Commander, Navy Region Mid-Atlantic
2013 - 2018 MS4 Program Plan
Contract No. N62470-10-D-3000; WE86

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Record of Review and Amendments

Date	MS4 Coordinator	Amendment	Initials
July 2013	Phillip Winslow	Initial Storm Water Pollution Prevention Plan	PW
September 2015	Angie Gent	Annual Review & Update	AG
April 2016	Angie Gent	Annual Review & Update	AG
August 2016	Angie Gent	Updates to SOPs and Appendices	AG

MS4 Program Plan Preface

This Municipal Separate Storm Sewer System (MS4) Program Plan presents Commander, Navy Region Mid-Atlantic's (CNRMA's) plan to meet the requirements of 4VAC50-60 "General Virginia Stormwater Management Program (VSMP) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems". The plan will be enforced and implemented at the following installations and annexes:

- Naval Station Norfolk (excluding Craney Island) (NSN)
- Naval Support Activity, Hampton Roads (excluding NSA Northwest) (NSA HR)
- Joint Expeditionary Base, Little Creek (JEB LC)
- Joint Expeditionary Base, Fort Story (JEB FS)
- Naval Air Station Oceana (NASO)
- Dam Neck Annex (NASO DN)
- Naval Support Activity, Hampton Roads Portsmouth Annex (NSA HR PA)
- Scott Center Annex (SCA)

Unless specifically noted, the actions described in this Program Plan will be performed at each of the installations. These facilities are designated as small municipal separate storm sewer systems (MS4s) under the Virginia Department of Environmental Quality (VADEQ) Phase II stormwater program (Permit No. VAR040114).

LIST OF ACRONYMS

Baker	Michael Baker Jr., Inc.
BMP	Best Management Practice
CNRMA	Commander, Navy Region Mid-Atlantic
COMNAVREG	Commander, Navy Region *(historical designation)*
MIDLANT	NAVFAC Mid-Atlantic
NASO DN	Dam Neck Annex
DoD	Department of Defense
DON	Department of the Navy
ECATTS	Environmental Compliance Assessment, Training, and Tracking System
EISA	Energy Independence and Security Act
EOS	Edge of Stream
EPA	Environmental Protection Agency (United States)
FEAD	Facilities Engineering Acquisition Division
HUC	Hydrologic Unit Code
IDA	Intensely Developed Acres
JEB FS	Joint Expeditionary Base, Fort Story
JEB LC	Joint Expeditionary Base, Little Creek
LID	Low Impact Development
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer Systems
NASO	Naval Air Station Oceana
NAVFAC	Naval Facilities Engineering Command
NSA HR PA	Naval Support Activity, Hampton Roads Portsmouth Annex
NPDES	National Pollutant Discharge Elimination System
NSA HR	Naval Support Activity, Hampton Roads (excluding NSA Northwest)
NSN	Naval Station Norfolk (excluding Craney Island)
OA	Opportunity Assessment
OPNAV	Office of the Chief of Naval Operations
POC	Pollutants of Concern
PY	Permit Year
RPM	Resource Management Area
RPA	Resource Protection Area
SCA	Scott Center Annex
SOP	Standard Operating Procedure
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UFC	Unified Facilities Criteria
VADCR	Virginia Department of Conservation & Recreation
VADEQ	Virginia Department of Environmental Quality
VESCP	Virginia Erosion and Sediment Control Program
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WIP	Watershed Implementation Plan
WLA	Waste Load Allocation

1. Introduction

This Municipal Separate Storm Sewer System (MS4) Program Plan details a comprehensive program to minimize stormwater pollution by establishing best management practices (BMPs), measurable goals, and responsible parties to achieve compliance with each of the six minimum control measures of the Phase II stormwater management permit. Also, this Program Plan addresses additional requirements associated with impaired waters and annual reporting and program evaluation requirements. The BMPs utilized to address each minimum control measure are described in the Program Plan.

Background

In December 1999, the National Pollutant Discharge Elimination System (NPDES) program was expanded to include provisions for discharges from small MS4s. The second phase of the regulations, Stormwater Phase II (64 FR 68722), extended the requirements for NPDES permits to stormwater discharges from:

1) "Small" MS4s serving populations of less than 100,000 people in an "urbanized" area; and
2) Construction activities disturbing between one and five acres of land.

The regulations allowed the Environmental Protection Agency (EPA) to designate the states as Stormwater Permitting Authorities, allowing each authorized state to administer and enforce stormwater requirements consistent with the NPDES program.

There are several Naval installations and annexes in the Commonwealth of Virginia that meet the criteria for small MS4 designation and, as such, currently receive consolidated permit coverage under the Virginia MS4 General Permit. The Naval installations currently covered under the Navy's Consolidated MS4 permit coverage (VAR040114) include:

- Naval Station Norfolk (excluding Craney Island) (NSN)
- Naval Support Activity, Hampton Roads (excluding NSA Northwest) (NSA HR)
- Joint Expeditionary Base, Little Creek (JEB LC)
- Joint Expeditionary Base, Fort Story (JEB FS)
- Naval Air Station Oceana (NASO)
- Dam Neck Annex (NASO DN)
- Naval Support Activity, Hampton Roads Portsmouth Annex (NSA HR PA)
- Scott Center Annex (SCA)

Waivers from regulatory coverage under the Virginia Phase II MS4 permit are available to MS4 operators who meet specific criteria as detailed in the NPDES regulations. The following Naval installations have applied for and received a waiver from the requirements of the Virginia MS4 General Permit regulations:

- New Gosport
- Southgate Annex
- Lafayette River Annex
- St. Helena's Annex

- Yorktown Fuel Terminal
- South Virginia Beach Annex

Other Naval installations in Virginia that are not regulated MS4s because they are outside of an urbanized area as determined by the latest census include:

- Cheatham Annex
- Naval Support Activity, Northwest Annex
- Naval Surface Warfare Center Dahlgren Division
- Naval Weapons Station Yorktown
- Surface Combat Systems Center Wallops Island

Other Naval installations in Virginia that are not regulated by MS4s because they are solely industrial include:

- Norfolk Naval Shipyard
- Saint Juliens Creek Annex

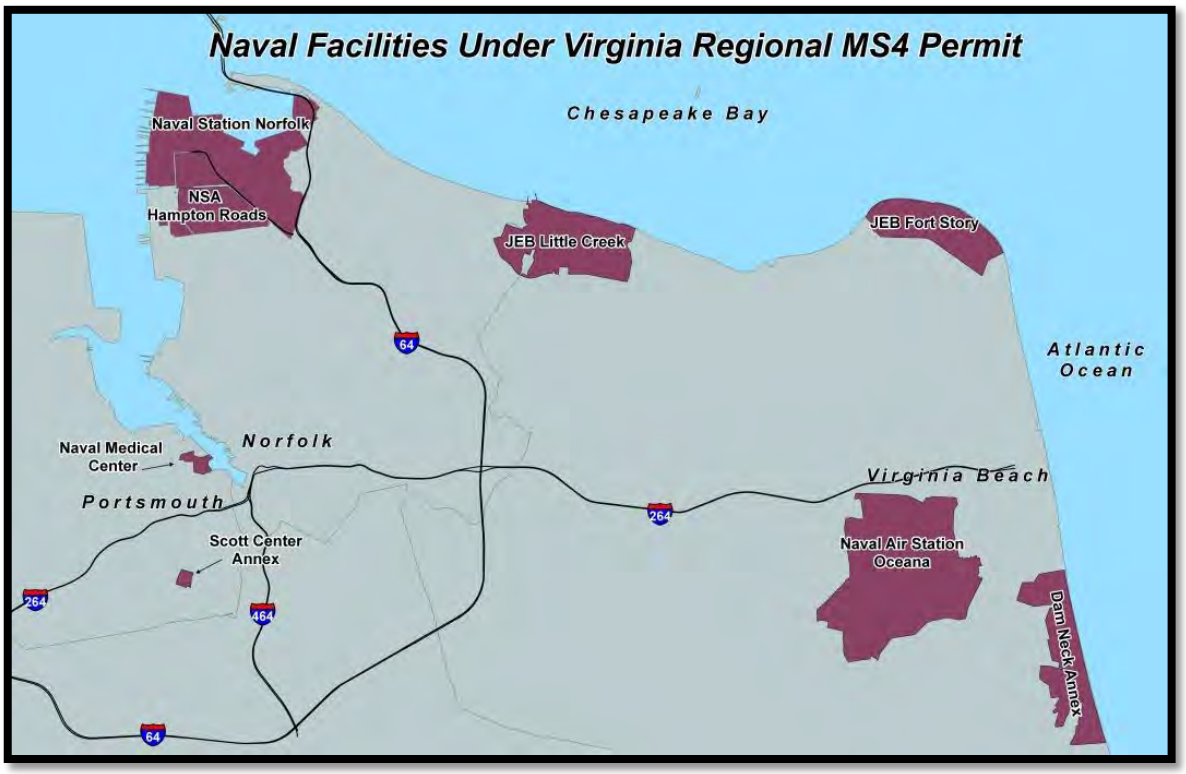

Figure 1-1. Naval Facilities under Virginia Regional MS4 Permit

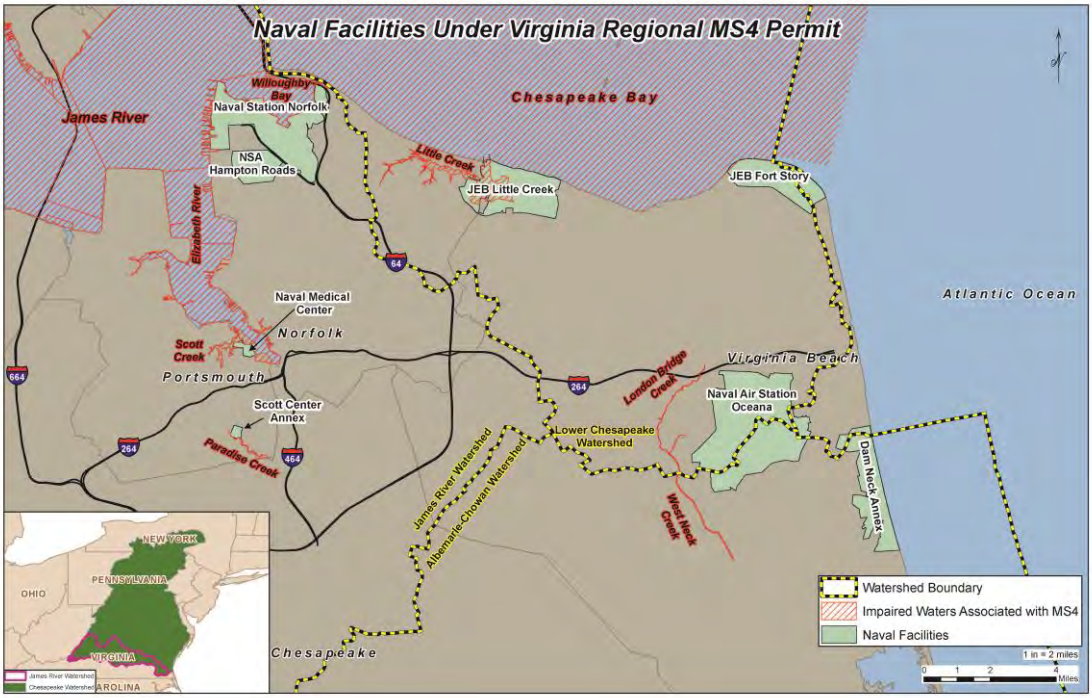

Figure 1-2. Impaired Receiving Waters Associated with the Virginia Regional MS4 Permit

Authorization, Scope and Purpose

Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic (MIDLANT) retained Michael Baker Jr., Inc. (Baker) under N62470-10-D-3000, WE86 to develop a Storm Water Phase II Storm Water Management Plan and Registration Statement for all Naval installations in the Commonwealth of Virginia that are subject to coverage under the Virginia Stormwater Management Program Small MS4 General Permit and to develop a MS4 Program Plan. The registration statement submitted to the Virginia Department of Conservation and Recreation (VADCR) in June 2013 can be found in **Appendix H**. Since submittal of the registration statement, administration of the MS4 program has been moved from VADCR to the Virginia Department of Environmental Quality (VADEQ).

The latest urbanized area maps from the 2010 Census were reviewed, and no additional Naval installations in Virginia were identified that fall under the Phase II MS4 permit coverage requirements. The enclosed plan was developed based on input received during two workshops with NAVFAC MIDLANT staff to discuss the requirements and potential BMPs of the first three and last three minimum control measures of the permit. Also, information was added to the plan to address specific requirements of impaired receiving waters.

Report Organization

The purpose of this report is to present the updated MS4 Program Plan, which is required by the VSMP Permit for Discharges of Stormwater from Small MS4s.

The MS4 Program Plan contains eleven sections:

- **Section 1** presents an introduction to the report, including an overview of the sites, background information on the regulatory requirements, and a description of the report organization.
- **Section 2** presents the organization and implementation of the total maximum daily load (TMDL) Action Plan for the Chesapeake Bay, and information on the annual inspection reports.
- **Section 3** addresses the requirements and implementation of the TMDL Action Plans for areas other than the Chesapeake Bay.
- **Section 4** addresses the requirements and implementation of the Public Education and Outreach Plan, and information on the annual evaluation and inspection reports.
- **Section 5** addresses the requirements and implementation of the Public Involvement and Participation Plan, and information on the annual evaluation.
- **Section 6** addresses the requirements and implementation of the Illicit Discharge Detection and Elimination Procedures, and information on the annual evaluation.
- **Section 7** addresses the requirements, implementation, and enforcement of the Construction Site Runoff Control Plan, and information on the annual inspection reports.
- **Section 8** addresses the requirements and implementation of the Post-Construction Runoff Control Plan, and information on the annual tracking and inspection reports.
- **Section 9** addresses the requirements and implementation of the Pollution Prevention/Good Housekeeping Plan, and information on the annual tracking reports.
- **Section 10** presents information on the annual program evaluation.
- **Section 11** presents the references for development of this report and supporting materials.

The MS4 Program Plan also contains the following appendices:

- **Appendix A** presents a complete list of the BMPs for each minimum control measure, including descriptions, metrics, responsible parties, and timeline.
- **Appendix B** presents the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems.
- **Appendix C** presents Construction Site Stormwater Runoff procedures and guidance.
- **Appendix D** presents the BMP Inspection and Maintenance Procedures.
- **Appendix E** contains the Illegal Dumping Instruction.
- **Appendix F** contains the Spill Reporting and Documenting SOP.

- **Appendix G** presents the Good Housekeeping Policies and Procedures for Municipal Operations.
- **Appendix H** presents the registration statement and supporting attachments.
- **Appendix I** contains a Training Plan for Municipal Operations
- **Appendix J** contains the permit required TMDL Action Plans.

2. Special Conditions for the Chesapeake Bay TMDL

This section presents the organization and implementation of the TMDL Action Plan for the Chesapeake Bay, and information on the annual inspection reports. More specifically, this section addresses the following:

- Permit Regulations
- TMDL Action Plan
- Implementation of TMDL Action Plan
- Annual Reporting

Since some of the permitted installations discharge into the Bay, these installations are subject to the requirements of the Chesapeake Bay TMDL. Table 2-1 presents the main receiving waters of the installations and whether or not they are regulated by the Chesapeake Bay TMDL. Please note that NASO drains partially to the Bay and partially to the North Landing River, which discharges into the Atlantic Ocean.

Table 2-1 Chesapeake Bay TMDL Receiving Waters

Receiving Waters	Installations	Subject to Chesapeake Bay TMDL Requirements
James River	Naval Station Norfolk Naval Support Activity, Hampton Roads Scott Center Annex Naval Support Activity, Hampton Roads Portsmouth Annex	YES
Chesapeake Bay	Joint Expeditionary Base, Fort Story (partial) Joint Expeditionary Base, Little Creek Naval Air Station Oceana (partial)	YES
Atlantic Ocean	Dam Neck Annex, Joint Expeditionary Base, Fort Story (partial)	NO
North Landing River (to Atlantic Ocean)	Naval Air Station Oceana (partial)	NO

The Chesapeake Bay TMDL Action Plan addresses three pollutants of concern (POCs) based on the Bay's impairment:

- Phosphorus;
- Total nitrogen; and
- Total suspended solids.

In its Phase I and Phase II Chesapeake Bay TMDL Watershed Implementation Plans (WIPs), the Commonwealth of Virginia committed to a phased approach for MS4s that affords MS4 permittees up to three full 5-year permit cycles to implement necessary reductions. The permit requires 5% of the necessary reduction in the first permit cycle, 35% in the second permit cycle, and the remaining 60% in the third permit cycle.

Permit Regulations (as of 07/01/2013)

An excerpt from Section I of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit, including Table 1 (as referenced below) can be found in **Appendix B**.

C. Special condition for the Chesapeake Bay TMDL. *The Commonwealth in its Phase I and Phase II Chesapeake Bay TMDL Watershed Implementation Plans (WIP) committed to a phased approach for MS4s, affording MS4 operators up to three full five-year permit cycles to implement necessary reductions. This permit is consistent with the Chesapeake Bay TMDL and the Virginia Phase I and II WIPs to meet the Level 2 (L2) scoping run for existing developed lands as it represents an implementation of 5.0% of L2 as specified in the 2010 Phase I WIP. Conditions of future permits will be consistent with the TMDL or WIP conditions in place at the time of permit issuance.*

1. Definitions. *The following definitions apply to this state permit for the purpose of the special condition for discharges in the Chesapeake Bay Watershed:*

"Existing sources" means pervious and impervious urban land uses served by the MS4 as of June 30, 2009.

"New sources" means pervious and impervious urban land uses served by the MS4 developed or redeveloped on or after July 1, 2009.

"Pollutants of concern" or "POC" means total nitrogen, total phosphorus, and total suspended solids.

"Transitional sources" means regulated land disturbing activities that are temporary in nature and discharge through the MS4.

2. Chesapeake Bay TMDL planning.

a. In accordance with Table 1 in this section, the operator shall develop and submit to the department for its review and acceptance an approvable Chesapeake Bay TMDL Action Plan. Unless specifically denied in writing by the department, this plan becomes effective and enforceable 90 days after the date received by the department. The plan shall include:

(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) 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) The means and methods that will be utilized to address discharges into the MS4 from new sources;

(4) 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 Storm (EOS) loading rate:

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 (6/30/09)***	***2009 EOS Loading Rate (lbs/acre)***	***Estimated Total POC Load Based on 2009 Progress Run***
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*	

(5) 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 first 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.

(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;

(7) The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009, and June 30, 2014, that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle.

(8) The means and methods to offset the increased loads from projects as grandfathered in accordance with 4VAC50-60-48, that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids.

(9) The operator shall address any modification to the TMDL or watershed implementation plan that occurs during the term of this state permit as part of its permit reapplication and not during the term of this state permit.

Table 3 a: Calculation Sheet for Determining Total POC Reductions Required During this Permit Cycle for the James River Basin *Based on Chesapeake Bay Program Watershed Model Phase 5.3.2				
Subsource	**Pollutant**	**Total Existing Acres Served by MS4 (6/30/09)**	**First Permit Cycle Required Reduction in Loading Rate (lbs/acre)**	**Total Reduction Required First Permit Cycle (lbs)**
Regulated Urban Impervious	*Nitrogen*		*0.04*	
Regulated Urban Pervious			*0.02*	
Regulated Urban Impervious	*Phosphorus*		*0.01*	
Regulated Urban Pervious			*0.002*	
Regulated Urban Impervious	*Total Suspended Solids*		*6.67*	
Regulated Urban Pervious			*0.44*	

Table 4: Ratio of Phosphorus Loading Rate to Nitrogen and Total Suspended Solids Loading Rates for Chesapeake Bay Basins			
Ratio of Phosphorus to Other POCs (Based on All Land Uses 2009 Progress Run)	**Phosphorus 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*

(10) A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48;

(11) An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle; and

(12) An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan.

b. As part of development of the Chesapeake Bay TMDL Action Plan, the operator may consider:

(1) Implementation of BMPs on unregulated lands provided any necessary baseline reduction is not included toward meeting the required reduction in this permit;

(2) Utilization of stream restoration projects, provided that the credit applied to the required POC load reduction is prorated based on the ratio of regulated urban acres to total drainage acres upstream of the restored area;

(3) Establishment of a memorandum of understanding (MOU) with other MS4 operators that discharge to the same or adjacent eight digit hydrologic unit within the same basin to implement BMPs collectively. The MOU shall include a mechanism for dividing the POC reductions created by BMP implementation between the cooperative MS4s;

(4) Utilization of any pollutant trading or offset program in accordance with § 10.1-603.15:1 et seq. of the Code of Virginia, governing trading and offsetting;

(5) A more stringent average land cover condition based on less than 16% impervious cover for new sources initiating construction between July 1, 2009, and June 30, 2014, and all grandfathered projects where allowed by law; and

(6) Any BMPs installed after June 30, 2009 as part of a retrofit program may be applied towards meeting the required load reductions provided any necessary baseline reductions is not included.

3. Chesapeake Bay TMDL Action Plan implementation. *The operator shall implement the TMDL Action Plan according to the schedule therein. Compliance with this requirement represents adequate progress for this state permit term towards achieving TMDL wasteload allocations consistent with the assumptions and requirements of the TMDL. For the purposes of this permit, the implementation of the following represents implementation to the maximum extent practicable and demonstrates adequate progress:*

a. Implementation of nutrient management plans in accordance with the schedule identified in the minimum control measure in Section II related to pollution prevention/good housekeeping for municipal operations;

b. Implementation of the minimum control measure in Section II related to construction site stormwater runoff control in accordance with this state permit shall address discharges from transitional sources;

c. Implementation of the means and methods to address discharges from new sources in accordance with the minimum control measure in Section II related to post-construction stormwater management in new development and development of prior developed lands and in order to offset 5.0% of the total increase in POC loads between July 1, 2009, and June 30, 2014. Increases in the POC load from grandfathered projects initiating construction after July 1, 2014, must be offset prior to completion of the project; and

d. Implementation of means and methods sufficient to meet the required reductions of POC loads from existing sources in accordance with the Chesapeake Bay TMDL Action Plan.

4. Annual reporting requirements.

a. In accordance with Table 1 in this section, the operator shall submit the Chesapeake Bay Action Plan with the appropriate annual report.

b. Each subsequent annual report shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.

c. Each subsequent annual report shall include a list of control measures, in an electronic format provided by the department, that were implemented during the reporting cycle and the estimated reduction achieved by the control. For stormwater management controls, the report shall include the information required in Section II B 5 e and shall include whether an existing stormwater management control was retrofitted, and if so, the existing stormwater management control type retrofit used.

d. Each annual report shall include a list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.

5. The operator shall include the following as part of its reapplication package due in accordance with Section III M:

a. Documentation that sufficient control measures have been implemented to meet the compliance target identified in this special condition. If temporary credits or offsets have been purchased in order to meet the compliance target, the list of temporary reductions utilized to meet the required reduction in this state permit and a schedule of implementation to ensure the permanent reduction must be provided; and

b. A draft second phase Chesapeake Bay TMDL Action Plan designed to reduce the existing pollutant load as follows:

(1) The existing pollutant of concern loads by an additional seven times the required reductions in loading rates using the applicable Table 3 for sources included in the 2000 U.S. Census Bureau urbanized areas;

(2) The existing pollutant of concerns loads by an additional eight times the required reductions in loading rates using the applicable Table 3 for expanded sources identified in the U.S. Census Bureau 2010 urbanized areas;

(3) An additional 35% reduction in new sources developed between 2009 and 2014 and for which the land use cover condition was greater than 16%; and

(4) Accounts for any modifications to the applicable loading rate provided to the operator as a result of TMDL modification.

TMDL Action Plan

As required by the permit, a phased Chesapeake Bay TMDL Action Plan was developed in permit year (PY) 1 and 2 and submitted to VADEQ within the 24 months after permit coverage. The Action Plan includes the components specified in Section I C of the permit: A brief summary of these items is provided below.

- Annual review of the MS4 Program for appropriateness;
- Identification of any new or modified legal authorities that need to be implemented to meet the requirements of the Chesapeake Bay TMDL Action Plan;
- The means and methods that will be used to address discharges into the MS4 from new sources;
- An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009;
- A determination of the total pollutant load reductions necessary to reduce the annual POC loads from existing sources;
- The means and methods, such as management practices and retrofit programs, that will be used to meet the required reductions;
- The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009, and June 30, 2014, that disturb one acre or greater;
- The means and methods to offset the increased loads from projects, as grandfathered in accordance with 4VAC50-60-48, that disturb one acre or greater;

- Modifications to the TMDL Action Plan or WIP that occur during the term of this state permit as part of its permit reapplication and not during the term of this state permit;
- A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48;
- An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle; and
- An opportunity for receipt and consideration of public comments regarding the draft Chesapeake Bay TMDL Action Plan.

The means and methods to address pollutants include low impact development (LID) practices, stream restoration practices, use of pollutant trading or offset programs and conversion of impervious surfaces with the overall goal of reducing runoff and encouraging infiltration.

Annual POC Loads

The permit requires an estimation of the annual POC loads discharged from the existing sources, based on the 2009 progress run using Table 2a (shown in the permit excerpt). The Navy's MS4s subjected to the Chesapeake Bay TMDL requirements either drain directly to the Chesapeake Bay or to the James River. The regulated areas have been computed for the installations and input into the appropriate table and the corresponding load based on the 2009 progress run has been computed. In accordance with the document entitled, "Fact Sheet – General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems," the installations that drain directly to the Chesapeake Bay are using the James River Basin tables in the permit to estimate the existing source loads.

Necessary Reductions

The permit requires an estimation of the total reductions necessary to reduce the annual POC load from existing sources to the appropriate implementation level using Table 3a (shown in the permit excerpt). The regulated areas determined for Table 2a has been used to calculate the total reduction requirements for the first permit cycle. In accordance with the document entitled, "Fact Sheet – General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems," the installations that drain directly to the Chesapeake Bay will use the James River Basin tables in the permit to determine the required pollutant reductions. The reduction for the first permit cycle will correspond to 5% of the total reduction required. An additional 35 percent reduction is required by the end of the second permit cycle (June 30, 2023) and the final 60 percent reduction by the end of the third permit cycle (June 30, 2028).

The calculations in the Action Plan show that the Best Management Practices (BMPs) installed between January1, 2006, and June 30, 2014, provide pollutant reductions for the pollutants of concern (POCs) that go beyond the required reductions for the first permit cycle (218.8 lbs/yr for TN, 37.7 lbs/yr for TP, and 25,891 lbs/yr for TSS). Therefore, no additional BMPs are required to be installed before the end of the first permit cycle (June 30, 2018).

The Action Plan also presents a preliminary strategy for implementation of additional BMPs to address pollutant load reductions required in the second permit cycle (July 2018 to July 2023). This strategy is based on current data and approaches and are

subject to change if new and/or modified information becomes available. During the second permit cycle, the Hampton Roads installations plan to install structural BMPs at various locations. If every planned BMP is implemented in the second permit cycle, the corresponding POC reductions are expected to fall short of the second permit cycle required reductions. Therefore, planning and investigation into additional BMP installation are needed to meet the second permit cycle reductions.

NAVFAC MIDLANT has currently contracted with Baker and other contractors to perform opportunity assessments on various installations and annexes to identify locations where the installation of BMP facilities will be most useful. After these locations are identified and prioritized, the Navy will decide how and where to install and implement these BMPs.

Appendix J contains the Chesapeake Bay TMDL Action Plan.

Implementation of TMDL Action Plan

The TMDL Action Plan will be implemented in phases as follows:

- BMPs for MCM #4, Construction Site Runoff Control, will be implemented within 24 months after permit coverage.
- The nutrient management plans described in a BMP under MCM #6, Pollution Prevention/Good Housekeeping, will be fully implemented within 60 months after permit coverage.
- Means and methods to address discharges from new sources in accordance with MCM #5 and to offset 5% of the total increase in POC loads between July 1, 2009, and June 30, 2014. Increases in the POC load from grandfathered projects initiating construction after July 1, 2014 must be offset prior to completion of the project. These means and methods will be installed in PY 2 through 5.

Annual Reporting

The Chesapeake Bay TMDL Action Plan was developed within 24 months after permit coverage and as requested was submitted to VADEQ on October 1, 2015 along with the annual report. Each subsequent annual report will include:

- A list of control measures implemented during the reporting period and the cumulative progress toward meeting the required reduction for the POCs.
- A list of control measures, in electronic format, that were implemented during the reporting cycle and the estimated reduction achieved by the control. If the control measure is a stormwater management control, the report will include the corresponding stormwater management facility tracking and reporting requirements outlined in MCM #5.
- A list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for the POCs.

3. Special Conditions for Other TMDLs

This section discusses the special conditions for TMDLs other than the Chesapeake Bay TMDL Action Plan that was summarized in the preceding section. EPA's website was consulted in January 2013 to identify TMDLs that are associated with the MS4 permitted installations. Table 3-1 provides a summary of these TMDLs.

Table 3-1. TMDLs Associated with Permitted Installations

Installation	Impairment	Water	Approval Date	WLA (count/day)	WLA (cfu/yr)
Naval Air Station Oceana	Fecal Coliform	West Neck Creek (Upper), London Bridge Creek	9/27/2005	Not Given	1.45E+13
Scott Center Annex	Enterococcus Bacteria	Paradise Creek	7/20/2010	1.91E+10	Not Given
Naval Support Activity, Hampton Roads Portsmouth Annex	Enterococcus Bacteria	Elizabeth River Mainstem (Upper)	7/20/2010	9.48E+10	Not Given

The waste load allocation (WLA) for Scott Center Annex (SCA) has been documented in past MS4 Program Plans. SCA and Naval Support Activity, Hampton Roads Portsmouth Annex (NSA HR PA) currently have WLAs associated with them which are further described in "The Bacteria TMDL Development for the Elizabeth River," which was published in July 2010 and can be found at

http://www.deq.virginia.gov/portals/0/DEQ/Water/TMDL/apptmdls/jamesrvr/elizabethec.pdf

The subsequent sections present the applicable excerpt from the permit and discuss relevant aspects of the permit, including pertinent requirements.

Permit Regulations (as of 07/01/2013)

An excerpt from Section I of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit, including Table 1 (as referenced below) can be found in **Appendix B**.

B. Special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL. *An approved TMDL may allocate an applicable wasteload to a small MS4 that identifies a pollutant or pollutants for which additional stormwater controls are necessary for the surface waters to meet water quality standards. The MS4 operator shall address the pollutants in accordance with this special condition where the MS4 has been allocated a wasteload in an approved TMDL.*

1. The operator shall maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan *for pollutants allocated to the MS4 in approved TMDLs. TMDL Action Plans may be implemented in multiple phases over more than one state permit cycle using the adaptive iterative approach provided adequate progress to reduce pollutant discharge in a manner consistent with the assumptions and requirements of the specific TMDL wasteload is demonstrated in accordance with subdivision 2 e of this subsection. These TMDL Actions Plans shall identify the best management practices and other interim milestone activities to be implemented during the remaining terms of this state permit.*

a. In accordance with Table 1 in this section, the operator shall update the MS4 Program Plans to address any new or modified requirements established under this special condition for pollutants identified in TMDL wasteload allocations approved prior to July 9, 2008.

b. In accordance with Table 1 in this section, the operator shall update the MS4 Program Plan to incorporate approvable TMDL Action Plans that identify the best management practices and other interim milestone activities that will be implemented during the remaining term of this permit for pollutants identified in TMDL wasteload allocations approved either on or after July 9, 2008, and prior to issuance of this permit.

c. Unless specifically denied in writing by the department, TMDL Action Plans and updates developed in accordance with this section become effective and enforceable 90 days after the date received by the department.

2. The operator shall:

a. Develop and maintain a list of its legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements applicable to reducing the pollutant identified in each applicable WLA;

b. Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Section II B, that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA;

c. Enhance its public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA;

d. Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purposes of this assessment, 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. (For example, a significant source of pollutant from a facility of concern for a bacteria TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited.)

e. Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant or pollutants of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or in-stream monitoring, as appropriate, to estimate pollutant reductions. The operator may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other MS4 operators or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in subdivision 2 d of this subsection. The methodology used for assessment shall be described in the TMDL Action Plan.

***3. Analytical methods** for any monitoring shall be conducted according to procedures approved under 40 CFR Part 136 or alternative methods approved by the Environmental Protection Agency (EPA). Where an approved method does not exist, the operator must use a method consistent with the TMDL.*

***4. The operator is encouraged to participate as a stakeholder** in the development of any TMDL implementation plans applicable to their discharge. The operator may incorporate applicable best management practices identified in the TMDL implementation plan in the MS4 Program Plan or may choose to implement BMPs of equivalent design and efficiency provided that the rationale for any substituted BMP is provided and the substituted BMP is consistent with the assumptions and requirements of the TMDL WLA.*

5. Annual reporting requirements.

a. The operator shall submit the required TMDL Action Plans with the appropriate annual report and in accordance with the associated schedule identified in this state permit.

b. On an annual basis, the operator shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.

6. The operator shall identify the best management practices *and other steps that will be implemented during the next state permit term as part of the operator's reapplication for coverage as required under Section III M.*

7. For planning purposes, the operator shall include an estimated end date *for achieving the applicable wasteload allocations as part of its reapplication package due in accordance with Section III M.*

TMDL Action Plans

The EPA website will be consulted annually to identify any additional permitted installations with WLAs. The annual reports will include updates on the current status of the TMDL Action Plans and any associated evaluation results.

TMDL Action Plans have been developed for Naval Air Station Oceana (NASO), NSA HR PA, and SCA as required by the permit. The Action Plans identify BMPs and other implementation steps to reduce the pollutants identified in the TMDL. The method(s) to assess the effectiveness of the Action Plan will be documented. These method(s) may include measurable goals, metrics and milestones.

In addition to the VPDES MS4 permit requirements for reducing the pollutants identified in the WLAs, the VPDES industrial stormwater permit also includes similar requirements.

Additional management practices, control techniques and system design, and engineering methods that have been implemented and are applicable to reducing fecal coliform and enterococcus bacteria, other than those identified in MCM #1 through #6 will be discussed in the TMDL Action Plans. Since all three WLAs are bacteria based, focus was placed on areas with wildlife, large goose populations, pet areas, etc.

Table 3-2 presents CNRMA's list of plans and instructions to address the TMDL. It is anticipated that the instruction documents will be converted to standard operating procedures within this permit cycle.

Table 3-2. Summary of Management Actions for TMDL Reduction

Management Category	Management Documents and Instructions
Agricultural BMPs	Nutrient Management Plans and Conservation Plan for NASO
Utilities	COMNAVREG MIDLANT Illegal Discharge and Dumping Instruction; Good Housekeeping Policies and Procedures.
Illicit Discharges	OPNAV Instruction 5090.1C Environmental Readiness Program Manual and COMNAVREG MIDLANT Illegal Discharge and Dumping Instruction
Erosion and Sediment Control	Erosion and Sediment Control Plan Development and Submittal SOP; MS4 Construction Site Inspection Procedures and Tracking Mechanism User's Manual (CH2MHILL)

Stormwater Management	Stormwater Management Plan Development and Submittal SOP; Stormwater Permit Coverage for Construction Activity SOP; MS4 Construction Site Inspection Procedures and Tracking Mechanism User's Manual (CH2MHILL); EISA Sect 438 & the DON Low Impact Development Policy
General	OPNAV Instruction 5090.1C Environmental Readiness Program Manual ; Implementation of TMDL Action Plans for Chesapeake Bay, NASO, NSA HR Portsmouth Annex and Scott Center Annex.

Public education, outreach, and employee training programs will be implemented in accordance with MCM #1 and #2 BMPs. Facilities will be identified that may be a significant source of the identified pollutant and are not covered under a separate VPDES permit at NASO, NSA HR PA, and SCA. These facilities will be assessed annually to ensure the BMPs are being implemented as required.

West Neck Creek – Naval Air Station Oceana
The TMDL Action Plan for fecal coliform at NASO was developed in PY 2 and due to delays in the schedule was submitted and approved by VDEQ in PY3. The Action Plan identifies BMPs and other implementation steps to reduce the amount of fecal coliform entering West Neck Creek.

The current TMDL Action Plan includes the following BMPs:

- Public Education and Outreach;
- Outfall Reconnaissance and Sampling (conducted as a requirement to the VPDES industrial stormwater permit renewal);
- Property Evaluations and Site Evaluations; and
- Program Evaluation and Assessment.

Elizabeth River – Naval Support Activity, Hampton Roads Portsmouth Annex
A TMDL Action Plan for NSA HR PA was developed during PY 3 and within 36 months after permit coverage, as required by the permit. The Action Plan identifies BMPs and other implementation steps to reduce the amount of enterococcus bacteria entering the Elizabeth River.

