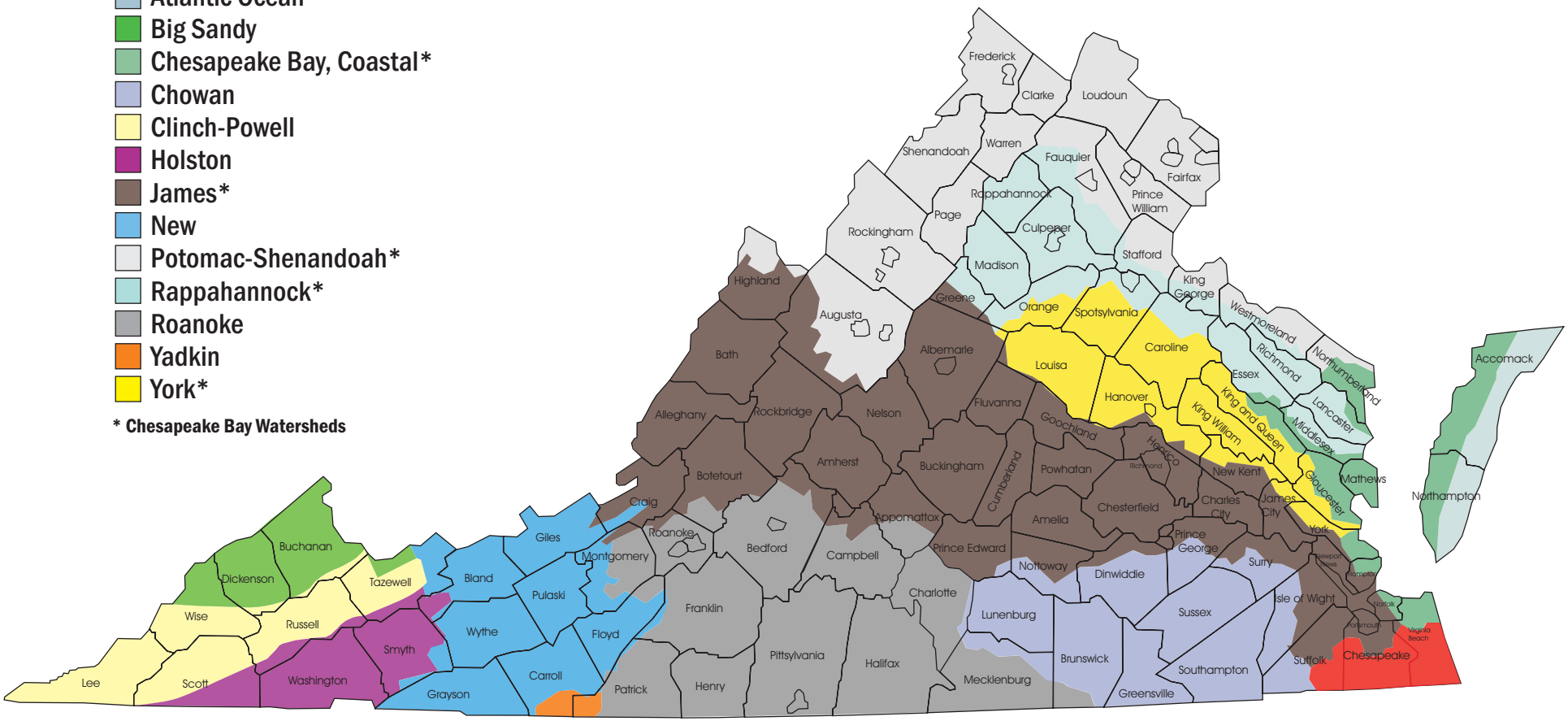
- CNU Apartments, CNU Landing, Presidents Hall
- CNU Village Parking Deck
- Main Campus Residents
- Main Campus Residents, Faculty/Staff
- Main Campus Residents, Day Student, Faculty/Staff
- Day Student, Faculty/Staff
- Faculty/Staff
- Rappahannock River Hall Parking Deck
- Open (with any valid CNU decal)
- Visitor Parking
- Retail Only

Updated: 08/2022

Virginia's Major Watersheds

- Albemarle Sound, Coastal
- Atlantic Ocean
- Big Sandy
- Chesapeake Bay, Coastal*
- Chowan
- Clinch-Powell
- Holston
- James*
- New
- Potomac-Shenandoah*
- Rappahannock*
- Roanoke
- Yadkin
- York*

* Chesapeake Bay Watersheds



DCR

Virginia Department of Conservation and Recreation

Appendix D:
Public Comments