Paradise Creek – Scott Center Annex
A TMDL Action Plan for the SCA was developed during PY 3 and within 36 months after permit coverage, as required by the permit. The Action Plan identifies BMPs and other implementation steps to reduce the amount of enterococcus bacteria entering Paradise Creek.

Appendix J contains the TMDL Action Plans for Local TMDLs (TMDLs other than the Chesapeake Bay).

4. MCM #1: Public Education and Outreach

This section addresses the requirements and implementation of the Public Education and Outreach Plan, and information on the annual evaluation and inspection reports. More specifically, this section addresses the following:

- Permit Regulations
- High-Priority Water Quality Issues
- Training
- Public Education
- Car Wash Areas
- Plan Evaluation and Annual Reporting

The Public Education Outreach Plan outlined below was finalized in PY 1 and within 12 months after permit coverage. The MS4 Program Plan is posted on the NAVFAC MIDLANT webpage. The term "public" has been interpreted as suggested in the permit as the resident and employee population within the property boundary of the facility.

Permit Regulations (as of 07/01/2013)

An excerpt from Section II B of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit, including Table 1 (as referenced below) can be found in **Appendix B**.

1. Public education and outreach on stormwater impacts.

a. The operator shall continue to implement the public education and outreach program as included in the registration statement until the program is updated to meet the conditions of this state permit. Operators who have not previously held MS4 permit coverage shall implement this program in accordance with the schedule provided with the completed registration statement.

b. The public education and outreach program should be designed with consideration of the following goals:

(1) Increasing target audience knowledge about the steps that can be taken to reduce stormwater pollution, placing priority on reducing impacts to impaired waters and other local water pollution concerns;

(2) Increasing target audience knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications; and

(3) Implementing a diverse program with strategies that are targeted towards audiences most likely to have significant stormwater impacts.

c. The updated program shall be designed to:

(1) Identify, at a minimum, three high-priority water quality issues, that contribute to the discharge of stormwater (e.g., Chesapeake Bay nutrients, pet wastes and local bacteria TMDLs, high-quality receiving waters, and illicit discharges from commercial sites) and a rationale for the selection of the three high-priority water quality issues;

(2) Identify and estimate the population size of the target audience or audiences who is most likely to have significant impacts for each high-priority water quality issue;

(3) Develop relevant message or messages and associated educational and outreach materials (e.g., various media such as printed materials, billboard and mass transit advertisements, signage at select locations, radio advertisements, television advertisements, websites, and social media) for message distribution to the selected target audiences while considering the viewpoints and concerns of the target audiences including minorities, disadvantaged audiences, and minors;

(4) Provide for public participation during public education and outreach program development;

(5) Annually conduct sufficient education and outreach activities designed to reach an equivalent 20% of each high-priority issue target audience. It shall not be considered noncompliance for failure to reach 20% of the target audience. However, it shall be a compliance issue if insufficient effort is made to annually reach a minimum of 20% of the target audience; and

(6) Provide for the adjustment of target audiences and messages including educational materials and delivery mechanisms to reach target audiences in order to address any observed weaknesses or shortcomings.

d. The operator may coordinate their public education and outreach efforts with other MS4 operators; however, each operator shall be individually responsible for meeting all of its state permit requirements.

e. Prior to application for continued state permit coverage required in Section III M, the operator shall evaluate the education and outreach program for:

(1) Appropriateness of the high-priority stormwater issues;

(2) Appropriateness of the selected target audiences for each high-priority stormwater issue;

(3) Effectiveness of the message or messages being delivered; and

(4) Effectiveness of the mechanism or mechanisms of delivery employed in reaching the target audiences.

f. The MS4 Program Plan shall describe how the conditions of this permit shall be updated in accordance with Table 1 in this section.

g. The operator shall include the following information in each annual report submitted to the department during this permit term:

(1) A list of the education and outreach activities conducted during the reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience or audiences that will be reached; and

(2) A list of the education and outreach activities that will be conducted during the next reporting period for each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached.

High-Priority Water Quality Issues

Three high-priority water quality issues were identified to include:

- Construction site (sediment and erosion) issues;
- Household hazardous waste (including illicit discharges); and
- Chesapeake Bay Nutrient Removal.

Public education and outreach will focus on the three issues outlined below.

Construction Site Issues

Construction site issues include improperly installed erosion and sediment control devices, areas that are not stabilized within the allotted time, and permitting procedures that are not followed. These items will be addressed with BMPs #4.1 to 4.5.

The population size of the target audience for construction site issues is approximately 200 (includes FEAD Construction, FEAD Design and Contractors). The population will include base personnel who manage or oversee construction projects. Education and outreach activities will be designed to reach 20% of the target audience.

Household Hazardous Waste
Because many individuals do not know how to properly dispose of household hazardous waste such as paint, oil, cleaners, fertilizer, etc., it can end up in the waterways. Fertilizers are a source of nutrients that are addressed in the Chesapeake Bay TMDL Action Plan. The proper disposal of household hazardous waste will be addressed through public education and outreach (BMP #1.1 through #1.5).

The population size of the target audience for household hazardous waste disposal will be determined in PY 1. The population will include individuals living on the installations as well as individuals who only work on the installation. Education and outreach activities will be designed to reach 20% of the target audience.

Chesapeake Bay Nutrient Removal
With the majority of the runoff from the installations draining to the Chesapeake Bay, NAVFAC MIDLANT will focus their efforts on nutrient removal from stormwater runoff. The Chesapeake Bay TMDL Action Plan addresses phosphorus, total nitrogen, and total suspended solids. As required by the permit, a Chesapeake Bay Action Plan and Turf and Landscape Nutrient Management Plans (BMP #6.3) have been developed. In addition, car wash areas on each installation will be identified and tracked (BMP #1.6) and brochures regarding proper disposal of pet waste are being distributed (BMP #1.3).

The population size of the target audience for Chesapeake Bay nutrient issues will be determined in PY 1. The population will include all individuals living and working on the installations. Education and outreach activities will be designed to reach 20% of the target audience.

Environmental Awareness Training (BMP #1.1)

The Environmental Awareness Training Program will continue to be implemented. In PY 1, the materials will be evaluated and updated. In PY 2 through 5, training will be conducted at least annually and include training of members of the Facilities Engineering & Acquisition Division (FEAD). For each high-priority water quality issue, the number of people trained and the date of the training will be recorded. The BMP List in **Appendix A** provides additional information, including a description of the BMP, measurable goals, metrics, responsible parties, and a timeline.

ECATTS Training (BMP #1.2)

Training will also be conducted for both Military Base Employees and NAVFAC Construction Contractors using the Web-based Environmental Compliance Assessment, Training and Tracking System (ECATTS). Several stormwater training modules have been developed including Principals of Erosion and Sedimentation, Erosion and Sediment Control Practices, Vegetative Stabilization, Stormwater Runoff, Stormwater BMPs, Construction Site Pollution Prevention, and Sediment and Stormwater Plans. The training will be conducted in PY 1 through 5. The number of people trained using each module will be recorded. The modules will be reviewed annually and updated as needed. The BMP List in **Appendix A** provides additional information.

Brochures (BMP #1.3)

A series of public education tri-fold brochures have been developed as a part of the Navy Stormwater Pollution Prevention Program. The brochure topics support the three high-priority water quality issues and include:

- General Stormwater (addressing nutrients from fertilizers and yard waste,etc.);
- Construction Sediment and Erosion Control - Virginia Stormwater Management Program (VSMP);
- Pet Waste; and
- Household Hazardous Waste.

Each brochure includes general information about the issues, guidance about what the public can do to help, contact information, and sources of additional data. In PY 1 through 5, the brochures will be distributed during training/events/functions where the members of the target audience will be present. For example, the Construction Sediment and Erosion Control brochure will be distributed at preconstruction meetings. Copies of the brochures will be retained, and the number of brochures distributed per event will be recorded. Brochures will continuously be distributed to housing to put in move-in packages for all new residents. In addition, the general, pet waste and hazardous waste brochures will be displayed in stands that include a general information poster at each installation. The BMP List in **Appendix A** provides additional information.

Newspaper Articles and Ads (BMP #1.4)

Articles and/or ads concerning stormwater pollution prevention related to the three high-priority water quality issues have been developed and will be placed semiannually in "The Flagship," the "Jet Observer," or the emailed "Plan of the Week" in PY 1 through 5. Copies of all published materials will be retained, and the publication dates will be recorded. The BMP List in **Appendix A** provides additional information.

External Website (BMP #1.5)

The NAVFAC MIDLANT website will be used to post public education material. In PY 1, content for the website will be identified and the materials will be posted sometime after. The website will also be used to post the draft and final MS4 Program Plans, as well as the annual reports. The number of times a material is viewed will be tracked and recorded. The BMP List in **Appendix A** provides additional information.

Car Wash Areas (BMP #1.6)

Each installation has a designated car wash area with a corresponding point of contact. Whenever individuals want to hold a car wash fundraiser, the point contact is called and only the designated location(s) can be used. Designated washing areas will be located on pervious surfaces to allow for infiltration of wash water or located on portions of the base with no connection to the MS4 system (i.e. no storm drains present). The car wash information will be posted in the "Plan of the Week" and/or the installation

newspaper at least annually. In PY 1 through PY 5, the number of car washes held will be tracked and reported. The BMP List in **Appendix A** provides additional information.

Plan Evaluation and Annual Reporting (BMP #1.7)

The Public Education and Outreach Plan will be evaluated during each permit cycle, including an assessment of:

- Appropriateness of the high-priority stormwater issues;
- Appropriateness of the selected target audiences for each high-priority issue;
- Effectiveness of the message(s) being delivered; and
- Effectiveness of the mechanism(s) of delivery employed in reaching the target audiences.

The annual report will include a list of the education and outreach activities that took place during the reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience reached. This same information will be estimated for the next reporting period. Any identified weakness or shortcomings will be addressed as necessary. The BMP List in **Appendix A** provides additional information.

5. MCM #2: Public Involvement and Participation

This section addresses the requirements and implementation of the Public Involvement and Participation Plan, and information on the annual evaluation. More specifically, this section addresses the following:

- Permit Regulations
- Posting of Program and Annual Report
- Storm Drain Marking Program
- Local Activity Participation
- Evaluation and Assessment

The Public Involvement and Participation Plan outlined below will be reviewed and updated, as appropriate, in PY 1 through 5. The term "public" has been interpreted as suggested in the permit as the resident and employee population within the property boundary of the facility.

Permit Regulations (as of 07/01/2013)

An excerpt from Section II B of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit can be found in **Appendix B**.

2. Public involvement/participation.

a. Public involvement.

(1) The operator shall comply with any applicable federal, state, and local public notice requirements.

(2) The operator shall:

(a) Maintain an updated MS4 Program Plan. Any required updates to the MS4 Program Plan shall be completed at a minimum of once a year and shall be updated in conjunction with the annual report. The operator shall post copies of each MS4 program plan on its webpage at a minimum of once a year and within 30 days of submittal of the annual report to the department.

(b) Post copies of each annual report on the operator's web page within 30 days of submittal to the department and retain copies of annual reports online for the duration of this state permit; and

(c) Prior to applying for coverage as required by Section III M, notify the public and provide for receipt of comment of the proposed MS4 Program Plan that will be submitted with the registration statement. As part of the reapplication, the operator shall address how it considered the comments received in the development of its MS4 Program Plan. The operator shall give public notice by a method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to solicit public participation.

b. Public participation. The operator shall participate, through promotion, sponsorship, or other involvement, in a minimum of four local activities annually e.g., stream cleanups; hazardous waste cleanup days; and meetings with watershed associations, environmental advisory committees, and other environmental organizations that operate within proximity to the operator's small MS4. The activities shall be aimed at increasing public participation to reduce stormwater pollutant loads;

improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other opportunities for public involvement.

c. The MS4 Program Plan shall include written procedures for implementing this program.

d. Each annual report shall include:

(1) A web link to the MS4 Program Plan and annual report; and

(2) Documentation of compliance with the public participation requirements of this section.

Posting of Program Plan and Annual Report (BMP #2.1)

The MS4 Program Plan (including updates) and Annual Reports are located on the NAVFAC MIDLANT webpage. These documents can be found at:

http://www.navfac.navy.mil/navfac_worldwide/atlantic/fecs/midatlantic/about_us/environmental_norfolk/environmental_compliance.html

The MS4 Program Plan will be updated yearly in conjunction with the annual report, and copies of these documents will be posted on the website within 30 days of submittal to VADEQ.

At the end of the permit cycle, the draft MS4 Program Plan will be posted on the website, and a notification stating that the document is available for review and comment will be sent to the public through the "Plan of the Week" and/or the newspaper "The Flagship." Comments will be received through the website. The reapplication package will include a description of the comments received and how they were addressed. The BMP List in **Appendix A** provides additional information.

Storm Drain Marking Program (BMP #2.2)

The Navy will continue the storm drain marking program, which places markers on inlets to the MS4, to remind the public that materials that flow into the storm drain end up in local waterways. These storm drain markers were developed specifically for the Navy. The target areas for the program will be identified in PY 1. In PY 2 through 5, annual markings of the storm drains will be completed. The BMP List in **Appendix A** provides additional information.

Local Activity Participation (BMP #2.3)

The Navy will participate in at least four local activities annually across the permitted Naval installations. Every effort will be taken to hold the four activities at four different installations. Most installations hold an Earth Day event and a Clean the Bay Day. Outreach information will be distributed at these events. When a booth is involved at an event, a banner (to be developed for the program and using the newly developed logo) will be used. For Clean the Bay Day events, the number of volunteers and amount of litter collected will be recorded. For both events, the amount of outreach materials that were distributed will be documented, as well as the date and location of each event. The BMP List in **Appendix A** provides additional information.

Evaluation and Assessment (BMP #2.4)

The Public Involvement and Participation Plan will be assessed on an annual basis to assess and evaluate progress toward meeting the measurable goals. The BMP List in **Appendix A** provides additional information.

6. MCM #3: Illicit Discharge Detection and Elimination

This section addresses the requirements and implementation of the Illicit Discharge Detection and Elimination Procedures, and information on the annual evaluation. More specifically, this section addresses the following:

- Permit Regulations
- Storm Sewer System Map
- Written Procedures and Dry Weather Screening
- Public Reporting
- Public Education
- Spill Control Documentation
- Evaluation and Assessment

Permit Regulations (as of 07/01/2013)

An excerpt from Section II B of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit, including Table 1 (as referenced below) can be found in **Appendix B**.

3. Illicit discharge detection and elimination.

a. The operator shall maintain an accurate storm sewer system map and information table and shall update it in accordance with the schedule set out in Table 1 of this section.

(1) The storm sewer system map must show the following, at a minimum:

(a) The location of all MS4 outfalls. In cases where the outfall is located outside of the MS4 operator's legal responsibility, the operator may elect to map the known point of discharge location closest to the actual outfall. Each mapped outfall must be given a unique identifier, which must be noted on the map; and

(b) The name and location of all waters receiving discharges from the MS4 outfalls and the associated HUC.

(2) The associated information table shall include for each outfall the following:

(a) The unique identifier;

(b) The estimated MS4 acreage served;

(c) The name of the receiving surface water and indication as to whether the receiving water is listed as impaired in the Virginia 2010 303(d)/305(b) Water Quality Assessment Integrated Report; and

(d) The name of any applicable TMDL or TMDLs.

(3) Within 48 months of coverage under this state permit, the operator shall have a complete and updated storm sewer system map and information table that includes all MS4 outfalls located within the boundaries identified as "urbanized" areas in the 2010 Decennial Census and shall submit the updated information table as an appendix to the annual report.

(4) The operator shall maintain a copy of the current storm sewer system map and outfall information table for review upon request by the public or by the department.

(5) The operator shall continue to identify other points of discharge. The operator shall notify in writing the downstream MS4 of any known physical interconnection.

b. The operator shall effectively prohibit, through ordinance or other legal mechanism, nonstormwater discharges into the storm sewer system to the extent allowable under federal, state, local law, regulation, or ordinance. Categories of nonstormwater discharges or flows (i.e., illicit discharges) identified in 4VAC50-60-400 D 2 c (3) must be addressed only if they are identified by the operator as significant contributors of pollutants to the small MS4. Flows that have been identified in writing by the Department of Environmental Quality as de minimis discharges are not significant sources of pollutants to surface water and do not require a VPDES permit.

c. The operator shall develop, implement, and update, when appropriate, written procedures to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the small MS4. These procedures shall include:

(1) Written dry weather field screening methodologies to detect and eliminate illicit discharges to the MS4 that include field observations and field screening monitoring and that provide:

(a) A prioritized schedule of field screening activities determined by the operator based on such criteria as age of the infrastructure, land use, historical illegal discharges, dumping or cross connections.

(b) The minimum number of field screening activities the operator shall complete annually to be determined as follows: (i) if the total number of outfalls in the small MS4 is less than 50, all outfalls shall be screened annually or (ii) if the small MS4 has 50 or more total outfalls, a minimum of 50 outfalls shall be screened annually.

(c) Methodologies to collect the general information such as time since the last rain, the quantity of the last rain, site descriptions (e.g., conveyance type and dominant watershed land uses), estimated discharge rate (e.g., width of water surface, approximate depth of water, approximate flow velocity, and flow rate), and visual observations (e.g., order, color, clarity, floatables, deposits or stains, vegetation condition, structural condition, and biology);

(d) A time frame upon which to conduct an investigation or investigations to identify and locate the source of any observed continuous or intermittent nonstormwater discharge prioritized as follows: (i) illicit discharges suspected of being sanitary sewage or significantly contaminated must be investigated first and (ii) investigations of illicit discharges suspected of being less hazardous to human health and safety such as noncontact cooling water or wash water may be delayed until after all suspected sanitary sewage or significantly contaminated discharges have been investigated, eliminated, or identified. Discharges authorized under a separate VPDES or state permit require no further action under this permit.

(e) Methodologies to determine the source of all illicit discharges shall be conducted. If an illicit discharge is found, but within six months of the beginning of the investigation neither the source nor the same nonstormwater discharge has been identified, then the operator shall document such in accordance with Section II B 3 f. If the observed discharge is intermittent, the operator must document that a minimum of three separate investigations were made in an attempt to observe the discharge when it was flowing. If these attempts are unsuccessful, the operator shall document such in accordance with Section II B 3 f.

(f) Mechanisms to eliminate identified sources of illicit discharges including a description of the policies and procedures for when and how to use legal authorities;

(g) Methods for conducting a follow-up investigation in order to verify that the discharge has been eliminated.

(h) A mechanism to track all investigations to document: (i) the date or dates that the illicit discharge was observed and reported; (ii) the results of the investigation; (iii) any follow-up to the investigation; (iv) resolution of the investigation; and (v) the date that the investigation was closed.

d. The operator shall promote, publicize, and facilitate public reporting of illicit discharges into or from MS4s. The operator shall conduct inspections in response to complaints and follow-up inspections as needed to ensure that corrective measures have been implemented by the responsible party.

e. The MS4 Program Plan shall include all procedures developed by the operator to detect, identify, and address nonstormwater discharges to the MS4 in accordance with the schedule in Table 1 in this section. In the interim, the operator shall continue to implement the program as included as part of the registration statement until the program is updated to meet the conditions of this permit. Operators, who have not previously held MS4 permit coverage, shall implement this program in accordance with the schedule provided with the completed registration statement.

f. Annual reporting requirements. Each annual report shall include:

(1) A list of any written notifications of physical interconnection given by the operator to other MS4s;

(2) The total number of outfalls screened during the reporting period, the screening results, and detail of any follow-up actions necessitated by the screening results; and

(3) A summary of each investigation conducted by the operator of any suspected illicit discharge. The summary must include: (i) the date that the suspected discharge was observed, reported, or both; (ii) how the investigation was resolved, including any follow-up, and (iii) resolution of the investigation and the date the investigation was closed.

Storm Sewer System Map (BMP #3.1)

A storm sewer system map and corresponding information table will be developed within 48 months after permit coverage. Maps will be developed for each permitted installation and will include data from a geodatabase. The maps will include:

- The location of all MS4 outfalls with unique identifiers; and
- The name and location of waters receiving MS4 discharges and the associated hydrologic unit code (HUC).

The corresponding information table will include:

- The unique identifier;
- The estimated MS4 acreage served;
- The name of the receiving surface water and whether the waters are listed as impaired on the Virginia 2010 303(d)/305(b) list; and
- The name of any applicable TMDL(s).

Most, if not all, of the MS4 outfall locations are currently mapped. However, in order to meet the permit requirements, the HUC numbers, receiving waters, and MS4 acreage served will need to be added. These and any other necessary updates will be identified in PY 1. In PY 4, the maps will be updated accordingly. In PY 5, the maps will be maintained and updated annually. A record of the date the maps were updated will be kept on file, and a copy of the maps and information table will be retained. The BMP List in **Appendix A** provides additional information.

Written Procedures and Dry Weather Screening (BMP #3.2)

Draft instructions related to illegal dumping and discharges have been developed by CNRMA and are included in **Appendix E**. The draft instructions require that periodic inspections occur to detect illicit connections and discharges. It is anticipated that these

instructions will be finalized in PY 4 and 5 to conform to the permit requirements and will include the following details pertaining to dry weather field screening methodologies:

- A prioritized schedule based on the age of infrastructure, land use, historical data, dumping, or cross connections;
- A requirement that a minimum of 50 outfalls will be screened annually;
- Methodologies to collect general information;
- Investigation of illicit discharges suspected of being sanitary sewage or significantly contaminated will be conducted first, and other illicit discharges investigations may be delayed;
- Methodologies to determine the source of all illicit discharges;
- Mechanisms to eliminate the identified sources of illicit discharges;
- Methods for conducting follow-up investigations; and
- A mechanism to track all investigations.

The total number of outfalls screened during the permit year, the screening results, and details concerning any follow-up investigations will be documented in the annual report.

The Navy has implemented the "Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedures," which outlines reporting and documentation actions that must be taken in response to a spill/release of oil, sewage, or hazardous or non-hazardous substance (solid or liquid). This document can be found in **Appendix E**. The BMP List in **Appendix A** provides additional information.

Public Reporting (BMP #3.3)

In PY 1, a hotline phone number for public reporting of illicit discharges will be implemented. Implementation of an email address and/or a website link for public reporting of illicit discharges will be forthcoming. This information will be publicized during PY 2 through 5. When a report is received, an inspection will be conducted in response to the comment. If an illicit discharge is found, a follow-up investigation will be completed in accordance with the written procedures. Details of the report and subsequent investigation will be recorded for incorporation in the annual report. The BMP List in **Appendix A** provides additional information.

Public Education (BMP #3.4)

Through the use of the BMPs identified in MCM #1 and MCM #2, the public will be educated about illicit discharges and effects of improper disposal of non-stormwater materials. The BMP List in **Appendix A** provides additional information.

Spill Control Documentation (BMP #3.5)

In accordance with the Spill Reporting and Documentation SOP, spills are reported to VADEQ. Spill reporting includes both an initial report of the spill within 24 hours of the spill discovery and a 5-day spill letter, which documents specific details of the spill. The 5-day spill letter includes:

- Date of release/discovery;
- Time of release/discovery;
- Location;
- Substance released;
- NRC # (if applicable);
- Quantity released;
- Quantity recovered;
- Receiving waterway;
- Cause of release; and
- Cleanup actions taken.

An electronic file of the spill log is located at: T:\EV\Workgroups\Spill Program (Regional)\Hampton Roads Spill Log.xls. The BMP List in Appendix A provides additional information. **Appendix E** contains the Spill Reporting and Documentation SOP.

Evaluation and Assessment (BMP #3.6)

The illicit discharge instruction will be assessed on an annual basis in PY 3 through 5 in regard to compliance and effectiveness. The BMP List in **Appendix A** provides additional information.

7. MCM #4: Construction Site Runoff Control

This section addresses the requirements, implementation, and enforcement of the Construction Site Runoff Control Plan, and information on the annual inspection reports. More specifically, this section addresses the following:

- Permit Regulations
- Oversight Requirements
- Erosion and Sediment Control Plans
- VSMP Construction Permit Instruction
- Construction Activity SWMP& SWPPP Review
- Compliance and Enforcement Procedures
- Tracking and Reporting

Permit Regulations (as of 07/01/2013)

An excerpt from Section II B of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit can be found in **Appendix B**.

4. Construction site stormwater runoff control.

a. Applicable oversight requirements. The operator shall utilize its legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to address discharges entering the MS4 from the following land-disturbing activities:

(1) Land-disturbing activities as defined in § 10.1-560 of the Code of Virginia that result in the disturbance of 10,000 square feet or greater;

(2) Land-disturbing activities in Tidewater jurisdictions, as defined in § 10.1-2101 of the Code of Virginia, that disturb 2,500 square feet or greater and are located in areas designated as Resource Protection Areas (RPA), Resource Management Areas (RMA) or Intensely Developed Acres (IDA), pursuant to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act;

(3) Land-disturbing activities disturbing less than the minimum land disturbance identified in subdivision (1) or (2) above for which a local ordinance requires that an erosion and sediment control plan be developed; and

(4) Land-disturbing activities on individual residential lots or sections of residential developments being developed by different property owners and where the total land disturbance of the residential development is 10,000 square feet or greater. The operator may utilize an agreement in lieu of a plan as provided in § 10.1-563 of the Code of Virginia for this category of land disturbances.

b. Required plan approval prior to commencement of the land disturbing activity. The operator shall require that land disturbance not begin until an erosion and sediment control plan or an agreement in lieu of a plan as provided in § 10.1-563 is approved by a VESCP authority in accordance with the Erosion and Sediment Control Act (§ 10.1-560 et seq.). The plan shall be:

(1) Compliant with the minimum standards identified in 4VAC-50-30-40 of the Erosion and Sediment Control Regulations; or

(2) Compliant with department-approved annual standards and specifications. Where applicable, the plan shall be consistent with any additional or more stringent, or both, erosion and sediment control requirements established by state regulation or local ordinance.

c. Compliance and enforcement.

(1) The operator shall inspect land-disturbing activities for compliance with an approved erosion and sediment control plan or agreement in lieu of a plan in accordance with the minimum standards identified in 4VAC50-30-40 or with department-approved annual standards and specifications.

(2) The operator shall implement an inspection schedule for land-disturbing activities identified in Section II B 4 a as follows:

(a) Upon initial installation of erosion and sediment controls;

(b) At least once during every two-week period;

(c) Within 48 hours of any runoff-producing storm event; and

(d) Upon completion of the project and prior to the release of any applicable performance bonds.

Where an operator establishes an alternative inspection program as provided for in 4VAC50-30-60 B 2, the written schedule shall be implemented in lieu of Section II B 4 c (2) and the written plan shall be included in the MS4 Program Plan.

(3) Operator inspections shall be conducted by personnel who hold a certificate of competence in accordance with 4VAC-50-50-40. Documentation of certification shall be made available upon request by the VESCP authority or other regulatory agency.

(4) The operator shall promote to the public a mechanism for receipt of complaints regarding regulated land-disturbing activities and shall follow up on any complaints regarding potential water quality and compliance issues.

(5) The operator shall utilize its legal authority to require compliance with the approved plan where an inspection finds that the approved plan is not being properly implemented.

(6) The operator shall utilize, as appropriate, its legal authority to require changes to an approved plan when an inspection finds that the approved plan is inadequate to effectively control soil erosion, sediment deposition, and runoff to prevent the unreasonable degradation of properties, stream channels, waters, and other natural resources.

(7) The operator shall require implementation of appropriate controls to prevent nonstormwater discharges to the MS4, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during land-disturbing activity inspections of the MS4. The discharge of nonstormwater discharges other than those identified in 4VAC50-60-1220 through the MS4 is not authorized by this state permit.

(8) The operator may develop and implement a progressive compliance and enforcement strategy provided that such strategy is included in the MS4 Program Plan and is consistent with 4VAC50-30.

d. Regulatory coordination. The operator shall implement enforceable procedures to require that large construction activities as defined in 4VAC50-60-10 and small construction activities as defined in 4VAC50-60-10, including municipal construction activities, secure necessary state permit authorizations from the department to discharge stormwater.

e. MS4 Program requirements. The operator's MS4 Program Plan shall include:

(1) A description of the legal authorities utilized to ensure compliance with the minimum control measure in Section II related to construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements;

(2) Written plan review procedures and all associated documents utilized in plan review;

(3) For the MS4 operators who obtain department-approved standards and specifications, a copy of the current standards and specifications;

(4) Written inspection procedures and all associated documents utilized during inspection including the inspection schedule;

(5) Written procedures for compliance and enforcement, including a progressive compliance and enforcement strategy, where appropriate; and

(6) The roles and responsibilities of each of the operator's departments, divisions, or subdivisions in implementing the minimum control measure in Section II related to construction site stormwater runoff control. If the operator utilizes another entity to implement portions of the MS4 Program Plan, a copy of the written agreement must be retained in the MS4 Program Plan. The description of each party's roles and responsibilities, including any written agreements with third parties, shall be updated as necessary.

Reference may be made to any listed requirements in this subdivision provided the location of where the reference material can be found is included and the reference material is made available to the public upon request.

f. Reporting requirements. The operator shall track regulated land-disturbing activities and submit the following information in all annual reports:

(1) Total number of regulated land-disturbing activities;

(2) Total number of acres disturbed;

(3) Total number of inspections conducted; and

(4) A summary of the enforcement actions taken, including the total number and type of enforcement actions taken during the reporting period.

Oversight Requirements (BMP #4.1)

The VSMP Regulation (9VAC25-870-10) defines a land disturbing activity as a "manmade change to the land surface that potentially changes its runoff characteristics including clearing, grading, or excavation, except that the term shall not include those exemptions specified in § 62.1-44.15:34 of the Code of Virginia."

LDAs will be inspected at each of the eight Navy installations covered under the Navy Consolidated MS4 Permit number VAR040114 in accordance with the minimum standards identified in 9VAC25-840-40. Certified Inspectors may be Navy personnel or contractors. In addition, the Inspector will inspect the implementation of appropriate controls to prevent non-stormwater discharges, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during LDAs in accordance with the MS4 Permit.

The Inspector will inspect projects with LDAs greater than 10,000 square feet. Projects disturbing land equal or greater than one acre must have coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities, also referred to as the Virginia Construction General Permit (CGP) Number VAR10. The CGP VAR10 authorizes discharges under the VSMP and the Virginia Stormwater Management Act. The current CGP became effective on July 1, 2014 and is valid for a 5 year permit cycle, expiring on June 30, 2019.

A SOP was created that establishes a procedure for obtaining coverage under the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities at installations and annexes and applies to projects with a disturbance of 1 acre or greater.

Another SOP was created that contains procedures for developing and submitting Erosion and Sediment Control Plans to the VDEQ for review and approval for all regulated land disturbing activities greater than or equal to 10,000 square feet at any Navy installation/annex in Virginia. Both SOPs can be found in **Appendix C**.

Since the installations are federal and do not include any delineated Resource Projection Areas (RPAs) or Resource Management Areas (RMAs), only land-disturbing activities that result in the disturbance of 10,000 square feet or greater are deemed regulated.

The BMP List in **Appendix A** provides additional information.

Erosion and Sediment Control Plans (BMP #4.2)

The MS4 Permit requires the approval of an Erosion and Sediment Control Plan (E&S Plan) prior to commencement of land disturbing activities (LDAs). The E&S Plan is a document that describes the potential for erosion and sediment on a construction project. It describes and illustrates the measures to be taken to control the erosion and transport of sediment. The E&S Plan is a stand-alone document to specifically address the requirements of E&S control measure installation, maintenance, and removal. The Navy is responsible for developing and submitting the E&S Plan for each project with LDA. This responsibility may be delegated to a contractor, but ultimately, the Navy is responsible to ensure the E&S Plan is developed, submitted and approved.

The Virginia Department of Environmental Quality (VDEQ) is the E&S Plan approving authority. VDEQ is required to approve an E&S Plan within 60 days of receipt. If the E&S Plan is inadequate, written notice of disapproval must be communicated by VDEQ to the applicant within 45 days. The written notice shall include the reasons for disapproval and the required modifications. If VDEQ does not take action within 60 days of the E&S Plan receipt, then plan is deemed to be approved. Stamped approved plans are required to remain onsite at all times and the plan must be adhered to throughout project execution.

A SOP was created to detail the procedures for developing and submitting E&S Plans to the VDEQ. The Erosion and Sediment Control Plan Development and Submittal SOP can be found in **Appendix C2**. The BMP List in **Appendix A** provides additional information.

VSMP Construction Permit Instruction & SWPPP Review (BMP #4.3)

The VSMP Construction Permit SOP, previously described in BMP #4.1, has been developed and will be maintained and enforced to require adherence to the Virginia Stormwater Management Program Construction General Permit for construction activities that result in land disturbance greater than or equal to one acre, or activities greater than 2500 square feet which are part of a “larger common plan of development.” Project operators are responsible for obtaining the Construction General Permit from VDEQ prior to project commencement and developing a Construction Site Stormwater Pollution Prevention Plan (SWPPP). This SOP can be found in **Appendix C4**.

Stormwater Management Plans (BMP #4.4)

All construction projects disturbing one acre or greater are required to develop Stormwater Management Plans (SWMPs). SWMPs must be consistent with the requirements set forth in the Virginia Stormwater Management Law and Regulations. The Navy is also responsible for developing and submitting the SWMP for each project (for LDAs 1 acre or greater). This responsibility may be delegated to a contractor, but ultimately, the Navy is responsible to ensure the SWMP is developed, submitted and approved. VADEQ is the VSMP authority so all SWMPs must be submitted to VDEQ for plan review and approval. Stamped approved plans are required to remain onsite at all times and the plan must be adhered to throughout project execution.

A SOP was created that details the Stormwater Management Plan development and submittal procedures. The Stormwater Management Plan Guidance SOP can be found in **Appendix C3**. The BMP List in **Appendix A** provides additional information.

Compliance and Enforcement Procedures (BMP #4.5)

Regulated land-disturbing activities are currently being inspected for compliance with the approved erosion and sediment control plan and stormwater management plan (if 1 acre or greater). Inspections are being conducted accordingly:

- Upon initial installation of erosion and sediment controls;
- At least once during every 2-week period;
- Within 48 hours of any runoff-producing storm event; and
- Upon completion of the project and prior to the release of any applicable performance bonds.

Inspections are completed by personnel with the appropriate certificate of competence.

Inspection reports serve as a notice of compliance or non-compliance. It serves as a record-keeping tool to document if a project complies with the Minimum Standards, the standards and specifications of the Erosion and Sediment Control (ESC) Handbook, and if the project is being constructed in accordance with the E&S approved Plan. It also records potential deficiencies, and corrective actions. An inspection report shall always be complete even if deficiencies are not found. The information collected during the site inspections will be summarized on a status report.

Refer to **Appendix C1** for the MS4 Construction Site Inspection Procedures and Tracking Mechanism User's Manual (CH2MHILL).

The public reporting system (hotline) described in MCM #3 will also be used for reporting of complaints regarding the regulated land-disturbing activities. Any comments received will be documented, tracked, and included in the annual report.

In regard to enforcement, any activity that violates the ESC laws and regulations and SWM laws and regulations may be subject to enforcement actions under the Clean Water Act; including Warning Letters, Notices of Violation, fines, and penalties from the Environmental Protection Agency and the Virginia Department of Environmental Quality.

The party that causes the violation will be responsible for all required corrective actions and either be issued a stop work order or will result in with-holding money.

Additional enforcement strategies will be investigated and documented during PY 4 through 5. The BMP List in Appendix A provides additional information.

Tracking and Reporting (BMP #4.6)

All regulated land-disturbing activities will be tracked. In PY 1 and 2, the annual report will include:

- Total number of regulated land-disturbing activities; and
- Total disturbed acreage.

In PY 3 through 5, the annual report will also include:

- Total number of inspections performed; and
- A summary of the enforcement actions taken, including the total number and type of enforcement actions.

The BMP List in **Appendix A** provides additional information.

8. MCM #5: Post Construction Runoff Control

This section addresses the requirements and implementation of the Post-Construction Runoff Control Plan, and information on the annual tracking and inspection reports. More specifically, this section addresses the following:

- Permit Regulations
- Legal Authority
- Inspection, Operation and Maintenance
- Tracking and Reporting

Permit Regulations (as of 07/01/2013)

An excerpt from Section II B of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit, including Table 1 (as referenced below) can be found in **Appendix B**.

5. Post-construction stormwater management in new development and development on prior developed lands.

a. Applicable oversight requirements. The operator shall address post-construction stormwater runoff that enters the MS4 from the following land-disturbing activities:

(1) New development and development on prior developed lands that are defined as large construction activities or small construction activities in 4VAC50-60-10;

(2) New development and development on prior developed lands that disturb greater than or equal to 2,500 square feet, but less than one acre, located in a Chesapeake Bay Preservation Area designated by a local government located in Tidewater, Virginia, as defined in § 10.1-2101 of the Code of Virginia; and

(3) New development and development on prior developed lands where an applicable state regulation or local ordinance has designated a more stringent regulatory size threshold than that identified in subdivision (1) or (2) above.

b. Required design criteria for stormwater runoff controls. The operator shall utilize legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to require that activities identified in Section II B 5 a address stormwater runoff in such a manner that stormwater runoff controls are designed and installed:

(1) In accordance with the appropriate water quality and water quantity design criteria as required in Part II (4VAC50-60-40 et seq.) of 4VAC50-60;

(2) In accordance with any additional applicable state or local design criteria required at project initiation; and

(3) Where applicable, in accordance with any department-approved annual standards and specifications.

Upon board approval of a Virginia Stormwater Management Program authority (VSMP Authority) as defined in § 10.1-603.2 of the Code of Virginia and reissuance of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Construction Activities, the operator shall require that stormwater management plans are approved by the appropriate VSMP Authority prior to land disturbance. In accordance with § 10.1-603.3 M of the Code of Virginia, VSMPs shall become effective July 1, 2014, unless otherwise specified by state law or by the board.

c. Inspection, operation, and maintenance verification of stormwater management facilities.

(1) For stormwater management facilities not owned by the MS4 operator, the following conditions apply:

(a) The operator shall require adequate long-term operation and maintenance by the owner of the stormwater management facility by requiring the owner to develop a recorded inspection schedule and maintenance agreement to the extent allowable under state or local law or other legal mechanism;

(b) The operator or his designee shall implement a schedule designed to inspect all privately owned stormwater management facilities that discharge into the MS4 at least once every five years to document that maintenance is being conducted in such a manner to ensure long-term operation in accordance with the approved designs.

(c) The operator shall utilize its legal authority for enforcement of maintenance responsibilities if maintenance is neglected by the owner. The operator may develop and implement a progressive compliance and enforcement strategy provided that the strategy is included in the MS4 Program Plan.

(d) Beginning with the issuance of this state permit, the operator may utilize strategies other than maintenance agreements such as periodic inspections, homeowner outreach and education, and other methods targeted at promoting the long-term maintenance of stormwater control measures that are designed to treat stormwater runoff solely from the individual residential lot. Within 12 months of coverage under this permit, the operator shall develop and implement these alternative strategies and include them in the MS4 Program Plan.

(2) For stormwater management facilities owned by the MS4 operator, the following conditions apply:

(a) The operator shall provide for adequate long-term operation and maintenance of its stormwater management facilities in accordance with written inspection and maintenance procedures included in the MS4 Program Plan.

(b) The operator shall inspect these stormwater management facilities annually. The operator may choose to implement an alternative schedule to inspect these stormwater management facilities based on facility type and expected maintenance needs provided that the alternative schedule is included in the MS4 Program Plan.

(c) The operator shall conduct maintenance on its stormwater management facilities as necessary.

d. MS4 Program Plan requirements. The operator's MS4 Program Plan shall be updated in accordance with Table 1 in this section to include:

(1) A list of the applicable legal authorities such as ordinance, state and other permits, orders, specific contract language, and interjurisdictional agreements to ensure compliance with the minimum control measure in Section II related to post-construction stormwater management in new development and development on prior developed lands;

(2) Written policies and procedures utilized to ensure that stormwater management facilities are designed and installed in accordance with Section II B 5 b;

(3) Written inspection policies and procedures utilized in conducting inspections;

(4) Written procedures for inspection, compliance and enforcement to ensure maintenance is conducted on private stormwater facilities to ensure long-term operation in accordance with approved design;

(5) Written procedures for inspection and maintenance of operator-owned stormwater management facilities;

(6) The roles and responsibilities of each of the operator's departments, divisions, or subdivisions in implementing the minimum control measure in Section II related to post-construction stormwater management in new development and development on prior developed lands. If the operator utilizes another entity to implement portions of the MS4 Program Plan, a copy of the

written agreement must be retained in the MS4 Program Plan. Roles and responsibilities shall be updated as necessary.

e. Stormwater management facility tracking and reporting requirements. The operator shall maintain an updated electronic database of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4. The database shall include the following:

(1) The stormwater management facility type;

(2) A general description of the facility's location, including the address or latitude and longitude;

(3) The acres treated by the facility, including total acres, as well as the breakdown of pervious and impervious acres;

(4) The date the facility was brought online (MM/YYYY). If the date is not known, the operator shall use June 30, 2005, as the date brought online for all previously existing stormwater management facilities;

(5) The sixth order hydrologic unit code (HUC) in which the stormwater management facility is located;

(6) The name of any impaired water segments within each HUC listed in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report to which the stormwater management facility discharges;

(7) Whether the stormwater management facility is operator-owned or privately-owned;

(8) Whether a maintenance agreement exists if the stormwater management facility is privately owned; and

(9) The date of the operator's most recent inspection of the stormwater management facility.

In addition, the operator shall annually track and report the total number of inspections completed and, when applicable, the number of enforcement actions taken to ensure long-term maintenance.

The operator shall submit an electronic database or spreadsheet of all stormwater management facilities brought online during each reporting year with the appropriate annual report. Upon such time as the department provides the operators access to a statewide web-based reporting electronic database or spreadsheet, the operator shall utilize such database to complete the pertinent reporting requirements of this state permit.

Legal Authority (BMP #5.1)

In November of 2007, the Department of the Navy (DON) issued an LID policy with a stated objective of "no net increase in stormwater runoff volume and sediment of nutrient loading from major renovation and construction projects." The policy applied only to major renovations with a stormwater component that exceeded $5M in value and major construction projects exceeding $750K. Approximately one month later in December of 2007, Section 438 of the Energy Independence and Security Act (EISA) was issued and requires that Federal facility projects over 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow."

In October of 2009, Executive Order 13514 was issued and included a requirement for all federal agencies to comply with the requirements of EISA Section 438 along with other sustainability measures such as water and energy conservation. In January of 2010, the Department of Defense (DoD) Policy of Implementing Section 438 of the EISA was issued and includes a flowchart with implementation steps. This document and the DON LID Policy can be found in **Appendix C5 and C6**. As a result of these policies, the DoD updated the Unified Facilities Criteria (UFC) Low Impact Development Manual in November 2010 so that it addresses both EISA and LID.

A SOP was created that details the Stormwater Management Plan requirements as well as development and submittal procedures. All development and redevelopment activities greater than or equal to 1 acre in size are required to develop Stormwater Management Plans (SWMPs). The requirement also applies to land development activities for an area smaller than 1 acre, if the activities are part of a larger common plan of development. SWMPs must be consistent with the requirements set forth in the Virginia Stormwater Management Law and Regulations and stormwater runoff controls are required to be designed and installed in accordance with 9VAC25-870.

The Navy is responsible for developing and submitting the SWMP for each project (for LDAs 1 acre or greater). This responsibility may be delegated to a contractor, but ultimately, the Navy is responsible to ensure the SWMP is developed, submitted and approved. VADEQ is the VSMP authority so all SWMPs must be submitted to VDEQ for plan review and approval.

The Stormwater Management Plan Guidance SOP can be found in **Appendix C**. The BMP List in **Appendix A** provides additional information.

Inspection, Operation and Maintenance (BMP #5.2)

Since all stormwater management facilities with the permitted MS4 are owned and operated by the CNRMA, the conditions described below apply.

Inspections are currently conducted in accordance with Chapter 9, “BMP Inspection and Maintenance,” of the Draft 2009 Virginia Stormwater Management Handbook. NAVFAC has developed inspections forms for the different types of BMPs, including:

- Bioretention;
- Detention, retention and wetlands;
- Green roofs;
- Infiltration practices;
- Rooftop disconnection; and
- Swales, bioswales, and channels.

The BMP Inspection and Maintenance Procedures can be found in Appendix D. Each BMP will be given a rating of satisfactory, unsatisfactory, or satisfactory with notes. The definitions of these ratings are:

- **Satisfactory –** There were no deficiencies requiring immediate corrective action identified during the BMP inspection. For record keeping purposes, the date of inspection must be recorded on the BMP inventory spreadsheet and "SAT" noted in the inspection results column.
- **Unsatisfactory –** There were deficiencies identified during inspection which require immediate corrective action to ensure the BMP will function as designed. For record keeping purposes, the date of inspection must be recorded on the BMP inventory spreadsheet, "UNSAT" shall be noted in the inspection results column, and an inspection report shall be completed, distributed, and a copy retained on file.

- **Satisfactory with Notes –** The BMP is properly functioning however the inspector observed areas of concern which may develop into a deficiency if routine maintenance is not performed. For record keeping purposes, the date of inspection shall be recorded on the BMP inventory spreadsheet, "SAT / Notes" shall be noted in the inspection results column, and all applicable notes from the inspection shall be recorded and retained on file.

Maintenance of the stormwater management facilities will be performed on an "as needed" basis and as a result of issues identified during the annual inspections. Reports from the public using the notification vessels (hotline) will also prompt an inspection of the facility and possible maintenance.

Each stormwater management facility will be inspected annually. The final inspection and maintenance procedures will be completed in PY 1 and within the 12 months after permit coverage. They will be implemented in PY 2 through 5.

The BMP List in **Appendix A** provides additional information.

Tracking and Reporting (BMP #5.3)

CNRMA has developed a database to track the BMPs on the installations and annexes. The database includes the following information:

- Stormwater management facility type;
- Building or area in which the facility is located;
- Latitude and longitude of the facility;
- Drainage area;
- Date installed;
- Sixth order HUC;
- Receiving waters; and
- Date of the most recent inspection.

In order to meet the permit regulations, the following data categories will be added to the spreadsheet:

- A breakdown of the pervious and impervious areas contributing to the facility;
- The name of any impaired water segments to which the facility discharges;
- Whether the facility is operator-owned or privately owned; and
- Whether a maintenance agreement exists (if the facility is privately owned).

The database will be maintained and updated semiannually. The BMP List in **Appendix A** provides additional information.

9. MCM #6: Pollution Prevention/Good Housekeeping

This section addresses the requirements and implementation of the Pollution Prevention/Good Housekeeping Plan, and information on the annual tracking reports. More specifically, this section addresses the following:

- Permit Regulations
- Policies and Procedures
- High-Priority Facilities and SWPPPs
- Turf and Landscape Nutrient Management
- Training
- Tracking and Reporting

Permit Regulations (as of 07/01/2013)

An excerpt from Section II B of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit, including Table 1 (as referenced below) can be found in **Appendix B**.

6. Pollution prevention/good housekeeping for municipal operations.

a. Operations and maintenance activities. The MS4 Program Plan submitted with the registration statement shall be implemented by the operator until updated in accordance with this state permit. In accordance with Table 1 in this section, the operator shall develop and implement written procedures designed to minimize or prevent pollutant discharge from: (i) daily operations such as road, street, and parking lot maintenance; (ii) equipment maintenance; and (iii) the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers. The written procedures shall be utilized as part of the employee training. At a minimum, the written procedures shall be designed to:

(1) Prevent illicit discharges;

(2) Ensure the proper disposal of waste materials, including landscape wastes;

(3) Prevent the discharge of municipal vehicle wash water into the MS4 without authorization under a separate VPDES permit;

(4) Prevent the discharge of wastewater into the MS4 without authorization under a separate VPDES permit;

(5) Require implementation of best management practices when discharging water pumped from utility construction and maintenance activities;

(6) Minimize the pollutants in stormwater runoff from bulk storage areas (e.g., salt storage, topsoil stockpiles) through the use of best management practices;

(7) Prevent pollutant discharge into the MS4 from leaking municipal automobiles and equipment; and

(8) Ensure that the application of materials, including fertilizers and pesticides, is conducted in accordance with the manufacturer's recommendations.

b. Municipal facility pollution prevention and good housekeeping.

(1) Within 12 months of state permit coverage, the operator shall identify all municipal high-priority facilities. These high-priority facilities shall include: (i) composting facilities; (ii) equipment storage and maintenance facilities; (iii) materials storage yards; (iv) pesticide storage facilities; (v) public works yards; (vi) recycling facilities; (vii) salt storage facilities; (viii) solid waste handling and transfer facilities; and (ix) vehicle storage and maintenance yards.

(2) With 12 months of state permit coverage, the operator shall identify which of the municipal high-priority facilities have a high potential discharging pollutants. Municipal high-priority facilities that have a high potential for discharging pollutants are those facilities identified in subsection (1) above that are not covered under a separate VPDES permit and which any of the following materials or activities occur and are expected to have exposure to stormwater resulting from rain, snow, snowmelt or runoff:

(a) Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;

(b) Materials or residuals on the ground or in stormwater inlets from spills or leaks;

(c) Material handling equipment (except adequately maintained vehicles);

(d) Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);

(e) Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);

(f) Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;

(g) Waste material except waste in covered, non-leaking containers (e.g., dumpsters);

(h) Application or disposal of process wastewater (unless otherwise permitted); or

(i) Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater outflow.

(3) The operator shall develop and implement specific stormwater pollution prevention plans for all high-priority facilities identified in subdivision 2 of this subsection. The operator shall complete SWPPP development and implementation shall be completed within 48 months of coverage under this state permit. Facilities covered under a separate VPDES permit shall adhere to the conditions established in that permit and are excluded from this requirement.

(4) Each SWPPP shall include:

(a) A site description that includes a site map identifying all outfalls, direction of flows, existing source controls, and receiving water bodies;

(b) A discussion and checklist of potential pollutants and pollutant sources;

(c) A discussion of all potential nonstormwater discharges;

(d) Written procedures designed to reduce and prevent pollutant discharge;

(e) A description of the applicable training as required in Section II B 6 d;

(f) Procedures to conduct an annual comprehensive site compliance evaluation;

(g) An inspection and maintenance schedule for site specific source controls. The date of each inspection and associated findings and follow-up shall be logged in each SWPPP;

(h) The contents of each SWPPP shall be evaluated and modified as necessary to accurately reflect any discharge, release, or spill from the high priority facility reported in accordance with Section III G. For each such discharge, release or spill, the SWPPP must include the following information: date of incident; material discharged, released, or spilled; and quantity discharged, released or spilled; and

(i) A copy of each SWPPP shall be kept at each facility and shall be kept updated and utilized as part of staff training required in Section II B 6 d.

c. Turf and landscape management.

(1) The operator shall implement turf and landscape nutrient management plans that have been developed by a certified turf and landscape nutrient management planner in accordance with § 10.1-104.2 of the Code of Virginia on all lands owned or operated by the MS4 operator where nutrients are applied to a contiguous area greater than one acre. Implementation shall be in accordance with the following schedule:

(a) Within 12 months of state permit coverage, the operator shall identify all applicable lands where nutrients are applied to a contiguous area of more than one acre. A latitude and longitude shall be provided for each such piece of land and reported in the annual report.

(b) Within 60 months of state permit coverage, the operator shall implement turf and landscape nutrient management plans on all lands where nutrients are applied to a contiguous area of more than one acre. The following measurable outcomes are established for the implementation of turf and landscape nutrient management plans: (i) within 24 months of permit coverage, not less than 15% of all identified acres will be covered by turf and landscape nutrient management plans; (ii) within 36 months of permit coverage, not less than 40% of all identified acres will be covered by turf and landscape nutrient management plans; and (iii) within 48 months of permit coverage, not less than 75% of all identified acres will be covered by turf and landscape nutrient management plans. The operator shall not fail to meet the measurable goals for two consecutive years.

(c) MS4 operators with lands regulated under § 10.1-104.4 of the Code of Virginia shall continue to implement turf and landscape nutrient management plans in accordance with this statutory requirement.

(2) Operators shall annually track the following:

(a) The total acreage of lands where turf and landscape nutrient management plans are required; and

(b) The acreage of lands upon which turf and landscape nutrient management plans have been implemented.

(3) The operator shall not apply any deicing agent containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, and sidewalks, or other paved surfaces.

d. Training. The operator shall conduct training for employees. The training requirements may be fulfilled, in total or in part, through regional training programs involving two or more MS4 localities provided; however, that each operator shall remain individually liable for its failure to comply with the training requirements in this permit. Training is not required if the topic is not applicable to the operator's operations and therefore does not have applicable personnel provided the lack of applicability is documented in the MS4 Program Plan. The operator shall determine and document the applicable employees or positions to receive each type of training. The operator shall develop an annual written training plan including a schedule of training events that ensures implementation of the training requirements as follows:

(1) The operator shall provide biennial training to applicable field personnel in the recognition and reporting of illicit discharges.

(2) The operator shall provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed during road, street, and parking lot maintenance.

(3) The operator shall provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed in and around maintenance and public works facilities.

(4) The operator shall ensure that employees, and require that contractors, who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act (§ 3.2-3900 et seq. of the Code of Virginia).

(5) The operator shall ensure that employees and contractors serving as plan reviewers, inspectors, program administrators, and construction site operators obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations.

(6) The operator shall ensure that applicable employees obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations.

(7) The operators shall provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed in and around recreational facilities.

(8) The appropriate emergency response employees shall have training in spill responses. A summary of the training or certification program provided to emergency response employees shall be included in the first annual report.

(9) The operator shall keep documentation on each training event including the training date, the number of employees attending the training, and the objective of the training event for a period of three years after each training event.

e. The operator shall require that municipal contractors use appropriate control measures and procedures for stormwater discharges to the MS4 system. Oversight procedures shall be described in the MS4 Program Plan.

f. At a minimum, the MS4 Program Plan shall contain:

(1) The written protocols being used to satisfy the daily operations and maintenance requirements;

(2) A list of all municipal high-priority facilities that identifies those facilities that have a high potential for chemicals or other materials to be discharged in stormwater and a schedule that identifies the year in which an individual SWPPP will be developed for those facilities required to have a SWPPP. Upon completion of a SWPPP, the SWPPP shall be part of the MS4 Program Plan. The MS4 Program Plan shall include the location in which the individual SWPPP is located;

(3) A list of lands where nutrients are applied to a contiguous area of more than one acre. Upon completion of a turf and landscape nutrient management plan, the turf and landscape nutrient management plan shall be part of the MS4 Program Plan. The MS4 Program Plan shall include the location in which the individual turf and landscape nutrient management plan is located; and

(4) The annual written training plan for the next reporting cycle.

g. Annual reporting requirements.

(1) A summary report on the development and implementation of the daily operational procedures;

(2) A summary report on the development and implementation of the required SWPPPs;

(3) A summary report on the development and implementation of the turf and landscape nutrient management plans that includes:

(a) The total acreage of lands where turf and landscape nutrient management plans are required; and

(b) The acreage of lands upon which turf and landscape nutrient management plans have been implemented; and

(4) A summary report on the required training, including a list of training events, the training date, the number of employees attending training and the objective of the training.

Policies and Procedures (BMP #6.1)

Written policies and procedures addressing good housekeeping for municipal operations were developed in PY 1 and 2 and are located in **Appendix G**. They will be implemented in PY 3 through 5. The procedures are written to minimize or prevent pollutant discharge from:

- Daily operations, such as road, street, and parking lot maintenance;
- Equipment maintenance; and
- The application, storage, transport, and disposal of pesticides, herbicides, and fertilizers.

The procedures were also designed to address criteria found in Section II B 6 a of the permit. A summary report on the development and implementation of the daily operational procedures will be included in the annual report.

The policies and procedures include ECATTS training for all NAVFAC MIDLANT contractors regarding stormwater management. Contractors are required to complete an environmental checklist related to the erosion and sediment control activities. Compliance and enforcement regarding contractors and construction sites was described in BMP # 4.5.

The BMP List in **Appendix A** provides additional information.

High-Priority Facilities and SWPPPs (BMP #6.2)

All municipal high-priority facilities were identified in PY 1 and within 12 months after permit coverage. The facilities include composting facilities, equipment storage and maintenance facilities, materials storage yards, pesticide storage facilities, public works yards, recycling facilities, salt storage facilities, solid waste handling and transfer facilities, and vehicle storage and maintenance yards. Of these facilities, the municipal high-priority facilities with a high potential of discharging chemicals or other non-stormwater materials into stormwater were identified using the criteria found in Section II B 6 b (2) of the permit, within the 12 months after permit coverage.

A comprehensive SWPPP was developed in PY 2, within 48 months after permit coverage for the high-priority facilities identified as having a high potential of discharging chemical or other non-stormwater materials. SWPPPs were developed to address the various municipal activities at the permitted installations (similar to the SWPPPs required by the industrial stormwater permit). CNRMA is one of the few permitted MS4s in Virginia that also has industrial stormwater permits and, therefore manages and maintains industrial SWPPPs. The below installations are covered by an industrial stormwater VPDES permit and have already developed SWPPPs to address stormwater pollution:

- Naval Station Norfolk
- Naval Support Activity, Hampton Roads (covered under the Norfolk permit)
- Joint Expeditionary Base, Little Creek (JEB LC)
- Joint Expeditionary Base Fort Story (JEB FS)
- Naval Air Station Oceana (NASO)
- Dam Neck Annex (NASO DN)

Therefore, the only two installations (listed below) will require the majority of the municipal SWPPPs since they do not already have a developed industrial SWPPP:

- Naval Support Activity, Hampton Roads Portsmouth Annex (NSA HR PA)
- Scott Center Annex (SCA)

Items to be included in the SWPPP are found in Section II B 6 b (4) of the permit. Implementation of the SWPPPs will begin to be rolled out in PY3 and all SWPPPs will be implemented by PY4. A summary report on the development and implementation of the

required SWPPP will be included in the annual report. The BMP List in **Appendix A** provides additional information.

The SWPPP contents will be evaluated and modified as necessary. They will be updated to include information about any discharge, release, or spill from a facility. This information will include the date of the incident; the material discharged, released, or spilled; and the quantity discharged, released, or spilled.

Copies of the SWPPPs will be located at the MS4 Water Program Manager's desk (working copy) and at the facility.

Turf and Landscape Nutrient Management (BMP #6.3)

Turf and landscape nutrient management plans will be developed on regulated lands where nutrients are applied to a contiguous area greater than 1 acre. The plans will be developed by a certified nutrient management planner. The latitude and longitude of each location will be recorded and included in the annual report. Locations where turf and landscape nutrient management plans are required will be identified during PY 1. In PY 2 through 3, the plans will be developed and implemented as follows:

- Over 15% of all identified acres will be covered by turf and landscape nutrient management plans within 24 months after permit coverage;
- Over 40% of identified acres will be covered within 36 months of coverage;
- Over 75% will be covered within 48 months of coverage; and
- 100% will be covered at the end of the permit cycle and within 60 months of coverage.

Areas that have been identified as needing turf and landscape nutrient management plans are: NASO Stables, two golf courses at NSN (including Sewells Point Golf Course and a practice golf course), two at NASO (including the Hornet Golf Course at the Aero Pines Golf Club and the Oceana Golf Course), and one at Joint Expeditionary Base, Little Creek (Eagle Haven Golf Course). We have also developed an Urban Nutrient Management Plan for all other areas regulated by the MS4 permit where nutrients are applied to a contiguous area greater than 1 acre.

A summary report on the development and implementation of the turf and landscape nutrient management plans will be included in the annual report. The annual report will also include the total acreage of lands where turf and landscape nutrient management plans are required and the acreage of lands upon which turf and landscape nutrient management plans have been implemented. The BMP List in **Appendix A** provides additional information.

Copies of the NMPs will be located at the MS4 Water Program Manager's desk (working copy) and at the facility.

Training (BMP #6.4)

A training plan, including a schedule, has been developed. Refer to **Appendix I** for the training plan. The training plan will include the requirements found in Section II B 6 d of the permit. A key aspect of the training plan will be use of the Web-based training ECATTS (previously described in BMP #1.2). The system is very versatile and will enable a large amount of key personnel to be trained in a relatively short amount of time. NAVFAC MIDLANT contractors are required to take ECATTS trainings that include stormwater management modules.

Documentation of each training event will be retained for a period of 3 years after the training date. The documentation will include the training date, the number of employees trained, and the training objective.

The training program will be implemented in PY 2 through 5. A summary report on the required training, list of training events, dates, number of employees trained and the training objectives will be included in the annual report. The BMP List in **Appendix A** provides additional information.

Tracking and Reporting (BMP #6.5)

The annual report will include summary reports on the development and implementation of the daily operational procedures, SWPPP, nutrient management plans, and training events. The BMP List in **Appendix A** provides additional information.

10. Program Evaluation and Assessment

This section presents information on the annual program evaluation. The program will be evaluated annually for the reporting period of July 1 through June 30 and a report submitted to VADEQ by the following October 1. The program will be evaluated based on the criteria given in Section II E 1 and will include the items listed in Section II E 3 of the permit.

Permit Regulations (as of 07/01/2013)

An excerpt from Section II of the final General Permit for Discharges of Stormwater from Small MS4s, dated July 1, 2013 is presented below. The entire General Permit can be found in **Appendix B**.

E. Evaluation and assessment.

1. MS4 Program Evaluation. *The operator must annually evaluate:*

a. Program compliance;

b. The appropriateness of the identified BMPs (as part of this evaluation, the operator shall evaluate the effectiveness of BMPs in addressing discharges into waters that are identified as impaired in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report); and

c. Progress towards achieving the identified measurable goals.

2. Recordkeeping. *The operator must keep records required by the state permit for at least three years. These records must be submitted to the department only upon specific request. The operator must make the records, including a description of the stormwater management program, available to the public at reasonable times during regular business hours.*

3. Annual reports. *The operator must submit an annual report for the reporting period of July 1 through June 30 to the department by the following October 1 of that year. The reports shall include:*

a. Background Information.

(1) The name and permit number of the program submitting the annual report;

(2) The annual report permit year;

(3) Modifications to any operator's department's roles and responsibilities;

(4) Number of new MS4 outfalls and associated acreage by HUC added during the permit year; and

(5) Signed certification.

b. The status of compliance with permit conditions, an assessment of the appropriateness of the identified best management practices and progress towards achieving the identified measurable goals for each of the minimum control measures;

c. Results of information collected and analyzed, including monitoring data, if any, during the reporting period;

d. A summary of the stormwater activities the operator plans to undertake during the next reporting cycle;

e. A change in any identified best management practices or measurable goals for any of the minimum control measures including steps to be taken to address any deficiencies;

f. Notice that the operator is relying on another government entity to satisfy some of the permit obligations (if applicable);

g. The approval status of any programs pursuant to Section II C (if appropriate), or the progress towards achieving full approval of these programs; and

h. Information required for any applicable TMDL special condition contained in Section I.

11. References

Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed; The Louis Berger Group, Inc.; April 2010.

Draft Chapter 9 BMP Inspection and Maintenance; Draft 2009 Virginia Stormwater Management Handbook; September 2009.

Draft Erosion and Sediment Control Instruction; Commander, Navy Region, Mid-Atlantic.

Draft Illegal Discharge and Illegal Dumping Instruction; Commander, Navy Region, Mid-Atlantic.

Draft Post Construction Stormwater Runoff Management Instruction; Commander, Navy Region, Mid-Atlantic.

Draft Virginia Stormwater Management Program Construction Permit Instruction; Commander, Navy Region, Mid-Atlantic.

Fact Sheet – General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems; Virginia Soil and Water Conservation Board; March 2013.

Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedure; NAVFAC MIDLANT Spill Program Manager; September 2012.

Hampton Roads Stormwater BMP Inventory in excel maintained by Commander, Navy Region, Mid-Atlantic.

NAVFAC Mid-Atlantic, Environmental Norfolk, Environmental Compliance: https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_navfacmidlant_pp/midlant_ps/environmental_norfolk/tab3987837

Nutrient Management Plan Identification; Ed Joyner; June 2009.

Regional MS4 Stormwater Program Annual Report, Plan Year 4; Commander, Navy Region, Mid-Atlantic; 2012.

Regional Phase II Stormwater Program Plan; Commander, Navy Region, Mid-Atlantic; August 2011.

Virginia Stormwater Management Program (VSMP) Permit Regulations (amending 4VAC50-60-10, 4VAC50-60-1200 through 4VAC50-60-1240); Virginia Soil and Water Conservation Board; November 2012. http://register.dls.virginia.gov/vol29/iss05/v29i05.htm

VPDES Phase II Regional Stormwater Management Plan; Commander, Navy Region, Mid-Atlantic; December 2008.

Appendix A – BMP List

Best Management Practices List
N62470-10-D-3000; WE86
Project Title: NAVFAC Midlant Phase II MS4 Program Plan

MCM	BMP Number	BMP Name	BMP Description	Measurable Goals	Metric	Responsible Party	Timeline
Chesapeake Bay TMDL	A-1	TMDL Action Plan	Develop and implement a Chesapeake Bay TMDL Action Plan.	In permit years 1 and 2, develop the TMDL Action Plan. In permit years 3 through 5 implement the action plan.	Retain a copy of the Chesapeake Bay TMDL Action Plan.	Phase II Water Program Media Manager	Continuously
Chesapeake Bay TMDL	A-2	Annual Reporting	Submit annual reports documenting the status of installing control measures.	Submit annual reports in permit years 3 through 5.	Record a list of control measured implemented, the corresponding pollutant reductions, and control measures to be implemented.	Phase II Water Program Media Manager	Annually
Other TMDLs	B-1	TMDL Action Plans	Develop and implement TMDL Action Plan for WLAs.	A TMDL Action Plan for NASO will be developed in PY 1 through 2. TMDL Action Plans will be developed for NMCP and SCA during PY 1 through 3. Plans will be implemented after development.	Retain a copy of each TMDL Action Plan.	Phase II Water Program Media Manager	Continuously
1	1.1	Environmental Awareness Trainings for Target Audiences	Conduct training for the target audiences for the Three Priority Water Quality Issues.	In permit year 1, evaluate and update stormwater pollution prevention materials utilized as part of the Environmental Awareness Training Program. In permit years 2 through 5, revised the new materials as needed. Conduct trainings annually including the Facilities Engineering Acquisition Division (FEAD).	Track the number of trainings conducted pertaining to each of the priority water quality issues and the number of people trained.	Phase II Water Program Media Manager and Installation Water Program Media Manager	Annually
1	1.2	Stormwater Management Training through ECATTS	Conduct training for the target audiences through the ECATTS or the web-based Environmental Compliance Assessment, Training, and Tracking System.	In permit years 1 through 5 annually review and update as needed the ECATTS stormwater training modules.	Record and report the number of people trained on each stormwater training module presented through ECATTS.	Phase II Water Program Media Manager and Installation Water Program Media Manager	Annually
1	1.3	Stormwater Education Brochures	Brochures for the Three Priority Water Quality Issues will be developed and distributed.	In permit years 1 through 5, on a semi-annual basis distribute stormwater educational brochures to targeted areas.	Retain a copy of each brochure distributed and record the date, location, and number of brochures distributed.	Phase II Water Program Media Manager	Semi-Annually
1	1.4	Newspaper Articles and Ads	Place articles and/or ads in installation newspapers such as the Flagship and Jet Observer or Plan of the Week emails.	On a semi-annual basis, in permit years 1 through 5 include at least one article/ad in base publications addressing stormwater pollution prevention.	Retain a copy of all articles/ads published and record the dates of publication.	Phase II Water Program Media Manager	Semi-Annually
1	1.5	External Website	Maintain a website that the general public can access that includes information about stormwater education.	In permit years 1 though 5, maintain the website and update content as needed. Include a link to EPA's "After the Storm" video.	Document the number of hits that the website has per year and the average amount of time each user spends on the website.	Phase II Water Program Media Manager	Annually
1	1.6	Car Wash Areas	Place articles in installation newspapers and/or in the "Plan of the Week" about the designated car wash areas.	In permit years 1 through 5, track the number of time each installation's car wash area is used.	Retain copies of all articles published related to car washing. Track the number of times each car wash is used.	Phase II Water Program Media Manager	Annually
1	1.7	Evaluation and Assessment	Annually evaluate and assess the Public Education and Outreach Program to effectiveness	In permit years 1 through 5, on an annual basis, estimate the number of people reached and the percentage of people reached in each target audience. Address any weakness or shortcomings as necessary.	In accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Media Manager	Annually

MCM	BMP Number	BMP Name	BMP Description	Measurable Goals	Metric	Responsible Party	Timeline
2	2.1	Post the MS4 Program Plan and Annual Report	Make the stormwater program plan and other stormwater program information available through the website.	In permit year 1, post the MS4 Program Plan on the website and notify the public through the Plan of the Week of its availability for review. In permit years 2 through 5, update as needed the MS4 Program Plan as needed and post the Annual Report in accordance with Section II of 4VAC50-60-1240. Provide for receipt of comment.	Track all comments and responses received from public reviews.	Phase II Water Program Media Manager	Continuously
2	2.2	Storm Drain Marking Program	Place storm drain markers on inlets to the MS4 reminding the public that flows that drain into the system go directly to streams and waterways.	In permit year 1, evaluate and target areas for storm drain marking efforts. In permit years 2 through 5, conduct annual storm drain marking efforts	Record location, date, number of storm drains marked, and if applicable the number of volunteer participants for each storm drain marking event	Phase II Water Program Media Manager	Annually
2	2.3	Local Activity Participation	Participate during the Annual Clean the Bay Day and Earth Day Events held at the installation. Outreach information will be distributed during these events.	In permit years 1 through 5, participate in the Clean the Bay Day and Earth Day Events at various installations.	For Clean the Bay Day, record the number of volunteers utilized and an estimate of the volume of litter collected. For both events, document the amount of outreach materials distributed.	Phase II Water Program Media Manager	Annually
2	2.4	Evaluation and Assessment	Annually evaluate and assess compliance.	In permit years 1 through 5, on a annual basis, evaluate and assess progress towards meeting measurable goals.	In accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Manager	Annually
3	3.1	Maintain Storm Sewer System Map	Maintain an accurate storm sewer system map in accordance with Section II of 4VAC50-60-1240.	In permit year 1, identify required updates to the storm sewer system map at each installation. In permit years 2 and 3, update the maps accordingly. In permit years 4 and 5, maintain and update the mapping as needed.	Record revision dates on storm system mapping for each regulated installation.	Installation Water Program Media Managers; Phase II Water Program Media Manager	Annually
3	3.2	Written Procedures and Dry Weather Screening	Develop and implement written procedures to detect, identify, and eliminate illicit discharges in accordance with Section II of 4VAC50-60-1240.	In permit year 1, finalize draft procedures to detect, identify and eliminate illicit discharges. These procedures will likely be identified as Standard Operating Procedures (SOP). In permit years 2 through 5, implement these final procedures.	Document the number of outfalls screened, the screening results, and other pertinent details. Document each investigation into a suspected illicit discharge. All reporting shall be in accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Media Manager	Continuously
3	3.3	Promote, Publicize, and Facilitate Public Reporting	Use reporting mechanisms such as hotlines, email, and website links to allow the public to report suspected illicit discharges.	In permit year 1, generate a hotline phone number, an email address, and/or a website link for public reporting of suspected illicit discharges. In permit years 2 through 5, publicize this information through public outreach BMPs.	Record the details (date, problem location, etc.) and number of the reports received using each reporting mechanism.	Phase II Water Program Media Manager	Continuously
3	3.4	Public Education for Illicit Discharges	Through the use of BMPs identified in MCM#1 and MCM#2, educate the public regarding illicit discharges.	In permit years 1 through 5, include information addressing illicit discharges in the BMPs used in MCM#1 and MCM#2.	Retain copies of materials published and dates of publication. Document the number of people trained annually.	Phase II Water Program Media Manager	Annually

MCM	BMP Number	BMP Name	BMP Description	Measurable Goals	Metric	Responsible Party	Timeline
3	3.5	Spill Control Documentation	Report Spills to DEQ and document in accordance with the Spill Reporting and Documentation SOP.	In permit years 1 through 5, report spills to the proper authorities and retain a copy of the initial report and the 5-day spill letter.	Retain copies of all spill reports and letters.	Spill Program Media Manager	Continuously
3	3.6	Evaluation and Assessment	Annually evaluate and assess the illicit discharge program for compliance and effectiveness.	In permit years 2 through 5, on a annual basis, evaluate and assess progress towards meeting measurable goals	In accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Media Manager	Annually
4	4.1	Legal Authority	Utilize legal authority to address discharges entering the MS4 from certain land-disturbing activities.	In permit year 1, identify and install legal mechanisms. In permit years 2 through 5, implement these policies and procedures.	Retain copies of documents outlining the policies and procedures.	Phase II Water Program Media Manager	Continuously
4	4.2	Approval of Erosion and Sediment Control Plan	Require that all Erosion and Sediment Control Plans are approved prior to commencement of the land disturbing activity.	In permit years 1 through 5, have all Erosion and Sediment Control Plans approved.	Retain copies of all approved plans. Document the number of plans approved annually.	Phase II Water Program Media Manager	Continuously
4	4.3	VSMP Construction Permit Instruction	Maintain and enforce the VSMP Construction Permit Instruction.	In permit year 1, convert the VSMP Construction Permit Instruction to an SOP. In PY 1 through PY 5, enforce the instruction accordingly.	Retain copies of all approved plans. Document the number of plans approved annually.	Phase II Water Program Media Manager	Continuously
4	4.4	Construction Activity SWMP & SWPPP Review	Review SWMPs and SWPPPs to ensure that each plan is consistent with the requirements set forth in the Virginia Stormwater Management Regulations and the VSMP Construction Permit Instruction.	In permit year 1, convert the VSMP Construction Permit Instruction to an SOP. In PY 1 through PY 5, SWMPs and SWPPPs will be reviewed for compliance.	Retain copies of all approved plans. Document the number of plans approved annually.	Phase II Water Program Media Manager	Continuously
4	4.5	Compliance and Enforcement Procedures	Document compliance inspection procedures and enforcement actions.	In permit years 1 through 2, develop the compliance inspection procedures and enforcement actions and conduct inspections. In permit years 3 through 5, implement these procedures in accordance with the permit requirements.	Retain copies of inspection procedures and enforcement actions.	Phase II Water Program Media Manager	Continuously
4	4.6	Tracking and Reporting	Track the number of regulated land-disturbing activities and corresponding information.	In permit years 1 through 2, track the number of land-disturbing activities and total disturbed acreage. In permit years 3 though 5, also track the number of inspections and number and type of enforcement actions.	Track the regulated land-disturbing activities in accordance with Section II of 4.VAC50-60-1240.	Phase II Water Program Media Manager	Continuously
5	5.1	Legal Authority	Utilize legal authority to require that stormwater runoff controls are designed and installed in accordance with regulations.	In permit year 1, identify and install legal mechanisms. In permit years 2 through 5, implement these policies and procedures.	Retain copies of documents outlining the policies and procedures.	Phase II Water Program Media Manager	Continuously
5	5.2	Inspection, Operation and Maintenance	Require long-term operation and maintenance procedures that include inspection schedules.	In permit year 1, develop operator-owned maintenance and inspection procedures in accordance with Section II of 4.VAC50-60-1240. In permit years 2 through 5, implement these inspection procedures.	Retain operator-owned maintenance and inspection procedures. Retain copies of the inspection reports.	Phase II Water Program Media Manager	Continuously

MCM	BMP Number	BMP Name	BMP Description	Measurable Goals	Metric	Responsible Party	Timeline
5	5.3	Tracking and Reporting	Maintain a electronic database of all stormwater management facilities.	In permit year 1, update the existing database to include all of the requirements listed in Section II of 4.VAC50-60-1240. In permit years 2 through 5, update the database semi-annually.	Retain a copy of the most current stormwater management facility database.	Phase II Water Program Media Manager	Semi-Annually
6	6.1	Written Policies and Procedures	Document policies and procedures to minimize or prevent pollutant discharge from various sources in accordance with Section II of 4.VAC50-60-1240.	In permit years 1 through 2, develop pollution prevention policies and procedures. In permit years 3 through 5, implement these policies and procedures.	Retain copies of the policy and procedural documents.	Phase II Water Program Media Manager	Continuously
6	6.2	SWPPPs	Develop and implement SWPPPs in accordance with Section II of 4.VAC50-60-1240.	In permit year 1, identify the high-priority facilities. In permit years 2 through 4, develop a general SWPPP for these facilities. In permit year 5, implement this SWPPP at each high-priority facility and updated as necessary.	Retain a list of high-priority facilities and a copy of the SWPPP.	Phase II Water Program Media Manager	Continuously
6	6.3	Turf and Landscape Nutrient Management	Develop and implement turf and landscape nutrient management plans in accordance with Section II of 4.VAC50-60-1240.	In permit year 1, identify the lands where turf and landscape nutrient management plans are required. In permit years 2 through 5, develop and implement these plans based on the phased approach found in Section II of 4.VAC50-60-1240.	Retain a list of lands requiring turf and landscape nutrient management plans and a copy of each plan.	Phase II Water Program Media Manager	Continuously
6	6.4	Training	Provide training in accordance with Section II of 4.VAC50-60-1240 on pollution prevention/good housekeeping to applicable personnel.	In permit year 1, develop a training schedule and program. Also, identify the applicable personnel and generate the training materials. In permit years 2 through 5, implement the training schedule.	Document each training event or ECATTS module. Include the date, number of employees, and training topic.	Phase II Water Program Media Manager	Continuously
6	6.5	Tracking and Reporting	Provide annual summary reports on the status of requirements outlined in Section II of 4.VAC50-60-1240.	In permit years 1 through 5, provide a summary report on the development and implementation of daily operational procedures, SWPPPs, and nutrient management plans.	Retain a copy of the three summary reports.	Phase II Water Program Media Manager	Annually

Appendix B – General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4020
1-800-592-5482

July 1, 2013

Ms. Elizabeth Nashold, Environmental Program Manager
Navy Region, Mid-Atlantic
9742 Maryland Ave.
Norfolk, Virginia 23511

RE: General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems
General Permit No. VAR040114
Navy Consolidated MS4

Dear Permittee:

Department staff has reviewed your Registration Statement and determined that the referenced Municipal Storm Sewer System (MS4) is hereby covered under the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems. .The effective date of your coverage under this general permit is July 1, 2013, or the date of this letter, whichever is later. The enclosed copy of the general permit contains the applicable reporting requirements and other conditions of coverage.

During its 2013 Legislative Session, the General Assembly passed Chapters 756 (HB2048) and 793 (SB1279) which moved several programs from the Virginia Department of Conservation and Recreation (DCR) to the Virginia Department of Environmental Quality (DEQ). As a result of this legislative change, the General Assembly transferred the administration and oversight of the General Permit for Discharges from Small Municipal Separate Storm Sewer Systems from DCR to DEQ. Please submit future permit correspondence and your annual MS4 program reports to the DEQ Tidewater Regional Office at the following address:

DEQ Tidewater Regional Office
5636 Southern Blvd.
Virginia Beach, VA 23462

The general permit will expire on June 30, 2018. The conditions of the permit require that you submit a new registration statement on or before April 1, 2018, if you wish to have continued coverage under the general permit.

If you have any questions about this letter or the general permit, please contact Mr. Mark Sauer, Water Permits Manager, at (757) 518-2105 or mark.sauer@deq.virginia.gov .

Sincerely,

Melanie D. Davenport

Melanie D. Davenport, Director
Water Division

Enc. General Permit No. VAR040114

Cc. Mark Sauer, DEQ-TRO

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

General Permit No.: VAR040114

Effective Date: July 1, 2013

Expiration Date: June 30, 2018

GENERAL PERMIT FOR DISCHARGES OF STORMWATER FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA STORMWATER MANAGEMENT PROGRAM AND THE VIRGINIA STORMWATER MANAGEMENT ACT

In compliance with the provisions of the Clean Water Act, as amended and pursuant to the Virginia Stormwater Management Act and regulations adopted pursuant thereto, this state permit authorizes operators of small municipal separate storm sewer systems to discharge to surface waters within the boundaries of the Commonwealth of Virginia, except those waters specifically named in State Water Control Board and Virginia Soil and Water Conservation Board regulations which prohibit such discharges.

The authorized discharge shall be in accordance with this cover page, Section I – Discharge Authorization and Special Conditions, Section II – MS4 Program and Section III – Conditions Applicable To All State Permits, as set forth herein. The operator shall utilize all legal authority provided by the laws and regulations of the Commonwealth of Virginia to control discharges to and from the MS4. This legal authority may be a combination of statute, ordinance, permit, specific contract language, order or interjurisdictional agreements.

For operators of small MS4s that are applying for initial coverage under this general permit, the schedule to develop and implement the MS4 Program Plan shall be submitted with the completed registration statement.

For operators that have previously held MS4 state permit coverage, the operator shall update the MS4 Program Plan in accordance with the following schedule. Until such time as the required updates are completed and implemented, the operator shall continue to implement the MS4 Program consistent with the MS4 Program Plan submitted with the registration statement.

Table 1: Schedule of MS4 Program Plan Updates Required in this Permit

Program Update Requirement	Permit Reference	Update Completed By
Public Education Outreach Plan (Minimum Control Measure 1 – Public Education and Outreach on Stormwater Impacts)	Section II B 1	12 months after permit coverage
Illicit Discharge Procedures - (Minimum Control Measure 3 – Illicit Discharge Detection and Elimination)	Section II B 3	
Individual Residential Lot Special Criteria (Minimum Control Measure 5 – Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands)	Section II B 5 c (1) (d)	
Operator-Owned Stormwater Management Inspection Procedures (Minimum Control Measure 5 – Post-Construction Stormwater Management in New Development and Development on Prior Developed Lands)	Section II B 5	
Identification of Locations Requiring SWPPPs (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6 b	
Nutrient Management Plan (NMP) Locations - (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6 c (1) (a)	
Training Schedule and Program - (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6	

Table 1: Schedule of MS4 Program Plan Updates Required in this Permit		
Program Update Requirement	**Permit Reference**	**Update Completed By**
Updated TMDL Action Plans (TMDLs approved before July of 2008) – (Special Conditions for Approved Total Maximum Daily Loads (TMDL) Other Than Chesapeake Bay)	Section I B	24 months after permit coverage
Chesapeake Bay TMDL Action Plan – (Special Condition for Chesapeake Bay TMDL)	Section I C	
Stormwater Management Progressive Compliance and Enforcement – (Minimum Control Measure 4 - Construction Site Stormwater Runoff Control)	Section II B 5	
Daily Good Housekeeping Procedures (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6 a	
Other TMDL Action Plans for applicable TMDLs approved between July 2008 and June 2013 - (Special Conditions for Approved Total Maximum Daily Loads (TMDL) Other Than Chesapeake Bay)	Section I B	36 months after permit coverage
Outfall Map Completed - (Minimum Control Measure 3 – Illicit Discharge Detection and Elimination) – Applicable to new boundaries identified as "urbanized" areas in the 2010 Decennial Census	Section II B 3 a (3)	48 months after permit coverage
SWPPP Implementation - (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6 b (3)	
NMP Implementation - (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6 c (1) (b)	60 months after permit coverage
*Updates should be submitted with the appropriate annual report.		

SECTION I

DISCHARGE AUTHORIZATION AND SPECIAL CONDITIONS

A. Coverage under this state permit. During the period beginning with the date of coverage under this general permit and lasting until the expiration and reissuance of this state permit, the operator is authorized to discharge in accordance with this state permit from the small municipal separate storm sewer system identified in the registration statement into surface waters within the boundaries of the Commonwealth of Virginia and consistent with 4VAC50-60-1230.

B. Special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL. An approved TMDL may allocate an applicable wasteload to a small MS4 that identifies a pollutant or pollutants for which additional stormwater controls are necessary for the surface waters to meet water quality standards. The MS4 operator shall address the pollutants in accordance with this special condition where the MS4 has been allocated a wasteload in an approved TMDL.

1. The operator shall maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for pollutants allocated to the MS4 in approved TMDLs. TMDL Action Plans may be implemented in multiple phases over more than one state permit cycle using the adaptive iterative approach provided adequate progress to reduce the pollutant discharge in a manner consistent with the assumptions and requirements of the specific TMDL wasteload is demonstrated in accordance with subdivision 2 e of this subsection These TMDL Actions Plans shall identify the best management practices and other interim milestone activities to be implemented during the remaining terms of this state permit.
   a. In accordance with Table 1 in this section, the operator shall update the MS4 Program Plans to address any new or modified requirements established under this special condition for pollutants identified in TMDL wasteload allocations approved prior to July 9, 2008.
   b. In accordance with Table 1 in this section, the operator shall update the MS4 Program Plan to incorporate approvable TMDL Action Plans that identify the best management practices and other interim milestone activities that will be implemented during the remaining term of this permit for pollutants identified in TMDL wasteload allocations approved either on or after July 9, 2008, and prior to issuance of this permit.
   c. Unless specifically denied in writing by the department, TMDL Action Plans and updates developed in accordance with this section become effective and enforceable 90 days after the date received by the department.

2. The operator shall:
   a. Develop and maintain a list of its legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements applicable to reducing the pollutant identified in each applicable WLA;
   b. Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Section II B, that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA;
   c. Enhance its public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA;
   d. Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purposes of this assessment, 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. (For example, a significant source of pollutant from a facility of concern for a bacteria TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited);
   e. Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available

information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant or pollutants of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or in-stream monitoring, as appropriate, to estimate pollutant reductions. The operator may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other MS4 operators or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in subdivision 2 d of this subsection. The methodology used for assessment shall be described in the TMDL Action Plan.

3. Analytical methods for any monitoring shall be conducted according to procedures approved under 40 CFR Part 136 or alternative methods approved by the Environmental Protection Agency (EPA). Where an approved method does not exist, the operator must use a method consistent with the TMDL.

4. The operator is encouraged to participate as a stakeholder in the development of any TMDL implementation plans applicable to their discharge. The operator may incorporate applicable best management practices identified in the TMDL implementation plan in the MS4 Program Plan or may choose to implement BMPs of equivalent design and efficiency provided that the rationale for any substituted BMP is provided and the substituted BMP is consistent with the assumptions and requirements of the TMDL WLA.

5. Annual reporting requirements.
a. The operator shall submit the required TMDL Action Plans with the appropriate annual report and in accordance with the associated schedule identified in this state permit.
b. On an annual basis, the operator shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.

6. The operator shall identify the best management practices and other steps that will be implemented during the next state permit term as part of the operator's reapplication for coverage as required under Section III M.

7. For planning purposes, the operator shall include an estimated end date for achieving the applicable wasteload allocations as part of its reapplication package due in accordance with Section III M.

C. Special condition for the Chesapeake Bay TMDL. The Commonwealth in its Phase I and Phase II Chesapeake Bay TMDL Watershed Implementation Plans (WIP) committed to a phased approach for MS4s, affording MS4 operators up to three full five-year permit cycles to implement necessary reductions. This permit is consistent with the Chesapeake Bay TMDL and the Virginia Phase I and II WIPs to meet the Level 2 (L2) scoping run for existing developed lands as it represents an implementation of 5.0% of L2 as specified in the 2010 Phase I WIP. Conditions of future permits will be consistent with the TMDL or WIP conditions in place at the time of permit issuance.

1. Definitions. The following definitions apply to this state permit for the purpose of the special condition for discharges in the Chesapeake Bay Watershed:
"Existing sources" means pervious and impervious urban land uses served by the MS4 as of June 30, 2009.
"New sources" means pervious and impervious urban land uses served by the MS4 developed or redeveloped on or after July 1, 2009.
"Pollutants of concern" or "POC" means total nitrogen, total phosphorus, and total suspended solids.
"Transitional sources" means regulated land disturbing activities that are temporary in nature and discharge through the MS4.
2. Chesapeake Bay TMDL planning.

a. In accordance with Table 1 in this section, the operator shall develop and submit to the department for its review and acceptance an approvable Chesapeake Bay TMDL Action Plan. Unless specifically denied in writing by the department, this plan becomes effective and enforceable 90 days after the date received by the department. The plan shall include:
(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) 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) The means and methods that will be utilized to address discharges into the MS4 from new sources;
(4) 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:

Table 2a: 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 (6/30/09)	2009 EOS Loading Rate (lbs/ acre)	Estimated Total POC Load Based on 2009 Progress Run
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 2b: Calculation Sheet for Estimating Existing Source Loads for the Potomac River Basin
***Based on Chesapeake Bay Program Watershed Model Phase 5.3.2**

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 EOS Loading Rate (lbs/ acre)	Estimated Total POC Load Based on 2009 Progress Run
Regulated Urban Impervious	Nitrogen		16.86	
Regulated Urban Pervious			10.07	
Regulated Urban Impervious	Phosphorus		1.62	
Regulated Urban Pervious			0.41	
Regulated Urban Impervious	Total Suspended Solids		1,171.32	
Regulated Urban Pervious			175.8	

Table 2c: Calculation Sheet for Estimating Existing Source Loads for the Rappahannock River Basin
***Based on Chesapeake Bay Program Watershed Model Phase 5.3.2**

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 EOS Loading Rate (lbs/ acre)	Estimated Total POC Load Based on 2009 Progress Run
Regulated Urban Impervious	Nitrogen		9.38	
Regulated Urban Pervious			5.34	
Regulated Urban Impervious	Phosphorus		1.41	
Regulated Urban Pervious			0.38	
Regulated Urban Impervious	Total Suspended Solids		423.97	
Regulated Urban Pervious			56.01	

Table 2d: Calculation Sheet for Estimating Existing Source Loads for the York River Basin *Based on Chesapeake Bay Program Watershed Model Phase 5.3.2				
Subsource	**Pollutant**	**Total Existing Acres Served by MS4 (6/30/09)**	**2009 EOS Loading Rate (lbs/ acre)**	**Estimated Total POC Load Based on 2009 Progress Run**
Regulated Urban Impervious	Nitrogen		7.31	
Regulated Urban Pervious			7.65	
Regulated Urban Impervious	Phosphorus		1.51	
Regulated Urban Pervious			0.51	
Regulated Urban Impervious	Total Suspended Solids		456.68	
Regulated Urban Pervious			72.78	

(5) 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 first 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.

Table 3a: Calculation Sheet for Determining Total POC Reductions Required During this Permit Cycle for the James River Basin
***Based on Chesapeake Bay Program Watershed Model Phase 5.3.2**

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/ acre)	Total Reduction Required First Permit Cycle (lbs)
Regulated Urban Impervious	Nitrogen		0.04	
Regulated Urban Pervious			0.02	
Regulated Urban Impervious	Phosphorus		0.01	
Regulated Urban Pervious			0.002	
Regulated Urban Impervious	Total Suspended Solids		6.67	
Regulated Urban Pervious			0.44	

Table 3b: Calculation Sheet for Determining Total POC Reductions Required During this Permit Cycle for the Potomac River Basin
***Based on Chesapeake Bay Program Watershed Model Phase 5.3.2**

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/ acre)	Total Reduction Required First Permit Cycle (lbs)
Regulated Urban Impervious	Nitrogen		0.08	
Regulated Urban Pervious			0.03	
Regulated Urban Impervious	Phosphorus		0.01	
Regulated Urban Pervious			0.001	
Regulated Urban Impervious	Total Suspended Solids		11.71	
Regulated Urban Pervious			0.77	

Table 3c: Calculation Sheet for Determining Total POC Reductions Required During this Permit Cycle for the Rappahannock River Basin
***Based on Chesapeake Bay Program Watershed Model Phase 5.3.2**

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/acre)	Total Reduction Required First Permit Cycle (lbs)
Regulated Urban Impervious	Nitrogen		0.04	
Regulated Urban Pervious			0.02	
Regulated Urban Impervious	Phosphorus		0.01	
Regulated Urban Pervious			0.002	
Regulated Urban Impervious	Total Suspended Solids		4.24	
Regulated Urban Pervious			0.25	

Table 3d: Calculation Sheet for Determining Total POC Reductions Required During this Permit Cycle for the York River Basin
***Based on Chesapeake Bay Program Watershed Model Phase 5.3.2**

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/acre)	Total Reduction Required First Permit Cycle (lbs)
Regulated Urban Impervious	Nitrogen		0.03	
Regulated Urban Pervious			0.02	
Regulated Urban Impervious	Phosphorus		0.01	
Regulated Urban Pervious			0.002	
Regulated Urban Impervious	Total Suspended Solids		4.60	
Regulated Urban Pervious			0.32	

(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;
(7) The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009, and June 30, 2014, that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle.
(8) The means and methods to offset the increased loads from projects as grandfathered in accordance with 4VAC50-60-48, that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids.
(9) The operator shall address any modification to the TMDL or watershed implementation plan that occurs during the term of this state permit as part of its permit reapplication and not during the term of this state permit.

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

Ratio of Phosphorus to Other POCs (Based on All Land Uses 2009 Progress Run)	Phosphorus 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

(10) A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48;
(11) An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle; and
(12) An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan.
b. As part of development of the Chesapeake Bay TMDL Action Plan, the operator may consider:
(1) Implementation of BMPs on unregulated lands provided any necessary baseline reduction is not included toward meeting the required reduction in this permit;
(2) Utilization of stream restoration projects, provided that the credit applied to the required POC load reduction is prorated based on the ratio of regulated urban acres to total drainage acres upstream of the restored area;
(3) Establishment of a memorandum of understanding (MOU) with other MS4 operators that discharge to the same or adjacent eight digit hydrologic unit within the same basin to implement BMPs collectively. The MOU shall include a mechanism for dividing the POC reductions created by BMP implementation between the cooperative MS4s;
(4) Utilization of any pollutant trading or offset program in accordance with § 10.1-603.15:1 et seq. of the Code of Virginia, governing trading and offsetting;

(5) A more stringent average land cover condition based on less than 16% impervious cover for new sources initiating construction between July 1, 2009, and June 30, 2014, and all grandfathered projects where allowed by law; and
(6) Any BMPs installed after June 30, 2009, as part of a retrofit program may be applied towards meeting the required load reductions provided any necessary baseline reductions are not included.

3. Chesapeake Bay TMDL Action Plan implementation. The operator shall implement the TMDL Action Plan according to the schedule therein. Compliance with this requirement represents adequate progress for this state permit term towards achieving TMDL wasteload allocations consistent with the assumptions and requirements of the TMDL. For the purposes of this permit, the implementation of the following represents implementation to the maximum extent practicable and demonstrates adequate progress:

a. Implementation of nutrient management plans in accordance with the schedule identified in the minimum control measure in Section II related to pollution prevention/good housekeeping for municipal operations;
b. Implementation of the minimum control measure in Section II related to construction site stormwater runoff control in accordance with this state permit shall address discharges from transitional sources;
c. Implementation of the means and methods to address discharges from new sources in accordance with the minimum control measure in Section II related to post-construction stormwater management in new development and development of prior developed lands and in order to offset 5.0% of the total increase in POC loads between July 1, 2009, and June 30, 2014. Increases in the POC load from grandfathered projects initiating construction after July 1, 2014, must be offset prior to completion of the project; and
d. Implementation of means and methods sufficient to meet the required reductions of POC loads from existing sources in accordance with the Chesapeake Bay TMDL Action Plan.

4. Annual reporting requirements.

a. In accordance with Table 1 in this section, the operator shall submit the Chesapeake Bay Action Plan with the appropriate annual report.
b. Each subsequent annual report shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.
c. Each subsequent annual report shall include a list of control measures, in an electronic format provided by the department , that were implemented during the reporting cycle and the estimated reduction achieved by the control. For stormwater management controls, the report shall include the information required in Section II B 5 e and shall include whether an existing stormwater management control was retrofitted, and if so, the existing stormwater management control type retrofit used.
d. Each annual report shall include a list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.

5. The operator shall include the following as part of its reapplication package due in accordance with Section III M:

a. Documentation that sufficient control measures have been implemented to meet the compliance target identified in this special condition. If temporary credits or offsets have been purchased in order to meet the compliance target, the list of temporary reductions utilized to meet the required reduction in this state permit and a schedule of implementation to ensure the permanent reduction must be provided; and
b. A draft second phase Chesapeake Bay TMDL Action Plan designed to reduce the existing pollutant load as follows:
(1) The existing pollutant of concern loads by an additional seven times the required reductions in loading rates using the applicable Table 3 for sources included in the 2000 U.S. Census Bureau urbanized areas;

(2) The existing pollutant of concerns loads by an additional eight times the required reductions in loading rates using the applicable Table 3 for expanded sources identified in the U.S. Census Bureau 2010 urbanized areas;
(3) An additional 35% reduction in new sources developed between 2009 and 2014 and for which the land use cover condition was greater than 16%; and
(4) Accounts for any modifications to the applicable loading rate provided to the operator as a result of TMDL modification.

SECTION II

MUNICIPAL SEPARATE STORM SEWER SYSTEM MANAGEMENT PROGRAM

A. The operator of a small MS4 must develop, implement, and enforce a MS4 Program designed to reduce the discharge of pollutants from the small MS4 to the maximum extent practicable (MEP), to protect water quality, to ensure compliance by the operator with water quality standards, and to satisfy the appropriate water quality requirements of the Clean Water Act and its attendant regulations. The MS4 Program must include the minimum control measures described in paragraph B of this section. Implementation of best management practices consistent with the provisions of an iterative MS4 Program required pursuant to this section constitutes compliance with the standard of reducing pollutants to the "maximum extent practicable", protects water quality in the absence of a TMDL wasteload allocation, ensures compliance by the operator with water quality standards, and satisfies the appropriate water quality requirements of the Clean Water Act and regulations in the absence of a TMDL WLA. The requirements of this section and those special conditions set out in Section I B also apply where a WLA is applicable.

B. Minimum control measures.

NOTE regarding minimum control measures for public education and outreach on stormwater impacts and public involvement/participation: "Public" is not defined in this permit. However, the department concurs with the following EPA statement, which was published in the Federal Register, Volume 64, No. 235, page 68,750 on December 8, 1999, regarding "public" and its applicability to MS4 programs: "EPA acknowledges that federal and state facilities are different from municipalities. EPA believes, however, that the minimum measures are flexible enough that they can be implemented by these facilities. As an example, DOD commentators asked about how to interpret the term "public" for military installations when implementing the public education measure. EPA agrees with the suggested interpretation of "public" for DOD facilities as "the resident and employee population within the fence line of the facility." The department recommends that nontraditional MS4 operators, such as state and federal entities and local school districts, utilize this statement as guidance when determining their applicable "public" for compliance with this permit.

1. Public education and outreach on stormwater impacts.

a. The operator shall continue to implement the public education and outreach program as included in the registration statement until the program is updated to meet the conditions of this state permit. Operators who have not previously held MS4 permit coverage shall implement this program in accordance with the schedule provided with the completed registration statement.

b. The public education and outreach program should be designed with consideration of the following goals:
(1) Increasing target audience knowledge about the steps that can be taken to reduce stormwater pollution, placing priority on reducing impacts to impaired waters and other local water pollution concerns;
(2) Increasing target audience knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications; and

(3) Implementing a diverse program with strategies that are targeted towards audiences most likely to have significant stormwater impacts.

c. The updated program shall be designed to:
(1) Identify, at a minimum, three high-priority water quality issues, that contribute to the discharge of stormwater (e.g., Chesapeake Bay nutrients, pet wastes and local bacteria TMDLs, high-quality receiving waters, and illicit discharges from commercial sites) and a rationale for the selection of the three high-priority water quality issues;
(2) Identify and estimate the population size of the target audience or audiences who is most likely to have significant impacts for each high-priority water quality issue;
(3) Develop relevant message or messages and associated educational and outreach materials (e.g., various media such as printed materials, billboard and mass transit advertisements, signage at select locations, radio advertisements, television advertisements, websites, and social media) for message distribution to the selected target audiences while considering the viewpoints and concerns of the target audiences including minorities, disadvantaged audiences, and minors;
(4) Provide for public participation during public education and outreach program development;
(5) Annually conduct sufficient education and outreach activities designed to reach an equivalent 20% of each high-priority issue target audience. It shall not be considered noncompliance for failure to reach 20% of the target audience. However, it shall be a compliance issue if insufficient effort is made to annually reach a minimum of 20% of the target audience; and
(6) Provide for the adjustment of target audiences and messages including educational materials and delivery mechanisms to reach target audiences in order to address any observed weaknesses or shortcomings.

d. The operator may coordinate their public education and outreach efforts with other MS4 operators; however, each operator shall be individually responsible for meeting all of its state permit requirements.

e. Prior to application for continued state permit coverage required in Section III M, the operator shall evaluate the education and outreach program for:
(1) Appropriateness of the high-priority stormwater issues;
(2) Appropriateness of the selected target audiences for each high-priority stormwater issue;
(3) Effectiveness of the message or messages being delivered; and
(4) Effectiveness of the mechanism or mechanisms of delivery employed in reaching the target audiences.

f. The MS4 Program Plan shall describe how the conditions of this permit shall be updated in accordance with Table 1 in this section.

g. The operator shall include the following information in each annual report submitted to the department during this permit term:
(1) A list of the education and outreach activities conducted during the reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience or audiences that will be reached; and
(2) A list of the education and outreach activities that will be conducted during the next reporting period for each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached.

2. Public involvement/participation.

a. Public involvement.
(1) The operator shall comply with any applicable federal, state, and local public notice requirements.
(2) The operator shall:
(a) Maintain an updated MS4 Program Plan. Any required updates to the MS4 Program Plan shall be completed at a minimum of once a year and shall be updated in conjunction with the annual report. The operator shall post copies of each MS4 program plan on its webpage at a minimum of once a year and within 30 days of submittal of the annual report to the department.
(b) Post copies of each annual report on the operator's web page within 30 days of submittal to the department and retain copies of annual reports online for the duration of this state permit; and
(c) Prior to applying for coverage as required by Section III M, notify the public and provide for receipt of comment of the proposed MS4 Program Plan that will be submitted with the registration statement. As part of the reapplication, the operator shall address how it considered the comments received in the development of its MS4 Program Plan. The operator shall give public notice by a method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to solicit public participation.

b. Public participation. The operator shall participate, through promotion, sponsorship, or other involvement, in a minimum of four local activities annually e.g., stream cleanups; hazardous waste cleanup days; and meetings with watershed associations, environmental advisory committees, and other environmental organizations that operate within proximity to the operator's small MS4. The activities shall be aimed at increasing public participation to reduce stormwater pollutant loads; improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other opportunities for public involvement.

c. The MS4 Program Plan shall include written procedures for implementing this program.

d. Each annual report shall include:
(1) A web link to the MS4 Program Plan and annual report; and
(2) Documentation of compliance with the public participation requirements of this section.

3. Illicit discharge detection and elimination.

a. The operator shall maintain an accurate storm sewer system map and information table and shall update it in accordance with the schedule set out in Table 1 of this section.
(1) The storm sewer system map must show the following, at a minimum:
(a) The location of all MS4 outfalls. In cases where the outfall is located outside of the MS4 operator's legal responsibility, the operator may elect to map the known point of discharge location closest to the actual outfall. Each mapped outfall must be given a unique identifier, which must be noted on the map; and
(b) The name and location of all waters receiving discharges from the MS4 outfalls and the associated HUC.
(2) The associated information table shall include for each outfall the following:
(a) The unique identifier;
(b) The estimated MS4 acreage served;
(c) The name of the receiving surface water and indication as to whether the receiving water is listed as impaired in the Virginia 2010 303(d)/305(b) Water Quality Assessment Integrated Report; and
(d) The name of any applicable TMDL or TMDLs.
(3) Within 48 months of coverage under this state permit, the operator shall have a complete and updated storm sewer system map and information table that includes all MS4 outfalls

located within the boundaries identified as "urbanized" areas in the 2010 Decennial Census and shall submit the updated information table as an appendix to the annual report.
(4) The operator shall maintain a copy of the current storm sewer system map and outfall information table for review upon request by the public or by the department.
(5) The operator shall continue to identify other points of discharge. The operator shall notify in writing the downstream MS4 of any known physical interconnection.

b. The operator shall effectively prohibit, through ordinance or other legal mechanism, nonstormwater discharges into the storm sewer system to the extent allowable under federal, state, or local law, regulation, or ordinance. Categories of nonstormwater discharges or flows (i.e., illicit discharges) identified in 4VAC50-60-400 D 2 c (3) must be addressed only if they are identified by the operator as significant contributors of pollutants to the small MS4. Flows that have been identified in writing by the Department of Environmental Quality as de minimis discharges are not significant sources of pollutants to surface water and do not require a VPDES permit.

c. The operator shall develop, implement, and update, when appropriate, written procedures to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the small MS4. These procedures shall include:
(1) Written dry weather field screening methodologies to detect and eliminate illicit discharges to the MS4 that include field observations and field screening monitoring and that provide:
(a) A prioritized schedule of field screening activities determined by the operator based on such criteria as age of the infrastructure, land use, historical illegal discharges, dumping or cross connections.
(b) The minimum number of field screening activities the operator shall complete annually to be determined as follows: (i) if the total number of outfalls in the small MS4 is less than 50, all outfalls shall be screened annually or (ii) if the small MS4 has 50 or more total outfalls, a minimum of 50 outfalls shall be screened annually.
(c) Methodologies to collect the general information such as time since the last rain, the quantity of the last rain, site descriptions (e.g., conveyance type and dominant watershed land uses), estimated discharge rate (e.g., width of water surface, approximate depth of water, approximate flow velocity, and flow rate), and visual observations (e.g., order, color, clarity, floatables, deposits or stains, vegetation condition, structural condition, and biology);
(d) A time frame upon which to conduct an investigation or investigations to identify and locate the source of any observed continuous or intermittent nonstormwater discharge prioritized as follows: (i) illicit discharges suspected of being sanitary sewage or significantly contaminated must be investigated first and (ii) investigations of illicit discharges suspected of being less hazardous to human health and safety such as noncontact cooling water or wash water may be delayed until after all suspected sanitary sewage or significantly contaminated discharges have been_investigated, eliminated, or identified. Discharges authorized under a separate VPDES or state permit require no further action under this permit.
(e) Methodologies to determine the source of all illicit discharges shall be conducted. If an illicit discharge is found, but within six months of the beginning of the investigation neither the source nor the same nonstormwater discharge has been identified, then the operator shall document such in accordance with Section II B 3 f. If the observed discharge is intermittent, the operator must document that a minimum of three separate investigations were made in an attempt to observe the discharge when it was flowing. If these attempts are unsuccessful, the operator shall document such in accordance with Section II B 3 f.
(f) Mechanisms to eliminate identified sources of illicit discharges including a description of the policies and procedures for when and how to use legal authorities;
(g) Methods for conducting a follow-up investigation in order to verify that the discharge has been eliminated.
(h) A mechanism to track all investigations to document: (i) the date or dates that the illicit discharge was observed and reported; (ii) the results of the investigation; (iii) any follow-up to the investigation; (iv) resolution of the investigation; and (v) the date that the investigation was closed.

d. The operator shall promote, publicize, and facilitate public reporting of illicit discharges into or from MS4s. The operator shall conduct inspections in response to complaints and follow-up inspections as needed to ensure that corrective measures have been implemented by the responsible party.

e. The MS4 Program Plan shall include all procedures developed by the operator to detect, identify, and address nonstormwater discharges to the MS4 in accordance with the schedule in Table 1 in this section. In the interim, the operator shall continue to implement the program as included as part of the registration statement until the program is updated to meet the conditions of this permit. Operators, who have not previously held MS4 permit coverage, shall implement this program in accordance with the schedule provided with the completed registration statement.

f. Annual reporting requirements. Each annual report shall include:
(1) A list of any written notifications of physical interconnection given by the operator to other MS4s;
(2) The total number of outfalls screened during the reporting period, the screening results, and detail of any follow-up actions necessitated by the screening results; and
(3) A summary of each investigation conducted by the operator of any suspected illicit discharge. The summary must include: (i) the date that the suspected discharge was observed, reported, or both; (ii) how the investigation was resolved, including any follow-up, and (iii) resolution of the investigation and the date the investigation was closed.

4. Construction site stormwater runoff control.

a. Applicable oversight requirements. The operator shall utilize its legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to address discharges entering the MS4 from the following land-disturbing activities:
(1) Land-disturbing activities as defined in § 10.1-560 of the Code of Virginia that result in the disturbance of 10,000 square feet or greater;
(2) Land-disturbing activities in Tidewater jurisdictions, as defined in § 10.1-2101 of the Code of Virginia, that disturb 2,500 square feet or greater and are located in areas designated as Resource Protection Areas (RPA), Resource Management Areas (RMA) or Intensely Developed Acres (IDA), pursuant to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act;
(3) Land-disturbing activities disturbing less than the minimum land disturbance identified in subdivision (1) or (2) above for which a local ordinance requires that an erosion and sediment control plan be developed; and
(4) Land-disturbing activities on individual residential lots or sections of residential developments being developed by different property owners and where the total land disturbance of the residential development is 10,000 square feet or greater. The operator may utilize an agreement in lieu of a plan as provided in § 10.1-563 of the Code of Virginia for this category of land disturbances.

b. Required plan approval prior to commencement of the land disturbing activity. The operator shall require that land disturbance not begin until an erosion and sediment control plan or an agreement in lieu of a plan as provided in § 10.1-563 is approved by a VESCP authority in accordance with the Erosion and Sediment Control Act (§ 10.1-560 et seq.). The plan shall be:
(1) Compliant with the minimum standards identified in 4VAC-50-30-40 of the Erosion and Sediment Control Regulations; or
(2) Compliant with department-approved annual standards and specifications. Where applicable, the plan shall be consistent with any additional or more stringent, or both, erosion and sediment control requirements established by state regulation or local ordinance.

c. Compliance and enforcement.
(1) The operator shall inspect land-disturbing activities for compliance with an approved erosion and sediment control plan or agreement in lieu of a plan in accordance with the minimum standards identified in 4VAC50-30-40 or with department-approved annual standards and specifications.
(2) The operator shall implement an inspection schedule for land-disturbing activities identified in Section II B 4 a as follows:
(a) Upon initial installation of erosion and sediment controls;
(b) At least once during every two-week period;
(c) Within 48 hours of any runoff-producing storm event; and
(d) Upon completion of the project and prior to the release of any applicable performance bonds.
Where an operator establishes an alternative inspection program as provided for in 4VAC50-30-60 B 2, the written schedule shall be implemented in lieu of Section II B 4 c (2) and the written plan shall be included in the MS4 Program Plan.
(3) Operator inspections shall be conducted by personnel who hold a certificate of competence in accordance with 4VAC-50-50-40. Documentation of certification shall be made available upon request by the VESCP authority or other regulatory agency.
(4) The operator shall promote to the public a mechanism for receipt of complaints regarding regulated land-disturbing activities and shall follow up on any complaints regarding potential water quality and compliance issues.
(5) The operator shall utilize its legal authority to require compliance with the approved plan where an inspection finds that the approved plan is not being properly implemented.
(6) The operator shall utilize, as appropriate, its legal authority to require changes to an approved plan when a inspection finds that the approved plan is inadequate to effectively control soil erosion, sediment deposition, and runoff to prevent the unreasonable degradation of properties, stream channels, waters, and other natural resources.
(7) The operator shall require implementation of appropriate controls to prevent nonstormwater discharges to the MS4, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during land-disturbing activity inspections of the MS4. The discharge of nonstormwater discharges other than those identified in 4VAC50-60-1220 through the MS4 is not authorized by this state permit.
(8) The operator may develop and implement a progressive compliance and enforcement strategy provided that such strategy is included in the MS4 Program Plan and is consistent with 4VAC50-30.

d. Regulatory coordination. The operator shall implement enforceable procedures to require that large construction activities as defined in 4VAC50-60-10 and small construction activities as defined in 4VAC50-60-10, including municipal construction activities, secure necessary state permit authorizations from the department to discharge stormwater.

e. MS4 Program requirements. The operator's MS4 Program Plan shall include:
(1) A description of the legal authorities utilized to ensure compliance with the minimum control measure in Section II related to construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements;
(2) Written plan review procedures and all associated documents utilized in plan review;
(3) For the MS4 operators who obtain department-approved standards and specifications, a copy of the current standards and specifications;
(4) Written inspection procedures and all associated documents utilized during inspection including the inspection schedule;
(5) Written procedures for compliance and enforcement, including a progressive compliance and enforcement strategy, where appropriate; and
(6) The roles and responsibilities of each of the operator's departments, divisions, or subdivisions in implementing the minimum control measure in Section II related to construction site stormwater runoff control. If the operator utilizes another entity to implement portions of the MS4 Program Plan, a copy of the written agreement must be retained in the

MS4 Program Plan. The description of each party's roles and responsibilities, including any written agreements with third parties, shall be updated as necessary.
Reference may be made to any listed requirements in this subdivision provided the location of where the reference material can be found is included and the reference material is made available to the public upon request.

f. Reporting requirements. The operator shall track regulated land-disturbing activities and submit the following information in all annual reports:
(1) Total number of regulated land-disturbing activities;
(2) Total number of acres disturbed;
(3) Total number of inspections conducted; and
(4) A summary of the enforcement actions taken, including the total number and type of enforcement actions taken during the reporting period.

5. Post-construction stormwater management in new development and development on prior developed lands.

a. Applicable oversight requirements. The operator shall address post-construction stormwater runoff that enters the MS4 from the following land-disturbing activities:
(1) New development and development on prior developed lands that are defined as large construction activities or small construction activities in 4VAC50-60-10;
(2) New development and development on prior developed lands that disturb greater than or equal to 2,500 square feet, but less than one acre, located in a Chesapeake Bay Preservation Area designated by a local government located in Tidewater, Virginia, as defined in § 10.1-2101 of the Code of Virginia; and
(3) New development and development on prior developed lands where an applicable state regulation or local ordinance has designated a more stringent regulatory size threshold than that identified in subdivision (1) or (2) above.

b. Required design criteria for stormwater runoff controls. The operator shall utilize legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to require that activities identified in Section II B 5 a address stormwater runoff in such a manner that stormwater runoff controls are designed and installed:
(1) In accordance with the appropriate water quality and water quantity design criteria as required in Part II (4VAC50-60-40 et seq.) of 4VAC50-60;
(2) In accordance with any additional applicable state or local design criteria required at project initiation; and
(3) Where applicable, in accordance with any department-approved annual standards and specifications.
Upon board approval of a Virginia Stormwater Management Program authority (VSMP Authority) as defined in § 10.1-603.2 of the Code of Virginia and reissuance of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Construction Activities, the operator shall require that stormwater management plans are approved by the appropriate VSMP Authority prior to land disturbance. In accordance with § 10.1-603.3 M of the Code of Virginia, VSMPs shall become effective July 1, 2014, unless otherwise specified by state law or by the board.

c. Inspection, operation, and maintenance verification of stormwater management facilities.
(1) For stormwater management facilities not owned by the MS4 operator, the following conditions apply:
(a) The operator shall require adequate long-term operation and maintenance by the owner of the stormwater management facility by requiring the owner to develop a recorded inspection schedule and maintenance agreement to the extent allowable under state or local law or other legal mechanism;

(b) The operator or his designee shall implement a schedule designed to inspect all privately owned stormwater management facilities that discharge into the MS4 at least once every five years to document that maintenance is being conducted in such a manner to ensure long-term operation in accordance with the approved designs.
(c) The operator shall utilize its legal authority for enforcement of maintenance responsibilities if maintenance is neglected by the owner. The operator may develop and implement a progressive compliance and enforcement strategy provided that the strategy is included in the MS4 Program Plan.
(d) Beginning with the issuance of this state permit, the operator may utilize strategies other than maintenance agreements such as periodic inspections, homeowner outreach and education, and other methods targeted at promoting the long-term maintenance of stormwater control measures that are designed to treat stormwater runoff solely from the individual residential lot. Within 12 months of coverage under this permit, the operator shall develop and implement these alternative strategies and include them in the MS4 Program Plan.
(2) For stormwater management facilities owned by the MS4 operator, the following conditions apply:
(a) The operator shall provide for adequate long-term operation and maintenance of its stormwater management facilities in accordance with written inspection and maintenance procedures included in the MS4 Program Plan.
(b) The operator shall inspect these stormwater management facilities annually. The operator may choose to implement an alternative schedule to inspect these stormwater management facilities based on facility type and expected maintenance needs provided that the alternative schedule is included in the MS4 Program Plan.
(c) The operator shall conduct maintenance on its stormwater management facilities as necessary.

d. MS4 Program Plan requirements. The operator's MS4 Program Plan shall be updated in accordance with Table 1 in this section to include:
(1) A list of the applicable legal authorities such as ordinance, state and other permits, orders, specific contract language, and interjurisdictional agreements to ensure compliance with the minimum control measure in Section II related to post-construction stormwater management in new development and development on prior developed lands;
(2) Written policies and procedures utilized to ensure that stormwater management facilities are designed and installed in accordance with Section II B 5 b;
(3) Written inspection policies and procedures utilized in conducting inspections;
(4) Written procedures for inspection, compliance and enforcement to ensure maintenance is conducted on private stormwater facilities to ensure long-term operation in accordance with approved design;
(5) Written procedures for inspection and maintenance of operator-owned stormwater management facilities;
(6) The roles and responsibilities of each of the operator's departments, divisions, or subdivisions in implementing the minimum control measure in Section II related to post-construction stormwater management in new development and development on prior developed lands. If the operator utilizes another entity to implement portions of the MS4 Program Plan, a copy of the written agreement must be retained in the MS4 Program Plan. Roles and responsibilities shall be updated as necessary.

e. Stormwater management facility tracking and reporting requirements. The operator shall maintain an updated electronic database of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4. The database shall include the following:
(1) The stormwater management facility type;
(2) A general description of the facility's location, including the address or latitude and longitude;

(3) The acres treated by the facility, including total acres, as well as the breakdown of pervious and impervious acres;
(4) The date the facility was brought online (MM/YYYY). If the date is not known, the operator shall use June 30, 2005, as the date brought online for all previously existing stormwater management facilities;
(5) The sixth order hydrologic unit code (HUC) in which the stormwater management facility is located;
(6) The name of any impaired water segments within each HUC listed in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report to which the stormwater management facility discharges;
(7) Whether the stormwater management facility is operator-owned or privately-owned;
(8) Whether a maintenance agreement exists if the stormwater management facility is privately owned; and
(9) The date of the operator's most recent inspection of the stormwater management facility.
In addition, the operator shall annually track and report the total number of inspections completed and, when applicable, the number of enforcement actions taken to ensure long-term maintenance.

The operator shall submit an electronic database or spreadsheet of all stormwater management facilities brought online during each reporting year with the appropriate annual report. Upon such time as the department provides the operators access to a statewide web-based reporting electronic database or spreadsheet, the operator shall utilize such database to complete the pertinent reporting requirements of this state permit.

6. Pollution prevention/good housekeeping for municipal operations.

a. Operations and maintenance activities. The MS4 Program Plan submitted with the registration statement shall be implemented by the operator until updated in accordance with this state permit. In accordance with Table 1 in this section, the operator shall develop and implement written procedures designed to minimize or prevent pollutant discharge from: (i) daily operations such as road, street, and parking lot maintenance; (ii) equipment maintenance; and (iii) the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers. The written procedures shall be utilized as part of the employee training. At a minimum, the written procedures shall be designed to:
(1) Prevent illicit discharges;
(2) Ensure the proper disposal of waste materials, including landscape wastes;
(3) Prevent the discharge of municipal vehicle wash water into the MS4 without authorization under a separate VPDES permit;
(4) Prevent the discharge of wastewater into the MS4 without authorization under a separate VPDES permit;
(5) Require implementation of best management practices when discharging water pumped from utility construction and maintenance activities;
(6) Minimize the pollutants in stormwater runoff from bulk storage areas (e.g., salt storage, topsoil stockpiles) through the use of best management practices;
(7) Prevent pollutant discharge into the MS4 from leaking municipal automobiles and equipment; and
(8) Ensure that the application of materials, including fertilizers and pesticides, is conducted in accordance with the manufacturer's recommendations.

b. Municipal facility pollution prevention and good housekeeping.
(1) Within 12 months of state permit coverage, the operator shall identify all municipal high-priority facilities. These high-priority facilities shall include (i) composting facilities, (ii) equipment storage and maintenance facilities, (iii) materials storage yards, (iv) pesticide storage facilities, (v) public works yards, (vi) recycling facilities, (vii) salt storage facilities, (viii) solid waste handling and transfer facilities, and (ix) vehicle storage and maintenance yards.

(2) Within 12 months of state permit coverage, the operator shall identify which of the municipal high-priority facilities have a high potential of discharging pollutants. Municipal high-priority facilities that have a high potential for discharging pollutants are those facilities identified in subsection (1) above that are not covered under a separate VPDES permit and which any of the following materials or activities occur and are expected to have exposure to stormwater resulting from rain, snow, snowmelt or runoff:
(a) Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
(b) Materials or residuals on the ground or in stormwater inlets from spills or leaks;
(c) Material handling equipment (except adequately maintained vehicles);
(d) Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);
(e) Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
(f) Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
(g) Waste material except waste in covered, non-leaking containers (e.g., dumpsters);
(h) Application or disposal of process wastewater (unless otherwise permitted); or
(i) Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.
(3) The operator shall develop and implement specific stormwater pollution prevention plans for all high-priority facilities identified in subdivision 2 of this subsection. The operator shall complete SWPPP development and implementation shall be completed within 48 months of coverage under this state permit. Facilities covered under a separate VDPES permit shall adhere to the conditions established in that permit and are excluded from this requirement.
(4) Each SWPPP shall include:
(a) A site description that includes a site map identifying all outfalls, direction of flows, existing source controls, and receiving water bodies;
(b) A discussion and checklist of potential pollutants and pollutant sources;
(c) A discussion of all potential nonstormwater discharges;
(d) Written procedures designed to reduce and prevent pollutant discharge;
(e) A description of the applicable training as required in Section II B 6 d;
(f) Procedures to conduct an annual comprehensive site compliance evaluation;
(g) An inspection and maintenance schedule for site specific source controls. The date of each inspection and associated findings and follow-up shall be logged in each SWPPP;
(h) The contents of each SWPPP shall be evaluated and modified as necessary to accurately reflect any discharge, release, or spill from the high priority facility reported in accordance with Section III G. For each such discharge, release, or spill, the SWPPP must include the following information: date of incident; material discharged, released, or spilled; and quantity discharged, released or spilled; and
(i) A copy of each SWPPP shall be kept at each facility and shall be kept updated and utilized as part of staff training required in Section II B 6 d.

c. Turf and Landscape management.
(1) The operator shall implement turf and landscape nutrient management plans that have been developed by a certified turf and landscape nutrient management planner in accordance with § 10.1-104.2 of the Code of Virginia on all lands owned or operated by the MS4 operator where nutrients are applied to a contiguous area greater than one acre. Implementation shall be in accordance with the following schedule:
(a) Within 12 months of state permit coverage, the operator shall identify all applicable lands where nutrients are applied to a contiguous area of more than one acre. A latitude and longitude shall be provided for each such piece of land and reported in the annual report.
(b) Within 60 months of state permit coverage, the operator shall implement turf and landscape nutrient management plans on all lands where nutrients are applied to a

contiguous area of more than one acre. The following measurable outcomes are established for the implementation of turf and landscape nutrient management plans: (i) within 24 months of permit coverage, not less than 15% of all identified acres will be covered by turf and landscape nutrient management plans; (ii) within 36 months of permit coverage, not less than 40% of all identified acres will be covered by turf and landscape nutrient management plans; and (iii) within 48 months of permit coverage, not less than 75% of all identified acres will be covered by turf and landscape nutrient management plans. The operator shall not fail to meet the measurable goals for two consecutive years.
(c) MS4 operators with lands regulated under § 10.1-104.4 of the Code of Virginia shall continue to implement turf and landscape nutrient management plans in accordance with this statutory requirement.
(2) Operators shall annually track the following:
(a) The total acreage of lands where turf and landscape nutrient management plans are required; and
(b) The acreage of lands upon which turf and landscape nutrient management plans have been implemented.
(3) The operator shall not apply any deicing agent containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, and sidewalks, or other paved surfaces.

d. Training. The operator shall conduct training for employees. The training requirements may be fulfilled, in total or in part, through regional training programs involving two or more MS4 localities provided; however, that each operator shall remain individually liable for its failure to comply with the training requirements in this permit. Training is not required if the topic is not applicable to the operator's operations and therefore does not have applicable personnel provided the lack of applicability is documented in the MS4 Program Plan. The operator shall determine and document the applicable employees or positions to receive each type of training. The operator shall develop an annual written training plan including a schedule of training events that ensures implementation of the training requirements as follows:
(1) The operator shall provide biennial training to applicable field personnel in the recognition and reporting of illicit discharges.
(2) The operator shall provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed during road, street, and parking lot maintenance.
(3) The operator shall provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed in and around maintenance and public works facilities.
(4) The operator shall ensure that employees, and require that contractors, who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act (§3.2-3900 et seq. of the Code of Virginia).
(5) The operator shall ensure that employees and contractors serving as plan reviewers, inspectors, program administrators, and construction site operators obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations.
(6) The operator shall ensure that applicable employees obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations.
(7) The operators shall provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed in and around recreational facilities.
(8) The appropriate emergency response employees shall have training in spill responses. A summary of the training or certification program provided to emergency response employees shall be included in the first annual report.
(9) The operator shall keep documentation on each training event including the training date, the number of employees attending the training, and the objective of the training event for a period of three years after each training event.

e. The operator shall require that municipal contractors use appropriate control measures and procedures for stormwater discharges to the MS4 system. Oversight procedures shall be described in the MS4 Program Plan.

f. At a minimum, the MS4 Program Plan shall contain:
(1) The written protocols being used to satisfy the daily operations and maintenance requirements;
(2) A list of all municipal high-priority facilities that identifies those facilities that have a high potential for chemicals or other materials to be discharged in stormwater and a schedule that identifies the year in which an individual SWPPP will be developed for those facilities required to have a SWPPP. Upon completion of a SWPPP, the SWPPP shall be part of the MS4 Program Plan. The MS4 Program Plan shall include the location in which the individual SWPPP is located;
(3) A list of lands where nutrients are applied to a contiguous area of more than one acre. Upon completion of a turf and landscape nutrient management plan, the turf and landscape nutrient management plan shall be part of the MS4 Program Plan. The MS4 Program Plan shall include the location in which the individual turf and landscape nutrient management plan is located; and
(4) The annual written training plan for the next reporting cycle.

g. Annual reporting requirements.
(1) A summary report on the development and implementation of the daily operational procedures;
(2) A summary report on the development and implementation of the required SWPPPs;
(3) A summary report on the development and implementation of the turf and landscape nutrient management plans that includes:
(a) The total acreage of lands where turf and landscape nutrient management plans are required; and
(b) The acreage of lands upon which turf and landscape nutrient management plans have been implemented; and
(4) A summary report on the required training, including a list of training events, the training date, the number of employees attending training and the objective of the training.

C. If an existing program requires the implementation of one or more of the minimum control measures of Section II B, the operator, with the approval of the board, may follow that program's requirements rather than the requirements of Section II B. A program that may be considered includes, but is not limited to, a local, state or tribal program that imposes, at a minimum, the relevant requirements of Section II B.

The operator's MS4 Program Plan shall identify and fully describe any program that will be used to satisfy one or more of the minimum control measures of Section II B.

If the program the operator is using requires the approval of a third party, the program must be fully approved by the third party, or the operator must be working towards getting full approval. Documentation of the program's approval status, or the progress towards achieving full approval, must be included in the annual report required by Section II E 3. The operator remains responsible for compliance with the permit requirements if the other entity fails to implement the control measures (or component thereof).

D. The operator may rely on another entity to satisfy the state permit requirements to implement a minimum control measure if: (i) the other entity, in fact, implements the control measure; (ii) the particular control measure, or component thereof, is at least as stringent as the corresponding state permit requirement; and (iii) the other entity agrees to implement the control measure on behalf of the operator. The agreement between the parties must be documented in writing and retained by the operator with the MS4 Program Plan for the duration of this state permit.

In the annual reports that must be submitted under Section II E 3, the operator must specify that another entity is being relied on to satisfy some of the state permit requirements.

If the operator is relying on another governmental entity regulated under 4VAC50-60-380 to satisfy all of the state permit obligations, including the obligation to file periodic reports required by Section II E 3,

the operator must note that fact in the registration statement, but is not required to file the periodic reports.

The operator remains responsible for compliance with the state permit requirements if the other entity fails to implement the control measure (or component thereof).

E. Evaluation and assessment.

1. MS4 Program Evaluation. The operator must annually evaluate:
   a. Program compliance;
   b. The appropriateness of the identified BMPs (as part of this evaluation, the operator shall evaluate the effectiveness of BMPs in addressing discharges into waters that are identified as impaired in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report); and
   c. Progress towards achieving the identified measurable goals.

2. Recordkeeping. The operator must keep records required by the state permit for at least three years. These records must be submitted to the department only upon specific request. The operator must make the records, including a description of the stormwater management program, available to the public at reasonable times during regular business hours.

3. Annual reports. The operator must submit an annual report for the reporting period of July 1 through June 30 to the department by the following October 1 of that year. The reports shall include:
   a. Background Information.
   (1) The name and state permit number of the program submitting the annual report;
   (2) The annual report permit year;
   (3) Modifications to any operator's department's roles and responsibilities;
   (4) Number of new MS4 outfalls and associated acreage by HUC added during the permit year; and
   (5) Signed certification.
   b. The status of compliance with state permit conditions, an assessment of the appropriateness of the identified best management practices and progress towards achieving the identified measurable goals for each of the minimum control measures;
   c. Results of information collected and analyzed, including monitoring data, if any, during the reporting period;
   d. A summary of the stormwater activities the operator plans to undertake during the next reporting cycle;
   e. A change in any identified best management practices or measurable goals for any of the minimum control measures including steps to be taken to address any deficiencies;
   f. Notice that the operator is relying on another government entity to satisfy some of the state permit obligations (if applicable);
   g. The approval status of any programs pursuant to Section II C (if appropriate), or the progress towards achieving full approval of these programs; and
   h. Information required for any applicable TMDL special condition contained in Section I.

F. Program Plan modifications.

1. Program modifications requested by the operator. Modifications to the MS4 Program are expected throughout the life of this state permit as part of the iterative process to reduce the pollutant loadings and to protect water quality. As such, modifications made in accordance with this state permit as a result of the iterative process do not require modification of this permit unless the department determines that the changes meet the criteria referenced in 4VAC50-60-630 or 4VAC50-60-650. Updates and modifications to the MS4 Program may be made during the life of this state permit in accordance with the following procedures:
   a. Adding (but not eliminating or replacing) components, controls, or requirements to the MS4 Program may be made by the operator at any time. Additions shall be reported as part of the annual report.
   b. Updates and modifications to specific standards and specifications, schedules, operating procedures, ordinances, manuals, checklists, and other documents routinely evaluated and

modified are permitted under this state permit provided that the updates and modifications are done in a manner that (i) is consistent with the conditions of this state permit, (ii) follow any public notice and participation requirements established in this state permit, and (iii) are documented in the annual report.

c. Replacing, or eliminating without replacement, any ineffective or infeasible strategies, policies, and BMPs specifically identified in this permit with alternate strategies, policies, and BMPs may be requested at any time. Such requests must be made in writing to the department and signed in accordance with 4VAC50-60-370, and include the following:

(1) An analysis of how or why the BMPs, strategies, or policies are ineffective or infeasible, including information on whether the BMPs, strategies, or policies are cost prohibitive;

(2) Expectations regarding the effectiveness of the replacement BMPs, strategies, or policies;

(3) An analysis of how the replacement BMPs are expected to achieve the goals of the BMP's to be replaced;

(4) A schedule for implementing the replacement BMPs, strategies, and policies; and

(5) An analysis of how the replacement strategies and policies are expected to improve the operator's ability to meet the goals of the strategies and policies being replaced.

d. The operator follows the public involvement requirements identified in Section II B 2 (a).

2. MS4 Program updates requested by the department. In a manner and following procedures in accordance with the Virginia Administrative Process Act, the Virginia Stormwater Management regulations, and other applicable state law and regulations, the department may request changes to the MS4 Program to assure compliance with the statutory requirements of the Virginia Stormwater Management Act and its attendant regulations to:

a. Address impacts on receiving water quality caused by discharges from the MS4;

b. Include more stringent requirements necessary to comply with new state or federal laws or regulations; or

c. Include such other conditions necessary to comply with state or federal law or regulation.

Proposed changes requested by the department shall be made in writing and set forth the basis for and objective of the modification as well as the proposed time schedule for the operator to develop and implement the modification. The operator may propose alternative program modifications or time schedules to meet the objective of the requested modification, but any such modifications are at the discretion of the department.

SECTION III

CONDITIONS APPLICABLE TO ALL STATE PERMITS

A. Monitoring.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Monitoring shall be conducted according to procedures approved under 40 CFR Part 136 (2001) or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this state permit.

3. The operator shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will insure accuracy of measurements.

B. Records.

1. Monitoring records/reports shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) and time(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

2. The operator shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this state permit, and records of all data used to complete the registration statement for this state permit, for a period of at least three years from the date of the sample, measurement, report or request for coverage. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the operator, or as requested by the board.

C. Reporting monitoring results.

1. The operator shall submit the results of the monitoring required by this state permit with the annual report unless another reporting schedule is specified elsewhere in this state permit.
2. Monitoring results shall be reported on a Discharge Monitoring Report (DMR); on forms provided, approved or specified by the department; or in any format provided the date, location, parameter, method, and result of the monitoring activity are included.
3. If the operator monitors any pollutant specifically addressed by this state permit more frequently than required by this state permit using test procedures approved under 40 CFR Part 136 (2001) or using other test procedures approved by the U.S. Environmental Protection Agency or using procedures specified in this state permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the department.
4. Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this state permit.

D. Duty to provide information. The operator shall furnish to the department, within a reasonable time, any information that the board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this state permit or to determine compliance with this state permit. The board may require the operator to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of surface waters, or such other information as may be necessary to accomplish the purposes of the CWA and Virginia Stormwater Management Act. The operator shall also furnish to the department upon request, copies of records required to be kept by this permit.

E. Compliance schedule reports. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this state permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized stormwater discharges. Pursuant to § 10.1-603.2:2 A of the Code of Virginia, except in compliance with a state permit issued by the board, it shall be unlawful to cause a stormwater discharge from a MS4.

G. Reports of unauthorized discharges. Any operator of a small MS4 who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance or a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110 (2002), 40 CFR Part 117 (2002) or 40 CFR Part 302 (2002) that occurs during a 24-hour period into or upon surface waters; or who discharges or causes or allows a discharge that may reasonably be expected to enter surface waters, shall notify the Department of Environmental Quality of the discharge immediately upon discovery of the discharge, but in no case later than within 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the Department of Environmental Quality and the Department of Conservation and Recreation, within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;

6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this state permit.

Discharges reportable to the Department of Environmental Quality and the Department of Conservation and Recreation under the immediate reporting requirements of other regulations are exempted from this requirement.

H. Reports of unusual or extraordinary discharges. If any unusual or extraordinary discharge including a " bypass " or " upset," as defined herein, should occur from a facility and the discharge enters or could be expected to enter surface waters, the operator shall promptly notify, in no case later than within 24 hours, the Department of Environmental Quality and the Department of Conservation and Recreation by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse affects on aquatic life and the known number of fish killed. The operator shall reduce the report to writing and shall submit it to the Department of Environmental Quality and the Department of Conservation and Recreation within five days of discovery of the discharge in accordance with Section III I 2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;
2. Breakdown of processing or accessory equipment;
3. Failure or taking out of service some or all of the facilities; and
4. Flooding or other acts of nature.

I. Reports of noncompliance. The operator shall report any noncompliance which may adversely affect surface waters or may endanger public health.

1. An oral report shall be provided within 24 hours to the Department of Environmental Quality and the Department of Conservation and Recreation from the time the operator becomes aware of the circumstances. The following shall be included as information which shall be reported within 24 hours under this paragraph:
   a. Any unanticipated bypass; and
   b. Any upset which causes a discharge to surface waters.
2. A written report shall be submitted within five days and shall contain:
   a. A description of the noncompliance and its cause;
   b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
   c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

   The board or its designee may waive the written report on a case-by-case basis for reports of noncompliance under Section III I if the oral report has been received within 24 hours and no adverse impact on surface waters has been reported.
3. The operator shall report all instances of noncompliance not reported under Sections III I 1 or 2, in writing, at the time the next monitoring reports are submitted. The reports shall contain the information listed in Section III I 2.

   NOTE: The immediate (within 24 hours) reports required to be provided to the Department of Environmental Quality in Sections III G, H and I may be made to the appropriate Department of Environmental Quality's Regional Office Pollution Response Program as found at http://deq.virginia.gov/Programs/PollutionResponsePreparedness.aspx. Reports may be made by telephone or by fax. For reports outside normal working hours, leave a message and this shall fulfill the immediate reporting requirement. **For emergencies, the Virginia Department of Emergency Services maintains a 24-hour telephone service at 1-800-468-8892.**
4. Where the operator becomes aware of a failure to submit any relevant facts, or submittal of incorrect information in any report to the department or the Department of Environmental Quality, it shall promptly submit such facts or correct information.

J. Notice of planned changes.

1. The operator shall give notice to the department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The operator plans an alteration or addition to any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

(1) After promulgation of standards of performance under § 306 of the Clean Water Act that are applicable to such source; or

(2) After proposal of standards of performance in accordance with § 306 of the Clean Water Act that are applicable to such source, but only if the standards are promulgated in accordance with § 306 within 120 days of their proposal;

b. The operator plans alteration or addition that would significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this state permit; or

2. The operator shall give advance notice to the department of any planned changes in the permitted facility or activity; which may result in noncompliance with state permit requirements.

K. Signatory requirements.

1. Registration statement. All registration statements shall be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for state permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a public agency includes:

(1) The chief executive officer of the agency, or

(2) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

2. Reports, etc. All reports required by state permits, and other information requested by the board shall be signed by a person described in Section III K 1, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Section III K 1;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the operator. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

c. The written authorization is submitted to the department.

3. Changes to authorization. If an authorization under Section III K 2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Section III K 2 shall be submitted to the department prior to or together with any reports, or information to be signed by an authorized representative.

4. Certification. Any person signing a document under Sections III K 1 or 2 shall make the following certification:
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

L. Duty to comply. The operator shall comply with all conditions of this state permit. Any state permit noncompliance constitutes a violation of the Virginia Stormwater Management Act and the Clean Water Act, except that noncompliance with certain provisions of this state permit may constitute a violation of the Virginia Stormwater Management Act but not the Clean Water Act. State permit noncompliance is grounds for enforcement action; for state permit termination, revocation and reissuance, or modification; or denial of a state permit renewal application.

The operator shall comply with effluent standards or prohibitions established under § 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this state permit has not yet been modified to incorporate the requirement.

M. Duty to reapply. If the operator wishes to continue an activity regulated by this state permit after the expiration date of this state permit, the operator shall submit a new registration statement at least 90 days before the expiration date of the existing state permit, unless permission for a later date has been granted by the board. The board shall not grant permission for registration statements to be submitted later than the expiration date of the existing state permit.

N. Effect of a state permit. This state permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, or any infringement of federal, state or local law or regulations.

O. State law. Nothing in this state permit shall be construed to preclude the institution of any legal action under, or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by § 510 of the Clean Water Act. Except as provided in state permit conditions on "bypassing" (Section III U), and "upset" (Section III V) nothing in this state permit shall be construed to relieve the operator from civil and criminal penalties for noncompliance.

P. Oil and hazardous substance liability. Nothing in this state permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties to which the operator is or may be subject under §§ 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law or § 311 of the Clean Water Act.

Q. Proper operation and maintenance. The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the operator to achieve compliance with the conditions of this state permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by the operator only when the operation is necessary to achieve compliance with the conditions of this state permit.

R. Disposal of solids or sludges. Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering surface waters.

S. Duty to mitigate. The operator shall take all reasonable steps to minimize or prevent any discharge in violation of this state permit that has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to halt or reduce activity not a defense. It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this state permit.

U. Bypass.

1. "Bypass," as defined in 4VAC50-60-10, means the intentional diversion of waste streams from any portion of a treatment facility. The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Sections III U 2 and U 3.
2. Notice.
   a. Anticipated bypass. If the operator knows in advance of the need for a bypass, prior notice shall be submitted, if possible at least 10 days before the date of the bypass.
   b. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Section III I.
3. Prohibition of bypass.
   a. Bypass is prohibited, and the board or its designee may take enforcement action against an operator for bypass, unless:
   (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
   (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and
   (3) The operator submitted notices as required under Section III U 2.
   b. The board or its designee may approve an anticipated bypass, after considering its adverse effects, if the board or its designee determines that it will meet the three conditions listed above in Section III U 3 a.

V. Upset.

1. An upset, as defined in 4VAC50-60-10, constitutes an affirmative defense to an action brought for noncompliance with technology based state permit effluent limitations if the requirements of Section III V 2 are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.
2. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
3. An operator who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
   a. An upset occurred and that the operator can identify the cause(s) of the upset;
   b. The permitted facility was at the time being properly operated;
   c. The operator submitted notice of the upset as required in Section III I; and
   d. The operator complied with any remedial measures required under Section III S.
4. In any enforcement proceeding the operator seeking to establish the occurrence of an upset has the burden of proof.

W. Inspection and entry. The operator shall allow the department as the board's designee, or an authorized representative (including an authorized contractor acting as a representative of the administrator), upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this state permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this state permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this state permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring state permit compliance or as otherwise authorized by the Clean Water Act and the Virginia Stormwater Management Act, any substances or parameters at any location.
For purposes of this subsection, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. State permit actions. State permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the operator for a state permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any state permit condition.

Y. Transfer of state permits.
1. State permits are not transferable to any person except after notice to the department. Except as provided in Section III Y 2, a state permit may be transferred by the operator to a new owner or operator only if the state permit has been modified or revoked and reissued, or a minor modification made, to identify the new operator and incorporate such other requirements as may be necessary under the Virginia Stormwater Management Act and the Clean Water Act.
2. As an alternative to transfers under Section III Y 1, this state permit may be automatically transferred to a new operator if:
a. The current operator notifies the department at least two days in advance of the proposed transfer of the title to the facility or property;
b. The notice includes a written agreement between the existing and new operators containing a specific date for transfer of state permit responsibility, coverage, and liability between them; and
c. The board does not notify the existing operator and the proposed new operator of its intent to modify or revoke and reissue the state permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Section III Y 2 b.

Z. Severability. The provisions of this state permit are severable, and if any provision of this state permit or the application of any provision of this state permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this state permit, shall not be affected thereby.

Appendix C– Construction Site Stormwater Runoff Control Procedures, Guidance and SOPs

Appendix C1– MS4 Construction Site Inspection Procedures and Tracking Mechanism User's Manual

MS4 Construction Site Inspection Procedures and Tracking Mechanism User's Manual

Hampton Roads Installations

Task Orders WE09 and WE74

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PART II – TRACKING MECHANISM USER'S MANUAL

Acronyms and Abbreviations

CGP	Construction General Permit
CI	Capital Improvement
CM	Construction Manager
CS/CD	Construction Supervisor/Construction Director
DFSCCI	Defense Fuel Support Center: Craney Island
DFSCYF	Defense Fuel Support Center: Yorktown
E&S Plan	Erosion and Sediment Control Plan
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
FEAD	Facilities, Engineering, and Acquisitions Department
IDA	Intensely Developed Acres
JEB	Joint Expeditionary Base
JEBLC	Joint Expeditionary Base West: Little Creek
JEBFS	Joint Expeditionary Base East: Fort Story
LDA	land disturbing activities
MS4	Municipal Separate Storm Sewer System
MCM	Minimum Control Measure
N/A	Not Applicable
NALF	Naval Auxiliary Landing Field Fentress
NASDN	Naval Air Station Oceana Dam Neck Annex
NASOC	Naval Air Station Oceana
NNSYSA	Norfolk Naval Shipyard: Southgate Annex
NNSYSH	Norfolk Naval Shipyard: St Helena
NPDES	National Pollutant Discharge Elimination System
NSAHR	Naval Support Activity Hampton Roads
NSANW	Naval Support Activity Hampton Roads: Northwest Annex
NSAPX	Support Activity Hampton Roads: Portsmouth Annex
NSN	Naval Station Norfolk
NSNSJ	Naval Station Norfolk: St Juliens Creek Annex
NWSCX	Naval Weapons Station Yorktown: Cheatham Annex
NWSYT	Naval Weapons Station Yorktown
RMA	Resource Management Area
RPA	Resource Protection Area
SCA	Scott Center Annex
TBD	To be determined
VDEQ	Virginia Department of Environmental Quality
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program

SECTION 1

Purpose and Background

1.1 Purpose

The purpose of the Municipal Separate Storm Sewer System (MS4) Construction Site Inspection Procedures document is to establish written inspection procedures for regulated land disturbing activities (LDAs) at naval installations as required by the General Permit for Discharges of Stormwater from Small MS4s, Permit VAR040114. This document also describes the components of the Navy construction site inspection program in accordance with the requirements of Small MS4 General Permit Section II B 4 and the Department of the Navy Environmental Readiness Program (OPNAV M-5090.1). The written procedures identify the criteria utilized by the MS4 program to ensure construction site operators comply with the Virginia Erosion and Sediment Control Regulations and the Virginia Stormwater Management Program (VSMP) Permit regulations.

1.2 Background

In December 1999, the National Pollutant Discharge Elimination System (NPDES) Stormwater Permit program (64 Fed. Reg. 68722) was expanded to include provisions for stormwater discharges from: 1) "small" MS4s serving populations of less than 100,000 people in an "urbanized area", and 2) construction activities disturbing between one and five acres of land. The regulations allowed the Environmental Protection Agency (EPA) to designate States as Stormwater Permitting Authorities, allowing each authorized State to administer and enforce stormwater requirements consistent with the NPDES program. As a delegated State, the Commonwealth of Virginia was required to put into practice an MS4 Phase II General Permit by December 9, 2002. The current MS4 Permit VAR04 became effective on July 1, 2013 and is valid for a 5 year permit cycle, expiring on June 30, 2018. It is included in Attachment 1.

There are several naval installations in the Commonwealth of Virginia that meet the criteria for small MS4 designation. The naval installations in the Hampton Roads area that are currently covered under the Navy's consolidated MS4 Permit VAR040114 include:

1. Naval Station Norfolk
2. Naval Support Activity Hampton Roads (excluding NSA Northwest)
3. Joint Expeditionary Base West: Little Creek
4. Joint Expeditionary Base East: Fort Story
5. Naval Air Station Oceana
6. Naval Air Station Oceana: Dam Neck Annex
7. Naval Support Activity Hampton Roads: Portsmouth Annex
8. Scott Center Annex

The Navy developed a Regional Phase II Stormwater Program Plan for the Virginia General Permit for Small MS4s, which describes the actions the Navy will take to implement the Minimum Control Measures (MCM) as required by the permit. The MCMs include the development of written inspection procedures as well as the establishment and implementation of an inspection program for regulated land disturbing activities. The most recent Stormwater Program Plan addressing the MCMs established under the MS4 Permit can be found in the NAVFAC Environmental Compliance website in the link below:

http://www.navfac.navy.mil/navfac_worldwide/atlantic/fecs/mid-atlantic/about_us/environmental_norfolk/environmental_compliance.html

In addition, to promote good environmental stewardship, and as instructed on the OPNAV M-5090.1, construction site inspections shall be performed in Hampton Roads installations not covered under the MS4 Permit. These inspections will follow the same procedures established in the MS4 Permit Construction Site

Inspection Program but will be performed at a lesser frequency than those installations covered under the MS4 Permit. The Hampton Roads Installations not covered under the MS4 Permit include:

1. Defense Fuel Support Center: Craney Island
2. Naval Weapons Station Yorktown
3. Naval Weapons Station Yorktown: Cheatham Annex
4. Defense Fuel Support Center: Yorktown
5. Naval Auxiliary Landing Field Fentress
6. Naval Station Norfolk: Saint Juliens Creek Annex
7. Norfolk Naval Shipyard: St. Helena
8. Norfolk Naval Shipyard: Southgate Annex
9. Naval Support Activity Hampton Roads: Northwest Annex

SECTION 2

MS4 Permit Construction Site Inspection Program Components

2.1 Background

The MS4 Permit Section II B 4 construction site stormwater runoff control establishes the components of an inspection program. The components include:

- Oversight Requirements
- Approved Erosion and Sediment Control Plan
- Inspection Schedule
- Certification Requirements
- Procedures
- Reporting Requirements

This section will summarize these components.

2.2 Oversight Requirements

The MS4 Permit applicable oversight requirements state: *"The operator shall utilize its legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to address discharges entering the MS4 from the following land-disturbing activities: (1) Land-disturbing activities as defined in § 62.1-44.15:51 of the Code of Virginia that result in the disturbance of 10,000 square feet or greater; (2) Land-disturbing activities in jurisdictions in Tidewater Virginia, as defined in § 62.1-44.15:68 of the Code of Virginia, that disturb 2,500 square feet or greater and are located in areas designated as Resource Protection Areas (RPA), Resource Management Areas (RMA) or Intensely Developed Acres (IDA), pursuant to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act; (3) Land-disturbing activities disturbing less than the minimum land disturbance identified in subdivision (1) or (2) above for which a local ordinance requires that an erosion and sediment control plan be developed; and (4) Land-disturbing activities on individual residential lots or sections of residential developments being developed by different property owners and where the total land disturbance of the residential development is 10,000 square feet or greater. The operator may utilize an agreement in lieu of a plan as provided in § 62.1-44.15:55 of the Code of Virginia for this category of land disturbances."*

The VSMP Regulation (9VAC25-870-10) defines a land disturbing activity as a "manmade change to the land surface that potentially changes its runoff characteristics including clearing, grading, or excavation, except that the term shall not include those exemptions specified in § 62.1-44.15:34 of the Code of Virginia."

LDAs will be inspected at each of the eight Navy installations covered under the US Navy Consolidated MS4 Permit number VAR040114 in accordance with the minimum standards identified in 9VAC25-840-40. Certified Inspectors may be Navy personnel or contractors. In addition, the Inspector will inspect the implementation of appropriate controls to prevent non-stormwater discharges, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during LDAs in accordance with the MS4 Permit. Attachment 2 includes the minimum standards as per 9VAC25-840-40 of the Erosion and Sediment Control Regulations.

The Inspector will inspect projects with LDAs greater than 10,000 square feet. Projects disturbing land equal or greater than one acre must have coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities, also referred to as the Virginia Construction General Permit (CGP) Number VAR10 included as Attachment 3. The CGP VAR10

authorizes discharges under the VSMP and the Virginia Stormwater Management Act. The current CGP became effective on July 1, 2014 and is valid for a 5 year permit cycle, expiring on June 30, 2019.

2.3 Approved Erosion and Sediment Control Plan

The MS4 Permit requires the approval of an Erosion and Sediment Control Plan (E&S Plan) prior to commencement of LDA's. As stated in the permit, "*The plan shall be: (1) Compliant with the minimum standards identified in 9VAC25-840-40 of the Erosion and Sediment Control Regulations; or (2) Compliant with department-approved annual standards and specifications. Where applicable, the plan shall be consistent with any additional or more stringent, or both, erosion and sediment control requirements established by state regulation or local ordinance.*"

The E&S Plan is a document that describes the potential for erosion and sediment on a construction project. It describes and illustrates the measures to be taken to control the erosion and transport of sediment. The E&S Plan is a stand-alone document to specifically address the requirements of E&S control measure installation, maintenance, and removal. The Navy is responsible for developing and submitting the E&S Plan for each project with LDA. This responsibility may be delegated to a contractor, but ultimately, the Navy is responsible to ensure the E&S Plan is developed, submitted and approved.

The Virginia Department of Environmental Quality (VDEQ) is the E&S Plan approving authority. VDEQ is required to approve an E&S Plan within 60 days of receipt. If the E&S Plan is inadequate, written notice of disapproval must be communicated by VDEQ to the applicant within 45 days. The written notice shall include the reasons for disapproval and the required modifications. If VDEQ does not take action within 60 days of the E&S Plan receipt, then plan is deemed to be approved.

The Inspector is not responsible for reviewing the E&S Plan but must verify there is an approved E&S Plan at the construction site. The Inspector will use the E&S Plan as a guide to check if the contractor is complying with the E&S Plan and the minimum standards.

2.4 Inspection Schedule

The MS4 Permit Section II 4 B (c) (2) requires the following inspection schedule for land disturbing activities:

- Upon initial installation of erosion and sediment controls
- At least once during every two-week period
- Within 48-hours of any run-off producing storm event
- Upon completion of the project and prior to the release of any applicable performance bonds.

These inspections are described as follows:

- An initial inspection is the first inspection conducted at the project site after the installation of perimeter controls.
- The biweekly inspections are the regular inspections conducted every two weeks.
- The inspections within 48-hours of a runoff producing rain event inspection are the inspections conducted after a rainfall event defined by the Stormwater Management Act (9VAC25-880-1) as producing 0.25 inches of rain or greater over 24 hours. Inspections need to be performed after each qualifying storm event, even if there are consecutive storms during the same week.

  At the end of the qualifying rain event where 0.25 inches per 24 hours is reached, an inspection should be conducted within 48 hours (2 business days). For example, if it began raining Monday afternoon/evening, and the qualifying 0.25 inch or greater of precipitation is achieved, then an inspection would need to be conducted Tuesday and Wednesday (weather permitting). Any rain fall/events that happen on Tuesday or Wednesday would not count as "qualifying rain events" as a 48-hour runoff producing storm event inspection is already scheduled to occur sometime during those two days. If another qualifying storm event is achieved on Thursday, new rain event inspections would need

to be conducted on Friday and/or Monday and the clock would restart again on Tuesday for the next rain event.

- The project completion inspection is the inspection after final stabilization is complete and prior to release of any applicable performance bonds. The Stormwater Management Act (9VAC25-880-1) defines final stabilization when one of the following conditions are met:

"1. All soil disturbing activities at the site have been completed and a permanent vegetative cover has been established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform (e.g., evenly distributed), mature enough to survive, and will inhibit erosion.

2. For individual lots in residential construction, final stabilization can occur by either:

a. The homebuilder completing final stabilization as specified in subdivision 1 of this definition; or

b. The homebuilder establishing temporary soil stabilization, including perimeter controls for an individual lot prior to occupation of the home by the homeowner, and informing the homeowner of the need for, and benefits of, final stabilization.

3. For construction projects on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to surface waters, and areas that are not being returned to their preconstruction agricultural use must meet the final stabilization criteria specified in subdivision 1 or 2 of this definition."

Section 3.3.4 describe the procedures for developing and updating the Inspection Schedule.

2.5 Certification Requirements

Section II B 4 (c) (3) establishes that the inspections "*shall be conducted by personnel who hold a certificate of competence in accordance with 9VAC25-850-40."* A certificate of competence is issued to individuals who attend the required VDEQ training for Erosion and Sediment Control and successfully passes the examination for Erosion and Sediment Control Inspector.

To become a certified ESC Inspector, the individual must attend a two-day Basic Class training, and a one-day Inspector training course. Once the individual completes both courses, a provisional certification is awarded. The individual will have a period of 12 months to complete the Inspector training after the Basic Course has been taken, and an additional 12 months from completion of the training to take an exam to obtain the certificate of competence before the provisional certificate expires. The certificate of competence is valid for three years. The Inspector will have to recertify prior to the certificate of competence expiration date. To recertify, the individual may re-take the exam, attend VDEQ training courses or complete the required amount of contact hours.

2.6 Inspection Procedures

The MS4 Program inspection procedure requirements are described in Section II B 4 (e) (4) (5) (6). The permit states that the MS4 Program Plan shall include: "*(4) Written inspection procedures and all associated documents utilized during inspection including the inspection schedule; (5) Written procedures for compliance and enforcement, including a progressive compliance and enforcement strategy, where appropriate; and (6) The roles and responsibilities of each of the operator's departments, divisions, or subdivisions in implementing the minimum control measure in Section II related to construction site stormwater runoff control. If the operator utilizes another entity to implement portions of the MS4 Program Plan, a copy of the written agreement must be retained in the MS4 Program Plan. The description of each party's roles and responsibilities, including any written agreements with third parties, shall be updated as necessary."*

Sections 3 and 4 of this report describe the inspection procedures.

This document provides the written inspection procedures, describes the inspection schedule, and includes the inspection program roles and responsibilities in Section 3. The written procedures for compliance and enforcement strategy are described in the Regional Phase II Stormwater Program Plan.

2.7 Reporting

The MS4 Permit Section II B 4 (f) established the reporting requirements. It states that the "operator shall track regulated land-disturbing activities and submit the following information as part of the annual reports.

- Total number of regulated activities
- Total number of acres disturbed
- Total number of inspections conducted
- A summary of the enforcement actions taken, including total number and type of enforcement actions taken during the reporting period."

Inspection reports serve as a notice of compliance or non-compliance. It serves as a record-keeping tool to document if a project complies with the Minimum Standards, the standards and specifications of the Erosion and Sediment Control (ESC) Handbook, and if the project is being constructed in accordance with the E&S approved Plan. It also records potential deficiencies, and corrective actions. An inspection report shall always be complete even if deficiencies are not found. Attachment 4 includes the Site Inspection Report template. The information collected during the site inspections will be summarized on a status report. A Status Report template is included as Attachment 5. Section 4 describe the Status Reporting and Data Management in more detail. The required information will be obtained for each LDA and loaded in a database. The central database will be used to generate the Status Report.

VDEQ provided approval to NAVFAC MIDLANT to use a short version of the Site Inspection Report form during 48-hour runoff producing storm event inspections. The discussions were held after conducting the initial storm event inspections where Inspectors received feedback from Contractors that there was not enough time between a biweekly inspection and a 48-hour runoff producing storm event inspection to address the deficiencies before the next inspection. Therefore, during the 48-hour runoff producing storm event inspection, the Inspector will not inspect any documentation on site, and will not verify if the prior recommended corrective actions have been addressed. The intent of the inspection is to verify if there are areas where sediment or pollutants (such as fuels and oils, waste, debris, process wastewater, etc.) are leaving the project site. Attachment 6 includes the 48 Runoff Producing Storm Event Inspection Form.

2.8 Inspections at Installations Not Covered under the MS4 Permit

The Department of the Navy Environmental Readiness Program Manual (OPNAV M-5090.1) contains the policy guidance for the environmental readiness program (5090.1D, *Environmental Readiness Program).*

The OPNAV 5090, Section 20-3.2 (2) (a) details the compliance requirements for the Environmental Readiness Program including, surface water discharges. It states that "*Stormwater discharges must meet all applicable federal, state, and local permit requirements. Stormwater discharges are a major contributor to surface water quality impairment. The NPDES Stormwater Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. These types of stormwater discharges are either regulated under Phase I or Phase II of the CWA Stormwater Program. Phase I regulations apply to MS4s serving a population of 100,000 or more, as well as stormwater discharges associated with regulated industrial activities as defined in the stormwater regulations, including construction activities disturbing 5 acres of land or more. Phase II regulations apply to MS4s serving a population less than 100,000 that are located in an "urbanized area," and construction activities that disturb greater than or equal to 1 acre of land (including smaller sites in a larger common*

plan of development or sale), or as specified by an individual state. Federally-operated storm sewer systems are defined as MS4s."

The projects with LDAs located at installations not covered under the MS4 Permit will follow the same MS4 Inspection Program as those installations under the MS4 Permit with the exception of the inspection schedule. For installations are not covered under the MS4 Permit, the projects with LDAs to be inspected will be equal to or greater than one acre and require coverage under the Construction General Permit (CGP) VAR10. The CGP requires an Erosion and Sediment Control Plan, Stormwater Management Plan (9VAC25-870-55), and Stormwater Pollution Prevention Plan (9VAC25-870-56). Therefore, during construction, it is required to periodically inspect the LDAs for compliance with the approved erosion and sediment control plan and the approved stormwater management plan.

The inspections will maintain the same components of the MS4 Permit construction site inspection program, such as: oversight requirements, approved erosion and sediment control plan, certification requirements, procedures, and reporting requirements. The inspection frequency for installations not covered under the MS4 Permit is once per calendar month and 48-Hour runoff producing storm event inspections are not required.

SECTION 3

Procedures

3.1 Background

The purpose of establishing written procedures is to ensure compliance with Section II B 4 of the MS4 Permit. The written procedures include all requirements for implementing the inspection program components. This section provides describe the following:

- Roles and responsibilities,
- Pre-inspection procedures,
- Construction site inspection procedures,
- 48-Hour runoff producing storm event procedures, and
- Special conditions

3.2 Roles and Responsibilities

The individuals responsible for the compliance of the MS4 Permit Construction Site Inspections requirements are included in Table 3-1.

TABLE 3-1
MS4 Inspection Individual Roles and Responsibilities

Roles	Responsibilities
Capital Improvement (CI) Designer	Develop and submit the E&S Plan to VDEQ. A Contractor can develop and submit E&S Plans to VDEQ on behalf of the Navy. Maintain communication with VDEQ related to the approval of the E&S Plan. Provide copies of approved E&S Plan to the Construction Manager. Provide E&S Plan approval letter copy to the MS4 Program Manager.
Facilities, Engineering, and Acquisitions Department (FEAD) Construction Manager (CM)	Provide approved E&S Plan copy to the Contractor. Update the Active Project Database on a monthly basis. Review ESC Site Inspection Reports and communicate non-compliance issues to the Contractor. Ensure Contractor complies with corrective action when non-compliance issues are found.
Construction Supervisor/Construction Director (CS/CD)	Supervises the FEAD CMs. Serve as an alternate point of contact for the FEAD CM.
MS4 Program Manager	Evaluate and assess progress towards meeting measurable goals. Maintain a log to track E&S Plan review and approvals. Maintain the Active Project Database. Satisfy MS4 reporting requirements to VDEQ.
Inspector	Conduct Construction Site Inspections. Prepare ESC Site Inspection Reports for each project with LDA. Prepare Status Reports for MS4 Permit reporting compliance. Send construction site inspection reports with deficiencies to corresponding FEAD CS/CD. Note: The Inspector does not have the authority to communicate non-compliance issues to the Contractor. The FEAD CM will communicate to the Contractor the non-compliance issues.

3.3 Pre-Inspection Procedures

This section provides the step by step process related to the activities to be conducted prior to commencement of the construction site inspections. Attachment 7 includes a flowchart of the Pre-Inspection Procedures.

The pre-inspection procedures help to establish documentation and coordination with all parties to manage and conduct the construction site inspections in compliance with the MS4 Permit requirements. This section provides information on the following items.

- Weather Stations
- Active Projects Database
- Inspection Schedule
- Projects Located in Secure Areas
- Erosion and Sediment Control Plan

3.3.1 Weather Stations

Section II 4 C 2 c of the MS4 Permit requires the operator to inspect the land disturbing activities within 48 hours of any runoff producing rain event. The Stormwater Management Act (9VAC25-880-1), defines a measurable storm event as a rainfall event producing 0.25 inches of rain or greater over 24 hours. Currently, NAVFAC has weather stations with rain gauges at some of the naval installations around the Hampton Roads Area. These rain gauges are programmed to send electronic and cellular notifications when total precipitation reaches 0.10-inch.

The existing rain gauge stations cannot be programmed to send notifications when a 0.25-inch storm event is achieved. Therefore, the Inspectors will receive email and text notifications from the existing Navy rain gauge stations when a 0.10-inch storm event is achieved. The 0.10-inch event notification will serve as a notice to the inspectors that an inspection could be required if the rainfall amount reaches 0.25-inches or greater over 24 hours. The project manager, lead inspector, or designee, will monitor the anticipated rainfall amounts using the National Oceanic and Atmospheric Administration (NOAA) national weather service website (http://www.weather.gov/) hourly weather graph. An email will be sent to the inspectors stating that based on the NOAA hourly weather graph, that rainfall amounts are anticipated to reach 0.25-inches or greater over 24 hours. After this email is received, inspectors will examine their schedules and make allowances in anticipation of required inspections. The project manager, lead inspector, or designee, will monitor real-time total rainfall amounts received using the NOAA website (http://water.weather.gov/precip/) precipitation data and the NOAA weather stations listed in Table 3-3. A final email will be sent once the 0.25-inches has been reached (based on the NOAA 3 Day History updated hourly) and inspections are required. Inspectors can also check weather forecasts and rainfall amount themselves for an advanced warning of a 48 hour inspection notification. The “Weatherbug” website (http://weather.weatherbug.com/) and free smartphone application are useful tools to track rain events and rainfall amounts. The “Details” tab on the smartphone application shows the daily precipitation amount and rate/hour in a chosen location.

Table 3-2 includes the list of the Navy weather stations that will be used to send notifications to the Inspectors. Table 3-3 includes a list of the NOAA weather stations the Inspectors will use to identify when a rainfall total of 0.25-inch storm event during 24 hours has been achieved. The 48-hour runoff producing storm event inspections will not be performed at the installations not covered under the MS4 Permit.

TABLE 3-2
Navy Rain Gauge Stations

Installation	Navy Rain Gauge Station Location for 0.10-inch Storm Event Notification
Naval Station Norfolk	Naval Station Norfolk
Naval Support Activity, Hampton Roads (excluding Northwest Annex)	Naval Station Norfolk
Joint Expeditionary Base, Little Creek	Joint Expeditionary Base, Little Creek
Joint Expeditionary Base, Fort Story	Joint Expeditionary Base, Little Creek
Naval Air Station Oceana	Naval Air Station Oceana
Dam Neck Annex	Naval Air Station Oceana
NSA, Portsmouth Annex	St Julien's Creek Annex
Scott Center Annex	St Julien's Creek Annex

TABLE 3-3
NOAA Weather Stations

Installation	Location of NOAA Weather Station
Naval Station Norfolk	Norfolk, Naval Air Station (KNGU)
Naval Support Activity, Hampton Roads (excluding Northwest Annex)	Norfolk, Naval Air Station (KNGU)
Joint Expeditionary Base, Little Creek	Norfolk International Airport (KORF)
Joint Expeditionary Base, Fort Story	Norfolk International Airport (KORF)
Naval Air Station Oceana	Virginia Beach, Oceana, Naval Air Station (KNTU)
Dam Neck Annex	Virginia Beach, Oceana, Naval Air Station (KNTU)
NSA, Portsmouth Annex	Norfolk International Airport (KORF)
Scott Center Annex	Norfolk International Airport (KORF)

Links to weather station websites:
Norfolk, Naval Air Station (KNGU) - http://forecast.weather.gov/MapClick.php?lat=36.93011796300044&lon=-76.29114912099965&site=all&smap=1
Norfolk International Airport (KORF) - http://forecast.weather.gov/MapClick.php?lat=36.89542604200045&lon=-76.20048666799965&site=all&smap=1
Virginia Beach, Oceana, Naval Air Station (KNTU) - http://forecast.weather.gov/MapClick.php?lat=36.80448911400049&lon=-76.01546758999967&site=all&smap=1

3.3.2 Active Projects Database

Each Navy installation FEAD office maintains a list of active construction projects. This list identifies projects that have been awarded, including projects where LDAs have not started. This active projects database is maintained in Microsoft Excel format. The database is updated on a monthly basis. Attachment 8 includes an example of the Active Project Database.

In order to comply with the MS4 Permit requirements, maintaining an up-to-date list is crucial. The procedures to maintain an updated list of all active and future projects with LDAs are as follows:

1. The MS4 Program Manager will request the 1st of each month an updated list of active projects from each installation FEAD Construction Manager.
2. The MS4 Program Manager will compile the information from all installations and update the Active Construction Projects master list. The master list will be provided to the Inspectors by the 15th of every month.

3. The Inspectors will review the updated master list and identify any projects with new land disturbing activities.
4. The first visit to active land disturbing activity projects will be the Initial Inspection visit, even if the project construction has already started.
5. The inspection schedule will be updated if new projects are added and a Project Code will be created by the Inspector.
6. The active project database list will be updated in the tracking mechanism database.
7. When new projects are included, an updated schedule will be distributed to the Inspector, MS4 Program Manager, and the Construction Managers and Supervisors.

The active project database includes projects with active LDAs, projects not started, active projects with no LDAs (interior construction), on hold, and complete.

3.3.3 Inspection Schedule

The Inspector will develop an inspection schedule to comply with the requirements of Section II 4 C 2 of the MS4 Permit. The schedule will include the days of the week when performing initial inspections, bi-weekly inspection, monthly inspections, and project completion inspections. An example of the inspection schedule is included in Attachment 9.

Two separate inspection schedules will be prepared in a monthly basis: a bi-weekly inspection schedule and a monthly inspection schedule. The bi-weekly inspection schedule includes the projects with LDAs located at installations covered under the MS4 Permit and the monthly inspection schedule includes the projects with LDAs at installations not covered under the MS4 Permit.

Each inspection schedule will include the following information:

- Date
- Naval installation where inspections will be conducted each day
- Inspection hours for each day, for example: 0700 – 1400
- Names of the projects to be inspected each day

The inspection schedule will be modified on a monthly basis, as needed, when new projects start LDAs, when projects are completed, and when new projects are added to the active project database where LDAs have not started (site visits). The procedures related to the inspection schedule are as follows:

1. The MS4 Program Manager will provide the Inspector an updated active project database electronically via email by the 15th of every month.
2. The Inspector will update the inspection schedules to include the initial inspection, bi-weekly inspections, monthly inspections, project completion inspections, and where site visits (drive-bys) will be performed to verify if LDAs have started (at installations covered under the MS4 Permit only). The inspection schedule dates may be adjusted based on new projects location, holidays, and adverse weather, among others.
3. The Inspector will provide the updated Inspection Schedule electronically via email to the MS4 Program Manager by the 1st of each month. If schedule has been updated, a revised version will be provided immediately via email.
4. The MS4 Program Manager will send the Inspection Schedule to the FEAD offices.

Projects with active LDAs at installations covered under the MS4 Permit will be visited bi-weekly as per Section II 4 C 2 of the MS4 Permit. Projects that have not started or are active with no LDAs will be visited every 4 weeks to identify if LDAs started. If LDAs have started, these projects will be added to the regular bi-weekly schedule. Projects with active LDAs at installations not covered under the MS4 Permit will be visited

once per calendar month. Site visits will not be performed for projects that have not started LDAs at installations not covered under the MS4 Permit.

3.3.4 Projects in Secure Areas

Some of the Navy installations have secure areas where the Inspector needs to be escorted at all times. The projects located within secure areas are identified in the active project database detailed in Section 3.3.2. The procedures to gain access to conduct inspections are as follows:

1. The Inspectors will request a 12-month clearance to the secure areas. The information will be sent to the MS4 Program Manager. The Inspector shall include the following information: full name, social security number, date of birth, and place of birth.
2. The Inspector can be escorted by the Contractor if clearance has been provided.
3. If the Contractor is unavailable or clearance has not been obtained, then:
    a. The FEAD CM will review the Inspection Schedule to identify the dates where projects within secure areas will be inspected.
    b. The Inspector will email the FEAD CM a week in advance by Thursday that escort is required to the secure area.
    c. The Inspector will coordinate a specific time to be escorted to the project with the corresponding CM. The coordination can be made via email or phone call. The Inspectors shall adhere to the Inspection Schedule to comply with the MS4 Permit requirements. The CM shall schedule a time on the project inspection date.
4. If additional clearance is needed to access secure area, the MS4 Program Manager will coordinate and submit the required information to the installations.

3.3.5 Erosion and Sediment Control Plan Coordination

Land disturbing activities require an Erosion and Sediment Control Plan (E&S Plan) approved by the VDEQ. The E&S Plans are approved by VDEQ and sent to the Capital Improvement (CI) Designer Offices. The MS4 Program Manager receives copies of the approval letters from VDEQ but not a copy of the E&S Plan. This section describes the coordination procedures with the Navy related to the Erosion and Sediment Control plan approval process. An example of a VDEQ E&S Plan Approval letter is included as Attachment 10.

Projects that started LDAs prior to the MS4 Permit effective date may be grandfathered under the previous permit and are not required to have a plan or plans may have been approved by the Navy. The E&S Plan status of each of the projects with LDAs is needed by the Inspector prior to starting construction site inspections to identify if a project is in compliance with the MS4 Permit requirements. The E&S Plan submittal and approval process coordination is as follows:

1. The CI Design Department or Contractor develops and submits the E&S Plan to VDEQ for approval for each of the projects. The CI Designer Department or Contractor is the main point of contact between the Navy and VDEQ related to the E&S Plans.
2. The CI Department receives the approved E&S Plans and the VDEQ E&S Plan Approval Letter from VDEQ.
3. The CI Department provides a copy of the approved E&S Plan to the corresponding FEAD CM.
4. The CI Department provides a copy of the VDEQ E&S Plan Approval Letter to the MS4 Program Manager.
5. The FEAD CM provides a copy of the approved E&S Plan to the Contractor.
6. The MS4 Program Manager will provide a copy of the VDEQ E&S Plan Approval Letter to the Inspector. If the project started LDAs prior to the MS4 Permit effective date, the project may be grandfathered and not require an E&S Plan or the E&S Plan may have been approved by the Navy.

7. The Inspector will update the Inspection Tracking Central database and upload a copy of the Approval Letter to the SharePoint site.
8. Inspections may be started without an approved E&S Plan.
9. In the Active Project Database, the MS4 Program Manager or the CI Designers will indicate the status of the E&S Plan (e.g. approved, submitted, rejected, etc.).

If the project has LDAs equal or greater than one acre, then the VDEQ letter will include the approval for the E&S Control Plan and the Stormwater Management Plan. The Stormwater Pollution Prevention Plan (SWPPP) is not reviewed or approved by VDEQ but can be requested by VDEQ in the event of a regulatory site inspection.

3.4 Construction Site Inspection Procedures

The purpose of construction site inspections is to verify that the project complies with the requirements set forth in the ESC Law, the ESC Regulations, and the VESC Handbook. This section provides the step by step process related to the activities to be conducted during the construction site inspections. The procedures will be implemented to comply with Section II B 4 (c) (2) of the MS4 Permit. The permit requires the following inspection schedule for LDAs:

- Upon initial installation of erosion and sediment controls (Initial Inspection);
- At least once during every 2-week period (Bi-Weekly Inspection)
- Within 48 hours of any run-off producing storm event; and
- Upon completion of the project and prior to the release of any applicable performance bonds (Project Completion Inspection).

The projects with LDAs located at installations not covered under the MS4 Permit will follow the same procedures as those installations under the MS4 Permit with the exception of the inspection schedule. Even though the installations are not covered under the MS4 Permit, the procedures described herein apply since the projects to be inspected are equal or greater than one acre and require coverage under the Construction General Permit (CGP) VAR10.

For all inspections, the Site Inspection Reports will be uploaded on the SharePoint site on a daily basis in a PDF format. The information collected during the daily inspections will be uploaded into the central database in a weekly basis. Status reports will be created from the central database.

3.4.1 Initial, Bi-Weekly, Monthly, and Project Completion Inspection Procedures

The initial, bi-weekly, and project completion inspections will follow the same procedures. These inspections will be performed during normal business days, Monday through Friday. Section 2.4 provides a definition for each of the inspection types. If a 48-hour runoff-producing storm event inspection is conducted and the bi-weekly inspection is scheduled to occur on that day, the 48-hour storm event inspection will also serve as the bi-weekly inspection. A flowchart describing the workflow for these inspections is included as Attachment 11.

The monthly inspections for projects with LDAs at installations not covered under the MS4 Permit will follow the same procedures as the initial, bi-weekly, and project completion inspections with the exception that the inspections will be performed once per calendar month.

The procedures for the initial, bi-weekly, monthly, and project completion inspections are as follows:

1. Inspections will be conducted based on the Inspection Schedule.
2. The Inspector will check-in at the construction trailer when he/she arrives at the construction site. Construction trailers may not be on site for small projects. If there is no construction trailer, the Inspector will find the Contractor Supervisor or Foreman prior to starting the site inspection. For projects located within secure areas, the construction trailer will be outside the secure area and not located at

the project site. For projects with the same Contractor and located at multiple sites, the construction trailer may not be located at the project site to be inspected.

3. The Inspector will discuss the following items with the Contractor Foreman or Supervisor:
   a. Inspector will introduce him/herself and explain their role.
   b. The Inspector will request the approved E&S Plan and during the initial inspection, he/she will request if an electronic PDF copy of the E&S Plan is available. An electronic copy of the E&S Plan will help the Inspectors perform inspections within 48 hours of a runoff producing storm event more efficiently.
   c. At the initial site inspection, notify the Contractor that photographs will be taken on site and will avoid any sensitive areas of the installation. Note that photographs are not permitted inside secure areas. Electronic devices including cellphone devices must be left in the car when accessing secure areas.
   d. The Inspector shall explain to the Contractor that they don't have the authority to provide a report of any observed deficiencies to the Contractor. The project FEAD CM will be responsible for reporting any deficiencies, if found, and their corresponding corrective actions to the Contractor.
4. The Inspector will perform the construction site field inspection.
5. The Inspection will complete the Site Inspection Form for each project, even if no deficiencies are observed and Attachment 12 includes a copy of the form. During inspections, the Inspector will provide the following information.
   a. Verify if the project has an approved E&S Plan. If the project does not have an approved E&S Plan, the Inspector will contact the MS4 Program Manager and the FEAD CM to verify if an E&S Plan has been developed or if the project started prior to the MS4 Permit effective date. If projects started land disturbing activities prior to the new MS4 Permit, the project may be grandfathered under the previous MS4 Permit or the E&S Plan may have been approved by the Navy.
   b. Identify if any previous deficiencies have been corrected. If so, the Inspector will note it in the report. If the deficiencies have not been corrected, the Inspector will mark the deficiency as a repeat deficiency.
   c. Verify the project is being constructed in accordance with the approved E&S Plan.
   d. Verify if the project complies with the minimum E&S standards and specifications.
   e. Verify perimeter controls and adjacent properties.
   f. Verify areas where sediment is likely to leave the site.
   g. Verify any environmental sensitive areas.
   h. Inspect the project outfall.
6. If deficiencies are found:
   a. The Inspector will verify if deficiencies are an immediate threat to the safety of the personnel, and adjacent properties. If deficiencies present are considered an immediate threat, these deficiencies will require immediate corrective actions.
      i. If an immediate threat is identified, then:
         - The Inspector will contact the corresponding project FEAD CM and discuss the deficiency and required immediate corrective action.
         - If the Inspector cannot reach the FEAD CM, the Inspector will contact the FEAD Construction Supervisor.

- After contacting the CM, the Inspector will contact the MS4 Program Manager.
- The Inspector will complete the site inspection report.
- The Inspector will upload an electronic PDF copy of the Site Inspection Report into the SharePoint.
- Daily alerts will be sent via email to the MS4 Program Manager with a summary of the reports that have been uploaded into the SharePoint site. A notification will be created for each of the installations individually and will be sent automatically directly from the SharePoint site via email every night at 11:00 PM EST.
- The MS4 Program Manager, Inspector or designee will send the report with deficiencies to the corresponding FEAD CS/CD. The FEAD office will distribute the report to the corresponding FEAD CM and Contractor.
- The Inspector will continue with the regular bi-weekly or monthly inspection and verify if the corrective actions have been addressed. The Inspector will not be notified of the discussions between the FEAD CM and the Contractor.
- The Inspector will verify if the deficiencies have been corrected during the next scheduled bi-weekly inspection or monthly inspection for a project is located in an installation not covered under the MS4 Permit.
- If a deficiency has not been corrected, it will be marked as a repeat deficiency in the Site Inspection Form and the same process will be followed as described in this section.

ii. If no immediate threat is observed:

- The Inspector will complete the site inspection report.
- The Inspector will upload an electronic copy in PDF of the Site Inspection Report into the SharePoint.
- Daily alerts will be sent via email to the MS4 Program Manager with a summary of the reports that have been uploaded into the SharePoint site. A notification will be created for each of the installations individually and will be sent automatically directly from the SharePoint site via email every night at 11:00 PM EST.
- The Inspector will continue with the regular bi-weekly or monthly inspection. The Inspector will not be notified of the discussions between the FEAD CM and the Contractor.
- The Inspector will verify if the deficiencies have been corrected during the next scheduled bi-weekly inspection or monthly inspection for a project is located in an installation not covered under the MS4 Permit.
- If a deficiency has not been corrected, these will be marked as a repeat deficiency in the Site Inspection Form and the same process will be followed as described in this section.

7. If no deficiencies are observed:

   a. The Inspector will complete the site inspection report.

   b. The Inspector will upload an electronic copy in PDF of the Site Inspection Report into the SharePoint site.

   c. Continue with the regular bi-weekly or monthly inspection.

3.4.2 48-Hour Runoff Producing Storm Event Inspection Procedures

A 48-hour runoff producing rain event is defined as a rainfall event producing 0.25 inches of rain or greater over 24 hours, as described in Section 2.4 of this report. Inspections have to be conducted within 48 hours of the end of the storm event. If the event occurs during the weekend, holidays, or outside of business hours, the Inspections will be conducted the next business day (Monday through Friday, excluding holidays). Attachment 13 includes a flowchart of the 48-Hour Runoff Producing Storm Event Inspection procedures.

During the 48-hour runoff producing storm event inspection, the Inspector will not inspect any documentation on site, and will not verify if the prior recommended corrective actions have been addressed. The intent of the inspection is to verify if there are areas where sediment or pollutants (such as fuels and oils, waste, debris, process wastewater, etc.) are leaving the project site. Full inspections will only be conducted if the project was scheduled to have a biweekly inspection on the day the 48-hour runoff producing storm event inspection is been conducted.

Since inspections have to be conducted within 48 hours, additional Inspectors will be activated to be able to comply with the MS4 Permit requirement. A separate inspection schedule will be developed to allow assignment of projects by Inspector per installation to ensure that all projects are inspected within the required timeframe. An example of this schedule is included as Attachment 14. The 48-hour runoff producing storm event inspection schedule will be updated as new projects are added or projects are completed and eliminated from the Active Project Database.

48-Hour runoff producing storm event inspections will not be performed at installations not covered under the MS4 Permit.

The procedures for the 48-Hour Runoff Producing Storm Event Inspections are as follows:

1. One Inspector from the team will monitor the weather for potential storm events.
2. All backup Inspectors will be notified of a potential 48-Hour runoff producing storm event.
3. Inspectors will receive a notification from the Navy rain gauges electronically via email and a text message when a storm event have reached 0.10 inch of rain. Table 3-2 includes the corresponding Navy rain gauges for each installation.
4. The Inspectors will start monitoring the weather stations referenced under Section 3.3.1 for each installation.
5. Projects will be assigned by installation to each of the Inspectors.
6. When a storm event of 0.25 inches or greater is achieved, Inspectors will start conducting Construction Site Inspections. The 48-hour inspection window starts at the end of the storm event. If weather conditions allow it (no thunderstorms or adverse weather), the Inspectors may choose to start inspections right away.
8. The Inspector will follow the procedures in Section 3.4.1. Attachment 15 includes a copy of the 48-Hour Runoff Producing Storm Event Inspection Field Form.
7. If the Inspector visits the site and find that project LDAs are suspended due to weather conditions, the Inspector will contact the FEAD CM and identify when the LDAs will be resumed. The Inspector will attempt to conduct a second inspection. If the LDAs are still suspended, then the Inspector will conduct the next inspection as per the regular bi-weekly schedule.

3.4.3 Site Visits to Projects with No Land Disturbing Activity

The site visit to projects with no LDAs consist of visiting the projects included in the active project database where the status is identified as not started or active with no LDAs (interior construction). Many times, Contractors have mobilized to the site but are waiting for the VDEQ E& Control Plan approval or the CGP approval before starting LDAs. Therefore, activities may start quickly without notice to the Inspectors. Even

though is not a requirement to visit these sites as per the MS4 permit, it is important to record visits to these locations and the status of the LDAs.

These site visits will be performed every four (4) weeks during normal business days, Monday through Friday. The site visit may consist of a drive-by if no personnel is on site or a conversation with the Contractor if mobilization has occurred. The Site Visit Report template is included as Attachment 16.

The procedures for the Site Visits is as follows:

1. Inspections will be conducted based on the Inspection Schedule (every 4 weeks).
2. The Inspector will check-in at the Construction Trailer when he/she arrives at the construction site. Construction trailers may not be on site for small projects. If there is no Construction Trailer, the Inspector will find the Contractor Supervisor or Foreman. For projects within secure areas, Construction Trailer is located at a different location than the project and outside of the secure area. This may also occur for projects located at different sites but that have the same Contractor.
3. The Inspector will complete the site visit report.
4. The Inspector will upload an electronic copy in PDF of the Site Visit Report into the SharePoint site.
5. Continue with the regular inspections every four weeks until the project start LDAs.

3.4.4 Special Conditions

The special conditions section includes a description of the procedures if there is a snowstorm or freezing conditions.

- If the snow fall doesn't produce any runoff, then no inspections will be conducted.
- If the snow accumulates, the runoff producing event doesn't happen until the snow melts and produces runoff.
- The Construction General Permit (VAR10), Part II F (SWPPP Inspections) establishes a potential inspection frequency reduction if there are frozen ground conditions as follows: "*b. Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator shall immediately resume the regular inspection frequency.*"
- The Inspector will discuss a potential change to the schedule with the MS4 Program Manager and its reasons. The MS4 Program Manager must approved the change to the inspection schedule.

SECTION 4

Reporting and Data Management

4.1 Reporting Requirements

Section II B 4 of the MS4 Permit requires that the operator track regulated land-disturbing activities and submit the following information as part of the annual reports.

- Total number of regulated activities
- Total number of acres disturbed
- Total number of inspections conducted
- A summary of the corrective actions taken, including total number and type of corrective action taken during the reporting period.

The construction site inspection status reports will be used to create the MS4 Program annual report. The status reports will be created and submitted on a monthly basis to the MS4 Program Manager. The report will enable the MS4 Program Manager to assess the status of all projects with LDAs at each of the Navy installations under the MS4 Permit with a summary of the projects where initial deficiencies, repeat deficiencies, and deficiencies that pose an immediate threat were observed. The report includes the MS4 Permit required information by installation with a total for all installations. Table 4-1 includes a description of the fields used in the Status Report. The source of all information is from the site construction inspections. Attachment 5 includes the Erosion and Sediment Control Status Report template and the MS4 Program Annual Report template. Attachment 17 includes the Site Visit Status Report template which summarizes the number of site visits conducted per installation. Attachment 18 includes the Erosion and Sediment Control Status Report Template for installations not covered under the MS4 Permit.

TABLE 4-1
Status Report Fields

Field	Description
Permit Number	US-Navy Consolidated MS4 Permit number VAR040114
Report Date	Date the report is created
Reporting Period	Start and end dates of reporting inspection period
Total Number of Regulated Land Disturbing Activities table	Count of all construction projects with LDAs per installation
Total Number of Acres Disturbed table	The sum of land disturbed area in acres for projects with active LDAs per installation during the reporting period
Total Number of Inspections Conducted table	Count of all the construction site inspections conducted during the reporting period per inspection type and per installation. There are four types of inspections based on the MS4 Inspection Schedule: Initial Inspection, Bi-Weekly Inspection, 48-Hour Runoff Producing Storm Event Inspection, and Project Completion Inspection.
Summary of Deficiencies per Installation table	Includes a summary of the projects per installation were deficiencies where observed. Includes the following: - Count of the total number of initial deficiencies observed - Count of the total number repeat deficiencies observed - Count of the total number of corrective immediate threat actions taken - List of projects and corresponding inspection dates where deficiencies were observed.

4.2 Data Management

The MS4 Construction Site Inspection information will be collected electronically using a series of tracking tools developed in Microsoft Access. These tools will be used for record-keeping and developing the inspection and status reports to comply with the reporting requirements under the MS4 Permit. The tracking mechanism consists of:

- An inspection data collection tracking tool (Field Tool)
- An inspection tracking central database, and
- A SharePoint site for web-based access

A User's Manual has been developed and included as Part II of this Report. The following sections provide a brief summary of the purpose of the record-keeping and tracking mechanisms User's Manual. For more details related to each mechanism and their interface, refer to the User's Manual in Part II of this report.

4.2.1 Inspection Tracking Mechanism

The Inspection Tracking Mechanism consists of a data collection tracking tool and a central database designed as Microsoft Access databases. It will be used in the field to collect the information required for the Site Inspection Form. The field collection tool (Field Tool) is a viewer that contains the forms, queries, and reports. This Field Tool is linked to the central database. The central database stores all the information regarding the inspections performed. The Inspectors also have the capability of producing the Site Inspection Report in PDF format. These reports will be uploaded on a daily basis to the SharePoint site. The Central Database will be updated on a weekly basis.

4.2.2 SharePoint Site

A SharePoint site has been developed inside the CH2M HILL network server to serve as the main record keeping location of all project information, site Inspection reports, and status reports. Inspectors will be able to send automatic notifications to the CMs when deficiencies are observed during Site Inspection Reports. It will also contain an up to date inspection schedule. The SharePoint site will not be transferred to the Navy at the end of the project but information included on the SharePoint site, tracking tool, and database will be provided to the Navy. Navy users will have the capability to access the SharePoint site using an assigned CH2M HILL user name.

Attachment 1
Phase II MS4 General Permit VAR004

Attachment 2
Minimum Standards

Attachment 3
Construction General Permit VAR10

Attachment 4
Erosion and Sediment Control Site Inspection Form

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

SITE INSPECTION REPORT

SECTION I: PROJECT INFORMATION

Project Name:	Total Disturbed Acreage:	
Project Location:	Installation:	
Inspector:	Date of Inspection:	Time:
Weather Conditions:		
NAVFAC Construction Manager:	Project Operator:	
Inspection Type: ☐ Initial Inspection ☐ Initial/48-hour Runoff Producing Storm Event Inspection ☐ Bi-Weekly Inspection ☐ Bi-Weekly/48-hour Runoff Producing Storm Event Inspection ☐ 48-hour Runoff Producing Storm Event Inspection ☐ Project Completion Inspection	Present at Inspection:	
VSMP VAR10 Construction Inspection Required: ☐ *Complete Section IV*	VSMP Permit Number:	
E&S Control Plan Approval Letter Received:	E&S Control Plan Approval Letter Date:	

SECTION II: STAGE OF CONSTRUCTION

Pre-Construction ☐	Building Construction ☐	Construction of SWM Facilities ☐
Clearing & Grubbing ☐	Finish Grading ☐	Maintenance of SWM Facilities ☐
Rough Grading ☐	Final Stabilization ☐	Other: _____ ☐

SECTION III: EROSION AND SEDIMENT CONTROL

Item	**Virginia E&S Control Law and Regulations**	***Yes***	***No***	***N/A***	***Notes***
1	Does the Project have an E&S control plan onsite?	☐	☐	☐	
2	Has the onsite E&S Control Plan been approved by the VESCP Authority?	☐	☐	☐	
3	Are E&S Control measures installed in accordance with the approved plan?	☐	☐	☐	
4	Is the project in compliance with the 19 minimum standards of the Erosion and Sediment Control Regulations?	☐	☐	☐	
5	Is the project operator conducting routine inspections of the installed E&S control measures?	☐	☐	☐	
6	Does the project have appropriate controls in place to prevent non-stormwater discharges to the MS4, such as: wastewater, concrete washout, fuels and oils, construction waste, and other illicit discharges?	☐	☐	☐	
7	Has sediment or other pollutants been observed leaving the project site?	☐	☐	☐	

SECTION IV: VSMP PERMIT COMPLIANCE (Projects disturbing land equal or greater than 1 acre)

Item	VAR10 Permit Required Items; 9VAC25-880-70	*Yes*	*No*	*N/A*	*Notes*
1	Project has received permit coverage to discharge stormwater under the Virginia Construction Stormwater General Permit?	☐	☐	☐	
2	Is a copy of the Permit coverage letter posted onsite?	☐	☐	☐	
3	Does the Operator have a SWPPP onsite?	☐	☐	☐	
4	Does the SWPPP identify the "Qualified Personnel" conducting inspections for the Operator?	☐	☐	☐	
5	Is the Operator conducting site inspections at the required frequency identified in the General Permit?	☐	☐	☐	
6	Stabilization control measures are being utilized?	☐	☐	☐	
7	Structural control measures designed and installed?	☐	☐	☐	
8	Control measures are maintained?	☐	☐	☐	
9	Litter, debris, and chemicals are controlled from becoming a pollutant source?	☐	☐	☐	

SECTION V: RECOMMENDED CORRECTIVE ACTIONS

RCA	State Regulation (Minimum Standards)/ Construction General Permit	VA ESC Handbook Standards and Specifications	Deficiency		Description and Location of Condition Observed, Recommended Corrective Actions, and Other Comments	Recommended Corrective Action Date
			Initial	Repeat		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		

NOTES:

CORRECTIVE ACTIONS IDENTIFIED DURING MOST RECENT INSPECTION

Inspection Date	RCA	State Regulation (Minimum Standards)/ Construction General Permit	VA ESC Handbook Standards and Specifications	Description and Location of Condition Observed, Recommended Corrective Actions, and Other Comments	Status	Description of Addressed Corrective Action

Attachment 5
Erosion and Sediment Control Status Report & MS4 Program Annual Report Templates

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, VA 23511

EROSION AND SEDIMENT CONTROL STATUS REPORT

GENERAL INFORMATION

Permit Number: VAR040114	Report Date:
Reporting Period: to	

TOTAL NUMBER OF REGULATED LAND DISTURBING ACTIVITIES

Installation	**Number of Land Disturbing Activities during reporting period**
Naval Station Norfolk	
Naval Support Activity, Hampton Roads (excluding NSA Northwest)	
Joint Expeditionary Base, Little Creek	
Joint Expeditionary Base, Fort Story	
Naval Air Station Oceana	
Dam Neck Annex	
Naval Support Activity, Hampton Roads, Portsmouth Annex	
Scott Center Annex	
Total	

TOTAL NUMBER OF ACRES DISTURBED

Installation	**Number of Acres Disturbed**
Naval Station Norfolk	
Naval Support Activity, Hampton Roads (excluding NSA Northwest)	
Joint Expeditionary Base, Little Creek	
Joint Expeditionary Base, Fort Story	
Naval Air Station Oceana	
Dam Neck Annex	
Naval Support Activity, Hampton Roads, Portsmouth Annex	
Scott Center Annex	
Total	

TOTAL NUMBER OF INSPECTIONS CONDUCTED

Installation	Initial Inspections	Bi-Weekly Inspections	48-Hour Producing Storm Events	Project Completion	Total per Installation
Naval Station Norfolk					
Naval Support Activity, Hampton Roads (excluding NSA Northwest)					
Joint Expeditionary Base, Little Creek					
Joint Expeditionary Base, Fort Story					
Naval Air Station Oceana					
Dam Neck Annex					
Naval Support Activity, Hampton Roads, Portsmouth Annex					
Scott Center Annex					
Total					

SUMMARY OF DEFICIENCIES PER INSTALLATION

Installation: **Naval Station Norfolk**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Support Activity Hampton Roads (excluding NSA Northwest)**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Joint Expeditionary Base, Little Creek**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Joint Expeditionary Base, Fort Story**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Air Station Oceana**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Dam Neck Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Support Activity Hampton Roads, Portsmouth Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Scott Center Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, VA 23511

MS4 PROGRAM ANNUAL REPORT

GENERAL INFORMATION

Permit Number: VAR040114	Report Date:
Reporting Period: to	

TOTAL NUMBER OF REGULATED LAND DISTURBING ACTIVITIES

Installation	**Number of Land Disturbing Activities during reporting period**
Naval Station Norfolk	
Naval Support Activity Hampton Roads (excluding NSA Northwest)	
Joint Expeditionary Base Little Creek	
Joint Expeditionary Base Fort Story	
Naval Air Station Oceana	
Naval Air Station Oceana Dam Neck Annex	
Naval Support Activity Hampton Roads- Portsmouth Annex	
Scott Center Annex	
Total	

TOTAL NUMBER OF ACRES DISTURBED

Installation	**Number of Acres Disturbed**
Naval Station Norfolk	
Naval Support Activity Hampton Roads (excluding NSA Northwest)	
Joint Expeditionary Base Little Creek	
Joint Expeditionary Base Fort Story	
Naval Air Station Oceana	
Naval Air Station Oceana Dam Neck Annex	
Naval Support Activity Hampton Roads- Portsmouth Annex	
Scott Center Annex	
Total	

TOTAL NUMBER OF INSPECTIONS CONDUCTED

Installation	Initial Inspections	Bi-Weekly Inspections	48-Hour Producing Storm Events	Project Completion	Total per Installation
Naval Station Norfolk					
Naval Support Activity Hampton Roads (excluding NSA Northwest)					
Joint Expeditionary Base Little Creek					
Joint Expeditionary Base Fort Story					
Naval Air Station Oceana					
Naval Air Station Oceana Dam Neck Annex					
Naval Support Activity Hampton Roads- Portsmouth Annex					
Scott Center Annex					
Total					

TOTAL NUMBER OF DEFICIENCIES PER INSTALLATION

Installation	Initial Deficiencies	Repeat Deficiencies	Immediate Threat Deficiencies
Naval Station Norfolk			
Naval Support Activity Hampton Roads (excluding NSA Northwest)			
Joint Expeditionary Base Little Creek			
Joint Expeditionary Base Fort Story			
Naval Air Station Oceana			
Naval Air Station Oceana Dam Neck Annex			
Naval Support Activity Hampton Roads- Portsmouth Annex			
Scott Center Annex			
Total			

Attachment 6
48-Hour Runoff Producing Storm Event Inspection Form

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

48 HOUR RUNOFF PRODUCING STORM EVENT INSPECTION FORM

SECTION I: PROJECT INFORMATION

Project Name:	Total Disturbed Acreage:	
Project Location:	Installation:	
Inspector:	Inspection Date:	Inspection Time:
Weather Conditions:	Precipitation (inches):	
NAVFAC Construction Manager:	Project Operator:	
Inspection Type: ☐ 48-hour Runoff Producing Storm Event Inspection	Present at Inspection:	

SECTION II: STAGE OF CONSTRUCTION

Pre-Construction ☐	Building Construction ☐	Construction of SWM Facilities ☐
Clearing & Grubbing ☐	Finish Grading ☐	Maintenance of SWM Facilities ☐
Rough Grading ☐	Final Stabilization ☐	Other: _____ ☐
Mobilization ☐	Interior Construction ☐	

SECTION III: SITE INSPECTION

Item	**Virginia E&S Control Law and Regulations**	***Yes***	***No***	***N/A***	***Notes***
1	Does the project have appropriate controls in place to prevent non-stormwater discharges to the MS4, such as: wastewater, concrete washout, fuels and oils, construction waste, and other illicit discharges?	☐	☐	☐	
2	Has sediment or other pollutants been observed leaving the project site?	☐	☐	☐	
3	Litter, debris, and chemicals are controlled from becoming a pollutant source?	☐	☐	☐	
4	Are perimeter controls (e.g. silt fence) installed and functioning properly after the storm event?	☐	☐	☐	
5	Do all operational storm sewer inlets have inlet protection in place and functioning properly after the storm event?	☐	☐	☐	

SECTION IV: RECOMMENDED CORRECTIVE ACTIONS

RCA	State Regulation (Minimum Standards)/ Construction General Permit	VA ESC Handbook Standards and Specifications	Deficiency		Description and Location of Condition Observed, Recommended Corrective Actions, and Other Comments	Recommended Corrective Action Date
			Initial	Repeat		
			☐	☐		
Photo #1(1):			Photo #2:		Photo #3:	
			☐	☐		
Photo #1:			Photo #2:		Photo #3:	

(1) Photograph naming convention is: INSTALLATION ABBREVIATION_PROJECT NAME_XX/XX/2015_###

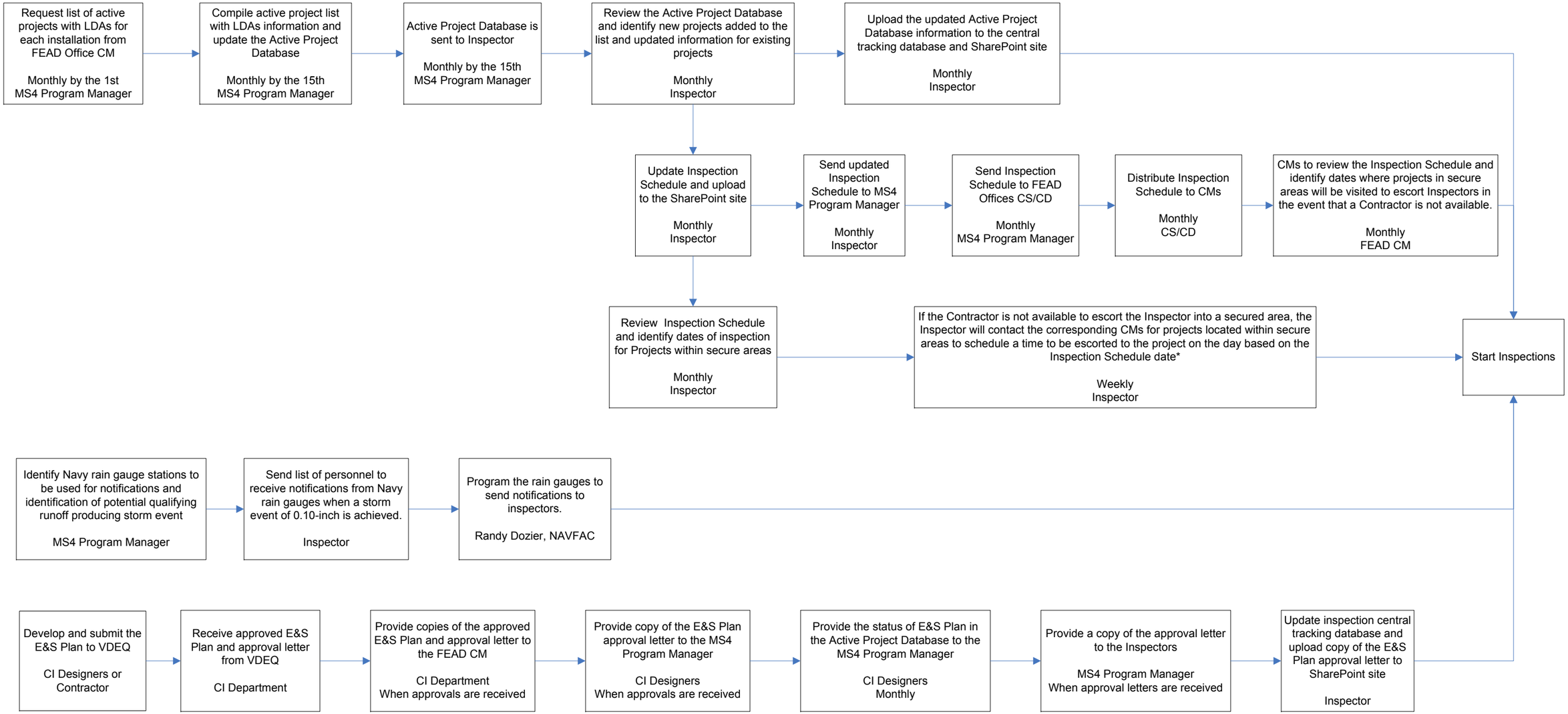
NOTES:

Attachment 7
Pre-Inspection Procedures Flowchart

TASK ORDERS WE09 & WE74 - MS4 CONSTRUCTION SITE INSPECTIONS FOR HAMPTON ROADS INSTALLATIONS

Pre-Inspection Procedures Flowchart

Updated: 08 July 2015



Notes:

- Inspectors will request and obtain a 12-month clearance for secured areas. Inspectors can be escorted to secure areas by Contractor. In the event that a Contractor is not available, the Inspector will contact the FEAD CM to be escorted into the secure area.
- CH2M HILL has been contracted under Contract Number N62470-10-D-3009, Task Order WE09 & WE74 to conduct Erosion and Sediment Control Construction Site Inspections. CH2M HILL is referred to as Inspector in this diagram.
- The SharePoint site will only be available during CH2M HILL Management of the Erosion and Sediment Control Construction Site Inspections contract period of performance.

Acronyms
CI – Capital Improvements
CM = Construction Manager
CS/CD = Construction Supervisor/Construction Director
E&S Plan = Erosion and Sediment Control Plan
FEAD = Facilities, Engineering, and Acquisitions Department
Inspector = CH2M HILL
LDA = Land Disturbing Activity
VDEQ = Virginia Department of Environmental Quality

Legend

Task

Schedule
Responsible Party

Attachment 8
Active Project Database

Municipal Separate Storm Sewer System (MS4) Permit Construction Site Inspections for Hampton Roads Installations

Active Project Database Template

PROJECT_CODE	INSTALLATION_CODE	PROJECT_NUMBER	DISTURBED_AREA	VSMP_INSPECTION_REQUIRED	PROJECT_CD_CM_SUPERVISOR	PROJECT_CM	PROJECT_ET	PROJECT_START_DATE	PROJECT_COMPLETION_DATE	WORK_IN_PLACE	LDAs_STATUS	LDAs_EXPECTED_START_DATE	LDAs_Start_Date	LDAs_End_Date	DEQ_APPROVAL_LETTER	DEQ_APPROVAL_LETTER_DATE	DEQ_TRO_PROJECT_NUMBER	PROJECT_IN_SECURED_AREA	COMMENTS	LASTUPDATEDATE
3165_MATERIAL_STORAGE	JEBLC	1341750	0.25	No	Chris Menia	Melanie Chavarria	Greg Meyers	9/3/2014	8/7/2015	0	Active		3/24/2015		Yes	11/25/2014	T-14-42	No	Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
3601_RENO	JEBLC		0.3	No	Chris Menia	Patrick Hooper	Davy Harrison	9/26/2013	10/21/2015	0.18	Active		3/24/2015		Yes	3/30/2015		No	E&S Plan submitted 07/2014 / No Approval Letter on file. Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
564_C_AVE_EXTENSION	NSN	1313779									Upcoming				Yes	8/29/2014	T-14-26		Received E&S Control Plan approval letter from DEQ. Project was added to the active project database by CH2M HILL.	3/19/2015
A128_DEMO	NSN	1106511	1.8	Yes	Mark Airaghi	Matt Cook	Mike Benson	8/1/2015	12/1/2015	0	Active but no LDAs	7/1/2015			Yes	7/11/2014	T-14-15	No	Interior construction only. Expect to start LDAs July-2015.	4/27/2015
ASOS_RELO	NSN	1314138	3.12	Yes	Mark Airaghi	Luke Castin	Kevin Catlin	11/1/2014	5/1/2015	0	Not Started				Yes	7/14/2014	T-14-16	Yes	CH2M HILL: Airfield Training required to access runway. Check with the contractor in the project trailer for escort. If contractor is not able to escort, contact Phillip Winslow to determine if the Airfield Training is needed.	3/4/2015
BH423_DBB_REPAIRS	NASO		0.77	No	Bill Shirk	Joseph Piper	James Wells	6/3/2014	4/15/2016	0.34	Active		3/20/2015		N/A			No	All building work is interior renovation. A well field will be constructed and could have associated LDA. Check project for LDA associated with the well field.	3/4/2015
CB_JOG_BATH_FACILITY	JEBLC				Chris Menia					0	Upcoming							No		3/4/2015
CB125_CRANE_STORAGE	JEBLC				Chris Menia	Melanie Chavarria	Mike Welch	9/22/2014	7/24/2015	0	Not Started		6/16/2015					No	Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
CB125_KALMAR_STORAGE	JEBLC	1358441	0.31	No	Chris Menia	Melanie Chavarria	Mike Welch	9/25/2014	6/12/2015	0	Not Started		6/15/2015		Yes	11/19/2014	T-14-37	No	Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
CEP156_AMMONIA	NSN		2.53	Yes	Mark Airaghi	Sheldon Johnson		2/1/2013	2/1/2015	1	Complete							No	CH2M HILL: Identified project is 100% complete during the site visit conducted on 15-JAN-2015. Meeting attendees Phillip Winslow and Lindsey Carr.	3/4/2015
CEP210_DEMO	NSN			No	Mark Airaghi	Mark Mainous	Mike Benson	1/15/2015	3/1/2015	0.02	Active		3/16/2015	4/29/2015	N/A			No	Over 10,000 sf Under 1 Acre.	4/27/2015
CEP66_DEMO	NSN	1332958		No	Mark Airaghi	Mark Mainous	Mike Benson	12/1/2014	12/1/2014	0.03	Not Started				Yes	8/26/2014	T-14-18	No	Over 10,000 sf Under 1 Acre.	3/4/2015
DB_SOF_DOG	DN		1.9	Yes	Bill Shirk	Hollis Jennings	James Wells	7/9/2013	4/15/2014	0.73	Active		3/26/2015		N/A			Yes	Project is nearing completion of land disturbing activities. Expect site work to be completed Feb/Mar 2015. Denotes project is within secured area. Contact Project CM or CM Supervisor to identify inspection schedule and obtain access to project locations. Disturbed acreage of 0.86 includes both projects under D/B SOF.	3/4/2015
DB_SOF_LOGISTICS	DN		3	Yes	Bill Shirk	Hollis Jennings	James Wells	7/9/2013	4/15/2014	0.73	Active		3/26/2015		N/A			Yes	Project is nearing completion of land disturbing activities. Expect site work to be completed Feb/Mar 2015. Denotes project is within secured area. Contact Project CM or CM Supervisor to identify inspection schedule and obtain access to project locations. Disturbed acreage of 0.86 includes both projects under D/B SOF.	3/4/2015
GATOR_SEWER	JEBLC				Chris Menia	Greg Ray	Brett Standley	6/6/2014	1/1/2015	0	Not Started							No	Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
HQ_SACT	NSA		21	Yes	Mark Airaghi	Reuben Trant	Ray Barnhill	3/1/2012	10/1/2015	0.75	Active		3/18/2015		N/A			No		4/27/2015
INDOOR_RANGE	JEBFS				Chris Menia					0	Upcoming								RFP out for bid; Hasn't been awarded.	3/4/2015
KK_KN_KJ_IF_BARRACKS	NSN		2.375	Yes	Mark Airaghi	Charles Stanton		1/1/2013	1/1/2015	1	Complete				N/A			No	CH2M HILL: Identified project is 100% complete during the site visit conducted on 15-JAN-2015. Meeting attendees Phillip Winslow and Lindsey Carr.	4/27/2015
KM_KL_KQ_BARRACKS	NSN		1.54	Yes	Mark Airaghi	Charles Stanton	Bob Parks	7/1/2014	9/23/2015	0.2	Active		3/19/2015		N/A			No		4/27/2015
LAYDOWN_YARD_3090	JEBLC	1353020									Upcoming				Yes	11/17/2014	T-14-38		Received E&S Control Plan approval letter from DEQ. Project was added to the active project database by CH2M HILL.	3/19/2015
M48_M110_DEMO	NSN	1354445		No							Upcoming				Yes	5/14/2015	TRO-15-85		Received E&S Control Plan approval letter from DEQ. Project was added to the active project database by CH2M HILL.	5/20/2015
MWR_YOUTH_CENTER	NASO		3.8	Yes	Bill Shirk	Harold Bishop	Art Sanchez	5/13/2014	2/15/2014		Active		3/20/2015		N/A			No		3/4/2015
N84_AUTO_SKILL	JEBLC				Chris Menia			7/1/2015		0	Upcoming	7/1/2015						No		3/4/2015
NEX_CAR_WASH	NSN		1.6	Yes	Mark Airaghi	John Vogt	Wayne Foster	2/1/2014	2/1/2015	0	Active		3/18/2015	5/14/2015	N/A			No		4/27/2015
NEX_CAR_WASH_DEMO_BUILD	JEBLC				Chris Menia					0	Not Started							No		3/4/2015
NO_PROJECT_NSAHR-PA	NSAHR-PA		0	N/A	Not Applicable	Not Applicable	Not Applicable			0	No Active Project							No	Place holder for Naval Medical Center Portsmouth.	3/4/2015
NO_PROJECT_SCA	SCA		0	N/A	Not Applicable	Not Applicable	Not Applicable			0	No Active Project							No	Place holder for Scott Center Annex.	3/4/2015
P123_BACH_QTERS	NSN		14	Yes	Mark Airaghi	Harrison Dudley	Mike Benson	4/1/2013	6/1/2015	0.79	Active		3/19/2015		N/A			No	Project does not have an approved E&S Plan. The project started prior to the Navy granting VDEQ authority to approve the E&S Plans.	3/16/2015
P165_SOF_COMBAT_FACILITY	JEBLC		3.23	Yes	Chris Menia	Jeff Miller	Davy Harrison	9/24/2013	11/26/2015	0.24	Active		3/23/2015		In Process			No	E&S Plan submitted 05/2014. No Approval Letter on file. Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre. There are two separate areas associated with P165, a warehouse off of Gator Road and an administration building in proximity to building 3897.	3/4/2015
P197_STEAM	NSA		0.97	No	Mark Airaghi	Reuben Trant	Jan Sutton	6/1/2013	5/1/2015	0.74	Active		3/19/2015		N/A			No		4/24/2015
P4_W193_P28_P86_DEMO	NSN		2.73	Yes	Mark Airaghi	Michael Howland	Bob Parks	12/1/2014	4/1/2015	0	Active		3/17/2015		Yes	7/8/2014		No		4/26/2015
P473_SOF_OPS_FACILITY	JEBLC		3.68	Yes	Chris Menia	Jeff Miller	Mike Welch	9/30/2013	12/27/2015	0.16	Active		3/23/2015		Yes	1/29/2015		No	Dates Awarded and Proposed. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
P504_VEH_STORAGE	DN		0.39	No	Bill Shirk	Bill Shirk	James Wells				Active		3/25/2015		N/A			No	No permit was obtained. Inspection is still required. Project is close to completion.	4/27/2015
P513_A_SCHOOL_BARRACKS	DN		4.4	Yes	Bill Shirk	Brandon Wade	Art Sanchez	4/14/2014	12/15/2014	0.2	Active		3/25/2015		Yes	4/22/2015		No	E&S Plan submitted; DEQ Comments Received 08/01/2014. Resubmittal Required.	3/4/2015
P527_SOF_PER_GATE	DN		25.88	Yes	Bill Shirk	Bill Shirk	James Wells	3/13/2013	4/15/2014	0.58	Active		3/26/2015		N/A			Yes	The Main Gate Improvement is the traffic circle being constructed on the Dam Neck Annex near the main gate. This project is reapplying for its Construction General Permit as the previous permit expired on July 1, 2014.	4/27/2015
P815_AERIAL_TARGET	DN		2.3	Yes	Bill Shirk	Hollis Jennings	James Wells			0	On Hold							No	UXO has been found within the project area resulting in a stop work order being issued. CH2M HILL will perform Digital Geophysical Mapping (DGM) survey of the project area. To do so, Walbridge Aldinger (contractor) will be required to remove the asphalt parking lot so the DGM survey can be conducted and UXO identified. The specific start dates are unknown at this time. In addition, Walbridge Aldinger will be responsible for repaving/resurfacing the existing entrance/exit road into the aerial target operations area. This portion of the project has also been issued a Stop Work Order (latitude: 36.766209; longitude: -75.954944).	3/4/2015

Municipal Separate Storm Sewer System (MS4) Permit Construction Site Inspections for Hampton Roads Installations

Active Project Database Template

PROJECT_CODE	INSTALLATION_CODE	PROJECT_NUMBER	DISTURBED_AREA	VSMP_INSPECTION_REQUIRED	PROJECT_CD_CM_SUPERVISOR	PROJECT_CM	PROJECT_ET	PROJECT_START_DATE	PROJECT_COMPLETION_DATE	WORK_IN_PLACE	LDAs_STATUS	LDAs_EXPECTED_START_DATE	LDAs_Start_Date	LDAs_End_Date	DEQ_APPROVAL_LETTER	DEQ_APPROVAL_LETTER_DATE	DEQ_TRO_PROJECT_NUMBER	PROJECT_IN_SECURED_AREA	COMMENTS	LASTUPDATEDATE
RODGZ_RANGE	JEBLC	132114	2.75	Yes	Chris Menia	Peter Rieger	Mike Welch	9/30/2014	5/29/2015	0	Active				Yes	3/23/2015	T-14-36	Yes	Project on hold. Dates Awarded and Proposed. Denotes project is within secured area. Contact Project CM or CM Supervisor to identify inspection schedule and obtain access to project locations. Project >10,000 sf. Need to identify during initial site visit total disturbed area and if it is over one acre.	3/4/2015
SP264_BULKHEAD	NSN		4.16	Yes	Mark Airaghi	Bill House	Wayne Foster	3/1/2014	2/1/2015	1	Complete		3/16/2015	3/16/2015	N/A			No	E&S Plan submitted; Not Approved. There is no permit coverage under the CGP and no approved E&S plan for the bulkhead repair project. Final inspection conducted.	4/27/2015
STEAM_PLANT_DEMO	NASO		2.82	Yes	Bill Shirk	Harold Bishop	Dave Pigeon	3/23/2015		0	Active	3/23/2015	5/21/2015		Yes	2/2/2015		No	Project had pre-construction meeting on March 12, 2015. Work is planned to start on March 23rd contingent on the contractor receiving the CGP coverage from the VDEQ. The project is anticipated to last 4-5 months.	3/16/2015
U112_RENO	NSN		2.2	Yes	Mark Airaghi	Mark Mainous	Wayne Foster	1/15/2015	12/1/2015	0	Not Started							No	Contractors mobilized construction trailer.	3/4/2015
U130_FM	NSN			No	Mark Airaghi	Matt Cook	Wayne Foster	6/1/2014	3/1/2015	0.43	Active		3/19/2015		N/A			No	Over 10,000 sf Under 1 Acre.	4/27/2015
V52_DEMO	NSN	1320328	2.3	Yes	Mark Airaghi	Bill House	Kevin Catlin	7/1/2014	3/1/2015		Active but no LDAs				Yes	3/3/2015	T-14-48	No	CH2M HILL: Ongoing interior demolition. Should be checked monthly as project work is not consistent VDEQ letter includes the approval of the Stormwater Management and E&S Control Plan.	3/18/2015
V70_PARKING	NSN	1351756		No	Mark Airaghi	John Vogt	Kevin Catlin	1/15/2015	4/1/2015	0	Not Started				Yes	3/3/2015	T-14-44	No	Over 10,000 sf Under 1 Acre.	3/18/2015
VET_CLINIC	NSN	1153471	2.3	Yes	Mark Airaghi	Bill House	Kevin Catlin	3/1/2014	9/1/2015	0.35	Active		3/17/2015		Yes	8/25/2014	Not Provided	No		4/27/2015
Z140_EXTERIOR	NSN		2.3	Yes	Mark Airaghi	Michael Howland	Glenn Ames	1/1/2015	8/1/2015	0.01	Not Started				Yes	1/14/2015		No	CH2M HILL: Exterior Repairs only. Drive by to confirm no LDAs will occur in the parking lot.	3/4/2015

Attachment 9
Inspection Schedule

June 29, 2015 - July 5, 2015

June 2015

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July 2015

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Monday, June 29

8:00am - 5:00pm JEB Little Creek (P-165 SOF Combat Services Support Facility (including Administration Building); P-473 SOF OPS Facility; SEABEEs Crane Storage Facility)

Tuesday, June 30

8:00am - 5:00pm JEB Little Creek (Construct Material Storage Facility adjacent to Building 3165; Building 3601 Renovations; Kalmar Storage Building; Rodriguez Range)

Wednesday, July 1

8:00am - 5:00pm Dam Neck Annex (DN: SECURE DEVGRU - D/B SOF Logistics Support Facility and Military Working Dog Facility; P-527, SOF Perimeter & Main Gate Improvements; P-527, Visitors Center)

Thursday, July 2

8:00am - 5:00pm Dam Neck Annex and Naval Air Station Oceana (NASO: MWR Youth Center; DBB Repairs BH-423; Demolition of Steam Plant; DN: P-513, A School Barracks; P-504 Vehicle Storage Facility)

Friday, July 3

Notes

Notes

Note: The bi-weekly inspection schedule will be updated monthly or when new projects with LDAs are added to the active project database.

Attachment 10
VDEQ Approval Letter Example

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2009
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Maria R. Nold
Regional Director

July 14, 2014

Mr. James W. Nelms, P.E.
NAVFAC MIDLANT, PWD Norfolk, FEAD
9742 Maryland Ave., Bldg Z-140, Room 114
Norfolk, VA 23511
james.w.nelms@navy.mil

RE: U.S. Navy Project No. 1314138
Relocate ASOS
Naval Station Norfolk
Erosion and Sediment Control Plan Approval
TRO Project No. T-14-16

Dear Mr. Nelms:

Thank you for the submission of the above referenced plans to our office for review and approval in accordance with the *Virginia Erosion and Sediment Control Law and Regulations*. Three (3) stamped and signed copies of the approved plan are enclosed. One (1) copy must remain on site at all times.

Although your plan is approved, please be advised that the Minimum Standards established in Section 40 of the *Virginia Erosion and Sediment Control Regulations* (9VAC25-840) apply to all land-disturbing activities that evolve from this project. In addition, no changes may be made to the approved plan without first obtaining approval from this office.

Additionally, prior to engaging in land-disturbing activities, the Navy, or awarded contractor, is required to obtain a VSMP Construction General Permit in accordance with the *Virginia Stormwater Management Act.* Pursuant to 9VAC25-880, land-disturbing activities that result in land disturbance equal to or greater than one acre must be registered for coverage under the General Permit for Discharges of Stormwater from Construction Activities.

We ask that you please notify this office at least one (1) week before the preconstruction conference and at least one (1) week before any land-disturbance associated with this project begins. Prompt notice is necessary, as we will be inspecting the installation and maintenance of all erosion control measures. The Registered Land Disturber (RLD) should also be present at the pre-construction meeting.

Please do not hesitate to contact me at (757) 518-2003 or erin.belt@deq.virginia.gov should you have any questions or comments regarding this project.

Sincerely,

Erin Ervin Belt

Erin Ervin Belt
Stormwater Compliance Specialist

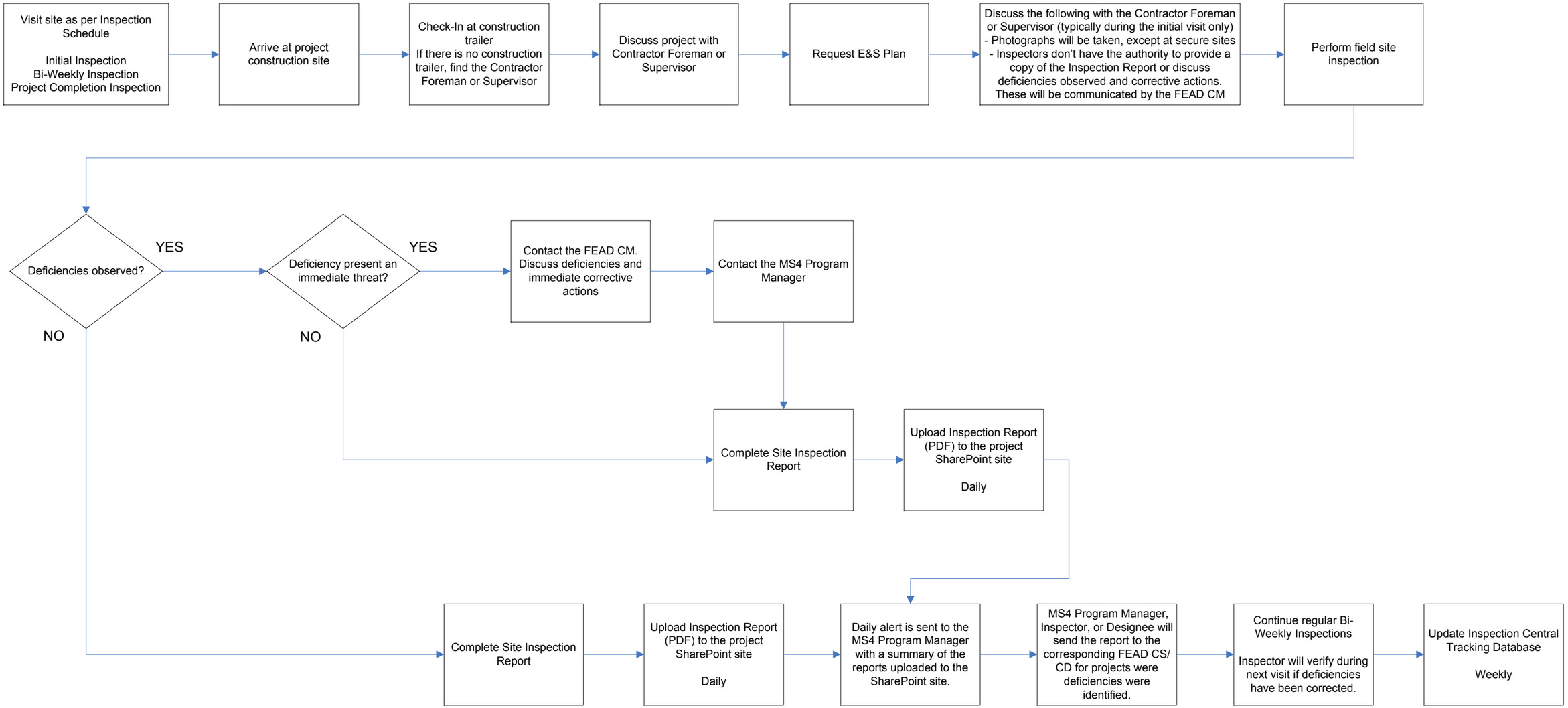
Cc: Phillip Winslow, NAVFAC Environmental Compliance Representative
Noah M. Hill, Stormwater Compliance Manager
File

Attachment 11
Construction Site Inspection Procedures Flowchart

TASK ORDERS WE09 & WE74 - MS4 CONSTRUCTION SITE INSPECTIONS FOR HAMPTON ROADS INSTALLATIONS

Construction Site Inspection Procedures

Updated: 09 September 2015



Acronyms
CM = Construction Manager
CS/CD = Construction Supervisor/Construction Director
E&S Plan = Erosion and Sediment Control Plan
FEAD = Facilities, Engineering, and Acquisitions Department
Inspector = CH2M HILL

Notes:
- Some projects with LDAs may not have a construction trailer. If that occurs, identify the Contractor Supervisor or Foreman. If no one is available on site, conduct a drive-by inspection and note it in the Site Inspection Report.
- Projects with no active LDAs or interior demolition/work will be visited once a month to verify if there are LDAs. If there are no LDAs, complete the Site Visit Report indicating that there are no active LDAs.

Attachment 12
Erosion and Sediment Control
Site Inspection Field Form

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

SITE INSPECTION FIELD FORM

SECTION I: PROJECT INFORMATION

Project Name:	Total Disturbed Acreage:	
Project Location:	Installation:	
Inspector:	Date of Inspection:	Time:
Weather Conditions:		
NAVFAC Construction Manager:	Project Operator:	
Inspection Type: ☐ Initial Inspection ☐ Initial/48-hour Runoff Producing Storm Event Inspection ☐ Bi-Weekly Inspection ☐ Bi-Weekly/48-hour Runoff Producing Storm Event Inspection ☐ 48-hour Runoff Producing Storm Event Inspection ☐ Project Completion Inspection	Present at Inspection:	
VSMP VAR10 Construction Inspection Required: ☐ *Complete Section IV*	VSMP Permit Number:	
E&S Control Plan Approval Letter Received:	E&S Control Plan Approval Letter Date:	

SECTION II: STAGE OF CONSTRUCTION

Pre-Construction ☐	Building Construction ☐	Construction of SWM Facilities ☐
Clearing & Grubbing ☐	Finish Grading ☐	Maintenance of SWM Facilities ☐
Rough Grading ☐	Final Stabilization ☐	Other: _____ ☐
Mobilization ☐	Interior Construction ☐	

PROJECT DOCUMENTATION INSPECTION

SECTION III: EROSION AND SEDIMENT CONTROL

Item	**Virginia E&S Control Law and Regulations**	***Yes***	***No***	***N/A***	***Notes***
1	Does the Project have an E&S control plan onsite?	☐	☐	☐	
2	Has the onsite E&S Control Plan been approved by the VESCP Authority?	☐	☐	☐	
5	Is the project operator conducting routine inspections of the installed E&S control measures?	☐	☐	☐	

SECTION IV: VSMP PERMIT COMPLIANCE (Projects disturbing land equal or greater than 1 acre)

Item	VAR10 Permit Required Items; 9VAC25-880-70	*Yes*	*No*	*N/A*	*Notes*
1	Project has received permit coverage to discharge stormwater under the Virginia Construction Stormwater General Permit?	☐	☐	☐	
2	Is a copy of the Permit coverage letter posted onsite?	☐	☐	☐	
3	Does the Operator have a SWPPP onsite?	☐	☐	☐	
4	Does the SWPPP identify the "Qualified Personnel" conducting inspections for the Operator?	☐	☐	☐	
5	Is the Operator conducting site inspections at the required frequency identified in the General Permit?	☐	☐	☐	

VA ESC HANDBOOK INSPECTION CHECKLIST

Item	Checklist Questionnaire	*Yes*	*No*	*N/A*	*Notes*
1	MS-1: Have all denuded areas requiring temporary or permanent stabilization been stabilized? (seeded, mulched, graveled)	☐	☐	☐	
2	MS-2: Are soil stockpiles adequately stabilized with seeding and/or controlled with sediment trapping measures?	☐	☐	☐	
3	MS-3: Does permanent vegetation provide adequate stabilization?	☐	☐	☐	
4	MS-4: Have sediment trapping measures (e.g. sediment basin, traps, perimeter dikes, sediment barriers, etc.) been constructed as a first step in LDA?	☐	☐	☐	
5	MS-5: For perimeter sediment trapping measures, are earthen structures stabilized?	☐	☐	☐	
6	MS-6: Are sediment basins installed where needed?	☐	☐	☐	
7	MS-7: Are finished cut and fill slopes adequately stabilized to minimize erosion?	☐	☐	☐	
8	MS-8: Are on-site channels, flumes, or slope drainage structures adequately stabilized?	☐	☐	☐	
9	MS-9: Is adequate drainage or other protection provided where water seeps from a slope?	☐	☐	☐	
10	MS-10: Do all operational storm sewer inlets have adequate inlet protection?	☐	☐	☐	
11	MS-11: Are stormwater conveyance channels adequately stabilized?	☐	☐	☐	
12	MS-12: Is in-stream construction conducted using measures to minimize channel damage?	☐	☐	☐	
13	MS-13: Are temporary stream crossings of non-erodible material installed where applicable?	☐	☐	☐	
14	MS-14: Are all applicable federal, state, and local regulations pertaining to working in or crossing live watercourses met?	☐	☐	☐	
15	MS-15: Is necessary restabilization of in-stream construction complete?	☐	☐	☐	
16	MS-16: Are utility trenches stabilized properly?	☐	☐	☐	
17	MS-17: Are soil and mud kept off public roadways where construction vehicle access routes intersect paved or public roads?	☐	☐	☐	
18	MS-18: Have all temporary control structures that are no longer needed been removed? Have all control structure repairs and sediment removal been performed?	☐	☐	☐	
19	MS-19: Are properties and waterways downstream from development adequately protected from erosion and sediment deposition due to increases in peak stormwater runoff?	☐	☐	☐	

SITE INSPECTION

SECTION III: EROSION AND SEDIMENT CONTROL

Item	Virginia E&S Control Law and Regulations	*Yes*	*No*	*N/A*	*Notes*
3	Are E&S Control measures installed in accordance with the approved plan?	☐	☐	☐	
4	Is the project in compliance with the 19 minimum standards of the Erosion and Sediment Control Regulations?	☐	☐	☐	
6	Does the project have appropriate controls in place to prevent non-stormwater discharges to the MS4, such as: wastewater, concrete washout, fuels and oils, construction waste, and other illicit discharges?	☐	☐	☐	
7	Has sediment or other pollutants been observed leaving the project site?	☐	☐	☐	

SECTION IV: VSMP PERMIT COMPLIANCE (Projects disturbing land equal or greater than 1 acre)

Item	VAR10 Permit Required Items; 9VAC25-880-70	*Yes*	*No*	*N/A*	*Notes*
6	Stabilization control measures are being utilized?	☐	☐	☐	
7	Structural control measures designed and installed?	☐	☐	☐	
8	Control measures are maintained?	☐	☐	☐	
9	Litter, debris, and chemicals are controlled from becoming a pollutant source?	☐	☐	☐	

CORRECTIVE ACTIONS IDENTIFIED DURING MOST RECENT INSPECTION

Refer to Most Recent Inspection Report

Inspection Date	RCA	Status		Description of Addressed Corrective Action
		Corrected	Not Addressed	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

RECOMMENDED CORRECTIVE ACTIONS (THIS INSPECTION)

State Regulation (Minimum Standards)/Construction General Permit	*VA ESC Handbook Standards and Specifications*		
MS1 – Soil Stabilization MS2 – Stockpiles & Borrow Area MS3 – Permanent Stabilization MS4 – Perimeter Controls MS5 – Earthen Structures MS6(A) – Sediment Traps MS6(B) – Sediment Basin MS7 – Cut and Fill Slopes MS8 – Concentrated Runoff MS9 – Water Seepage MS10 – Storm Inlet MS11 – Conveyance Channel MS12 – Minimize Encroachment to Live Watercourse MS13 – Live Watercourse Crossing MS14 – Working in a Live Watercourse MS15 – Bed and Banks of a Watercourse MS16 – Underground Utility MS17 – Transport of Sediment onto Paved Surfaces MS18 – Temporary ESC Measures Removed MS19 – Downstream Properties ESC Plan - VA Erosion and Sediment Control Plan Regulation 9VAC25-840 SWM Program - VA Stormwater Management Program Permit Regulation 9VAC25-870 Other	3.01 – Safety Fence 3.02 – Construction Entrance 3.03 – Construction Road Stabilization 3.04 – Straw Bale Barrier 3.05 – Silt Fence 3.06 – Brush Barrier 3.07 – Storm Drain Inlet Protection 3.08 – Culvert Inlet Protection 3.09 – Temporary Diversion Dike 3.10 – Temporary Fill Diversion 3.11 – Temporary Right-of-Way Diversion 3.12 - Diversion 3.13 – Temporary Sediment Trap 3.14 – Temporary Sediment Basin	3.15 – Temporary Slope Drain 3.16 – Paved Flume 3.17 – Stormwater Conveyance Channel 3.18 – Outlet Protection 3.19 – Riprap 3.20 – Rock Check Dams 3.21 – Level Spreader 3.22 – Vegetative Streambank Stabilization 3.23 – Structural Streambank Stabilization 3.24 – Temporary Vehicular Stream Crossing 3.25 – Utility Stream Crossing 3.26 – Dewatering Structure	3.27 – Turbidity Curtain 3.28 – Subsurface Drain 3.29 – Surface Roughening 3.30 - Topsoiling 3.31 – Temporary Seeding 3.32 – Permanent Seeding 3.33 - Sodding 3.34 – Bermudagrass and Zoysiagrass Establishment 3.35 - Mulching 3.36 – Soil Stabilization Blankets and Matting 3.37 – Trees, Shrubs, Vines and Ground Covers 3.38 – Tree Preservation and Protection 3.39 – Dust Control Not Applicable

Note: Use the above table to assist in completing *Section V: Recommended Corrective Actions* below.

SECTION V: RECOMMENDED CORRECTIVE ACTIONS

RCA	State Regulation (Minimum Standards)/ Construction General Permit	VA ESC Handbook Standards and Specifications	Deficiency		Description and Location of Condition Observed, Recommended Corrective Actions, and Other Comments	Recommended Corrective Action Date
			Initial	Repeat		
			☐	☐		
Photo #1[(1)]:			Photo #2:		Photo #3:	
			☐	☐		
Photo #1:			Photo #2:		Photo #3:	
			☐	☐		
Photo #1:			Photo #2:		Photo #3:	

RCA	State Regulation (Minimum Standards)/ Construction General Permit	VA ESC Handbook Standards and Specifications	Deficiency		Description and Location of Condition Observed, Recommended Corrective Actions, and Other Comments	Recommended Corrective Action Date
			Initial	Repeat		
			☐	☐		
Photo #1:			Photo #2:		Photo #3:	
			☐	☐		
Photo #1:			Photo #2:		Photo #3:	
Photo #1:			Photo #2:		Photo #3:	
Photo #1:			Photo #2:		Photo #3:	
Photo #1:			Photo #2:		Photo #3:	
Photo #1:			Photo #2:		Photo #3:	

(1) Photograph naming convention is: INSTALLATION ABBREVIATION_PROJECT NAME_XX/XX/2015_###

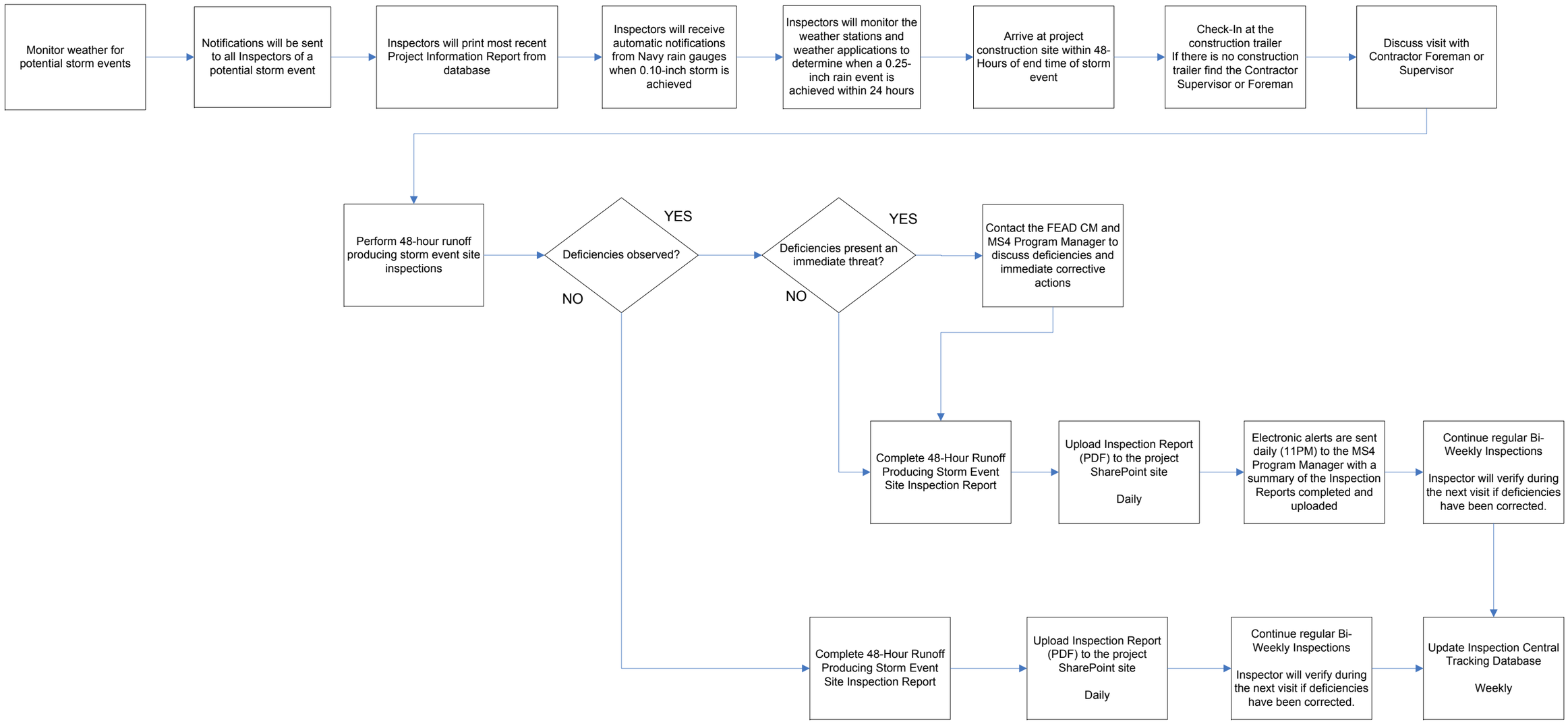
NOTES:

Attachment 13
48-Hour Runoff Producing Storm Event Procedures Flowchart

TASK ORDERS WE09 & WE74 - MS4 CONSTRUCTION SITE INSPECTIONS FOR HAMPTON ROADS INSTALLATIONS

48 Hour Runoff Producing Storm Event Inspection Procedures

Updated: 08 July 2015



Acronyms
CM = Construction Manager
CS/CD = Construction Supervisor/Construction Director
E&S Plan = Erosion and Sediment Control Plan
FEAD = Facilities, Engineering, and Acquisitions Department
Inspector = CH2M HILL

Notes:
- Contractor trailers for projects located in secured areas are located outside the secured areas.
- Inspectors have been provided a 12-month security clearance to DEVGRU at Dam Neck Annex. If visiting the site, the Contractor will escort you to the construction site. If the Contractor is not available, contact the corresponding CM.
- Inspectors will not conduct full inspections during 48-hour runoff producing storm events. Full inspections will only be conducted if the project was scheduled to have a bi-weekly inspection on the day the 48-hour runoff producing storm event inspection is been conducted.
- Inspectors will not verify if prior RCAs have been addressed. Prior RCAs will only be verified during bi-weekly inspections.

Attachment 14
48-Hour Runoff Producing Storm Event Inspection Schedule

MS4 CONSTRUCTION SITE INSPECTIONS FOR HAMPTON ROADS INSTALLATIONS

48-HOUR RUNOFF PRODUCING STORM EVENT INSPECTIONS

Inspection Schedule

Updated: 24 June 2015

INSPECTOR 1 – Celeste	
Day 1 Naval Station Norfolk and Naval Support Activity Hampton Roads 0700 – 1600 NSA: • HQ SACT Addition *[HQ_SACT]* • P-197 Steam Decentralization *[P197_STEAM]* NSN: • Demolition of Buildings P-4, W-193, P-28 and P-86 [P4_W193_P28_P86_DEMO] • Barracks KM/KL/KQ *[KM_KL_KQ_BARRACKS]* • P-123 Bachelor Quarters Homeport Ashore • *[P123_BACH_QTERS]* • U-130 Force Main *[U130_FM]* • Veterinary Clinic *[VET_CLINIC]* • Exterior Repairs Z-140 *[Z140_EXTERIOR]*	Day 2 Naval Station Norfolk and Naval Support Activity Hampton Roads 0700 – 1600
INSPECTOR 2 – Kathryn	
Day 1 Dam Neck Annex and Naval Air Station Oceana 0700 – 1600 DN: • P-513, A School Barracks *[P513_A_SCHOOL_BARRACKS]* • P-504 Vehicle Storage Facility *[P504_VEH_STORAGE]* NASO: • MWR Youth Center *[MWR_YOUTH_CENTER]* • DBB Repairs BH-423 *[BH423_DBB_REPAIRS]* • Demolition of Steam Plant *[STEAM_PLANT_DEMO]*	Day 2 Dam Neck Annex 0700 – 1600 • P-527, SOF Perimeter & Main Gate Improvements & Visitors Center *[P527_SOF_PER_GATE]* • SECURE DEVGRU - D/B SOF Logistics Support Facility and Military Working Dog Facility *[DB_SOF_DOG], [DB_SOF_LOGISTICS]*

[DENOTES PROJECT CODE]

Attachment 15
48-Hour Runoff Producing Storm Event Inspection Field Form

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

48 HOUR RUNOFF PRODUCING STORM EVENT FIELD INSPECTION FORM

SECTION I: PROJECT INFORMATION

Project Name:	Total Disturbed Acreage:	
Project Location:	Installation:	
Inspector:	Date of Inspection:	Time:
Weather Conditions:	Precipitation (inches):	
NAVFAC Construction Manager:	Project Operator:	
Inspection Type: ☐ 48-hour Runoff Producing Storm Event Inspection	Present at Inspection:	

SECTION II: STAGE OF CONSTRUCTION

Pre-Construction ☐	Building Construction ☐	Construction of SWM Facilities ☐
Clearing & Grubbing ☐	Finish Grading ☐	Maintenance of SWM Facilities ☐
Rough Grading ☐	Final Stabilization ☐	Other: _____ ☐
Mobilization ☐	Interior Construction ☐	

SECTION III: SITE INSPECTION

Item	Virginia E&S Control Law and Regulations	*Yes*	*No*	*N/A*	*Notes*
1	Does the project have appropriate controls in place to prevent non-stormwater discharges to the MS4, such as: wastewater, concrete washout, fuels and oils, construction waste, and other illicit discharges?	☐	☐	☐	
2	Has sediment or other pollutants been observed leaving the project site?	☐	☐	☐	
3	Litter, debris, and chemicals are controlled from becoming a pollutant source?	☐	☐	☐	
4	Are perimeter controls (e.g. silt fence) installed and functioning properly after the storm event?	☐	☐	☐	
5	Do all operational storm sewer inlets have inlet protection in place and functioning properly after the storm event?	☐	☐	☐	

SECTION IV: RECOMMENDED CORRECTIVE ACTIONS

RCA	State Regulation (Minimum Standards)/ Construction General Permit	VA ESC Handbook Standards and Specifications	Deficiency		Description and Location of Condition Observed, Recommended Corrective Actions, and Other Comments	Recommended Corrective Action Date
			Initial	Repeat		
			☐	☐		
Photo #1[(1)]:			Photo #2:		Photo #3:	
			☐	☐		
Photo #1:			Photo #2:		Photo #3:	

(1) Photograph naming convention is: INSTALLATION ABBREVIATION_PROJECT NAME_XX/XX/2015_###

NOTES:

State Regulation (Minimum Standards)/Construction General Permit	*VA ESC Handbook Standards and Specifications*		
MS1 – Soil Stabilization MS2 – Stockpiles & Borrow Area MS3 – Permanent Stabilization MS4 – Perimeter Controls MS5 – Earthen Structures MS6(A) – Sediment Traps MS6(B) – Sediment Basin MS7 – Cut and Fill Slopes MS8 – Concentrated Runoff MS9 – Water Seepage MS10 – Storm Inlet MS11 – Conveyance Channel MS12 – Minimize Encroachment to Live Watercourse MS13 – Live Watercourse Crossing MS14 – Working in a Live Watercourse MS15 – Bed and Banks of a Watercourse MS16 – Underground Utility MS17 – Transport of Sediment onto Paved Surfaces MS18 – Temporary ESC Measures Removed MS19 – Downstream Properties ESC Plan - VA Erosion and Sediment Control Plan Regulation 9VAC25-840 SWM Program - VA Stormwater Management Program Permit Regulation 9VAC25-870 Other	3.01 – Safety Fence 3.02 – Construction Entrance 3.03 – Construction Road Stabilization 3.04 – Straw Bale Barrier 3.05 – Silt Fence 3.06 – Brush Barrier 3.07 – Storm Drain Inlet Protection 3.08 – Culvert Inlet Protection 3.09 – Temporary Diversion Dike 3.10 – Temporary Fill Diversion 3.11 – Temporary Right-of-Way Diversion 3.12 - Diversion 3.13 – Temporary Sediment Trap 3.14 – Temporary Sediment Basin	3.15 – Temporary Slope Drain 3.16 – Paved Flume 3.17 – Stormwater Conveyance Channel 3.18 – Outlet Protection 3.19 – Riprap 3.20 – Rock Check Dams 3.21 – Level Spreader 3.22 – Vegetative Streambank Stabilization 3.23 – Structural Streambank Stabilization 3.24 – Temporary Vehicular Stream Crossing 3.25 – Utility Stream Crossing 3.26 – Dewatering Structure	3.27 – Turbidity Curtain 3.28 – Subsurface Drain 3.29 – Surface Roughening 3.30 - Topsoiling 3.31 – Temporary Seeding 3.32 – Permanent Seeding 3.33 - Sodding 3.34 – Bermudagrass and Zoysiagrass Establishment 3.35 - Mulching 3.36 – Soil Stabilization Blankets and Matting 3.37 – Trees, Shrubs, Vines and Ground Covers 3.38 – Tree Preservation and Protection 3.39 – Dust Control Not Applicable

Attachment 16
Site Visit Report

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

SITE VISIT REPORT

SECTION I: PROJECT INFORMATION

Project Name:	Total Disturbed Acreage:	
Project Location:	Installation:	
Inspector:	Date of Inspection:	Time:
Weather Conditions:		
NAVFAC Construction Manager:	Project Operator:	
Inspection Type: ☐ Site Visit – No Active LDAs	Present at Inspection:	
VSMP VAR10 Construction Inspection Required: ☐	VSMP Permit Number:	
E&S Control Plan Approval Letter Received:	E&S Control Plan Approval Letter Date:	

SECTION II: STAGE OF CONSTRUCTION

Interior Construction ☐ Mobilization ☐ Other: _____ ☐

NOTES:

Attachment 17
Site Visit Status Report

NAVFAC Naval Facilities Engineering Command
NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, VA 23511

SITE VISITS STATUS REPORT

GENERAL INFORMATION

Permit Number: VAR04114	Report Date:
Reporting Period: to	

TOTAL NUMBER OF PROJECTS WITH NO LAND DISTURBING ACTIVITIES

Installation	**Number of Projects with no Land Disturbing Activities during reporting period**
Naval Station Norfolk	
Naval Support Activity, Hampton Roads (excluding NSA Northwest)	
Joint Expeditionary Base, Little Creek	
Joint Expeditionary Base, Fort Story	
Naval Air Station Oceana	
Dam Neck Annex	
Naval Medical Center Portsmouth	
Scott Center Annex	
Total	

TOTAL NUMBER OF SITE VISITS CONDUCTED TO PROJECTS WITH NO ACTIVE LAND DISTURBING ACTIVITIES

Installation	**Total Number of Site Visits**
Naval Station Norfolk	
Naval Support Activity, Hampton Roads (excluding NSA Northwest)	
Joint Expeditionary Base, Little Creek	
Joint Expeditionary Base, Fort Story	
Naval Air Station Oceana	
Dam Neck Annex	
Naval Medical Center Portsmouth	
Scott Center Annex	
Total	

Attachment 18
Erosion and Sediment Control Status Report Form for Installations Not Covered under the MS4 Permit

NAVFAC Naval Facilities Engineering Command
NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, VA 23511

EROSION AND SEDIMENT CONTROL STATUS REPORT
INSTALLATIONS NOT COVERED UNDER THE MS4 PERMIT

GENERAL INFORMATION

Reporting Period: to	Report Date:

TOTAL NUMBER OF REGULATED LAND DISTURBING ACTIVITIES

Installation	**Number of Land Disturbing Activities during reporting period**
Defense Fuel Support Center Craney Island	
Naval Weapons Station Yorktown	
Naval Weapons Station Yorktown, Cheatham Annex	
Defense Fuel Support Center Yorktown	
Naval Auxiliary Landing Field Fentress	
Norfolk Naval Shipyard Saint Julien's Creek Annex	
Norfolk Naval Shipyard St. Helena	
Southgate Annex	
Naval Support Activity, Hampton Roads Northwest Annex	
Total	

TOTAL NUMBER OF ACRES DISTURBED

Installation	**Number of Acres Disturbed**
Defense Fuel Support Center Craney Island	
Naval Weapons Station Yorktown	
Naval Weapons Station Yorktown, Cheatham Annex	
Defense Fuel Support Center Yorktown	
Naval Auxiliary Landing Field Fentress	
Norfolk Naval Shipyard Saint Julien's Creek Annex	
Norfolk Naval Shipyard St. Helena	
Southgate Annex	
Naval Support Activity, Hampton Roads Northwest Annex	
Total	

TOTAL NUMBER OF INSPECTIONS CONDUCTED

Installation	Initial Inspections	Monthly Inspections	Project Completion	Total per Installation
Defense Fuel Support Center Craney Island				
Naval Weapons Station Yorktown				
Naval Weapons Station Yorktown, Cheatham Annex				
Defense Fuel Support Center Yorktown				
Naval Auxiliary Landing Field Fentress				
Norfolk Naval Shipyard Saint Julien's Creek Annex				
Norfolk Naval Shipyard St. Helena				
Southgate Annex				
Naval Support Activity, Hampton Roads Northwest Annex				
Total				

SUMMARY OF DEFICIENCIES PER INSTALLATION

Installation: **Defense Fuel Support Center Craney Island**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Weapons Station Yorktown**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Weapons Station Yorktown, Cheatham Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Defense Fuel Support Center Yorktown**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Auxiliary Landing Field Fentress**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Norfolk Naval Shipyard Saint Julien's Creek Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Norfolk Naval Shipyard St. Helena**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Southgate Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Installation: **Naval Support Activity, Hampton Roads Northwest Annex**		
Number of Initial Deficiencies:	Number of Repeat Deficiencies:	Number of Immediate Threats:
Summary of Inspection Reports with Deficiencies		
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)
Project:	Date:	Type of Action: (Initial Deficiency, Repeat Deficiency, OR Immediate Threat)

Appendix C2– Erosion and Sediment Control Plan Development and Submittal SOP

DOCUMENT NO.:

HR-SOP-WA-06

TITLE:

Erosion and Sediment Control Plan Guidance for CI Community, Virginia AOR's: Standard Operating Procedures (SOP)

CONTENTS

1. PURPOSE: 2

2. REFERENCES: 2

3. APPLICABILITY: 2

4. ACTION: 2

A. MAILING SUBMITTAL PACKAGE: 2
B. SUBMITTAL PACKAGES CONTENTS: 3
C. TRANSMITTAL FORM TEMPLATE:: 3
D. NOTE TO ADD TO E&S CONTROL PLAN: 3

DOCUMENT OWNER: EV14, MS4 Stormwater Program Manager	AUTHORIZED BY: Director, Water and Wastewater Compliance EV14 8/17/2016 X Phillip S. Winslow, Jr.

REV. NO.	EFFECTIVE DATE	DESCRIPTION OF REVISION
A	07/29/2016	ORIGINAL ISSUE
B	08/09/2016	FINALIZED AND SIGNED
C	08/17/2016	UPDATED AND SIGNED

From: NAVFAC MIDLANT EV14 - Water and Wastewater Compliance

To: NAVFAC MIDLANT Capital Improvements Business Line and Installation Public Works Departments

Subj.: Erosion and Sediment Control Plan Guidance for CI Community, Virginia AOR's – Standard Operating Procedures (SOP)

1. **Purpose:**

An Erosion and Sediment Control Plan shall be developed and submitted to the Virginia Department of Environmental Quality (DEQ) for review and approval for all regulated land disturbing activities greater than or equal to 10,000 square feet in size occurring at any Navy installations and annexes in Virginia. All Erosion and Sediment Control Plans submitted to the State for approval shall comply with the criteria, techniques and methods specified in the Virginia Erosion and Sediment Control Law and Regulations.

The Virginia Erosion and Sediment Control Handbook (VESCH) includes in Chapter 6 guidance detailing E&S Control plan preparation. The VESCH should be utilized as a guidance document for all E&S Control plans that will be prepared and submitted to the Virginia DEQ for approval.

2. **References:**
   - Virginia Erosion and Sediment Control Handbook (VESCH): Chapter 6 (E&S Control plan preparation)

3. **Applicability:**

   This SOP is applicable to all installations in Virginia that fall under the CNRMA-HR EMS. Personnel within the Environmental Business Line Core, Capital Improvements Business Line, and Public Works Departments at Naval Installations within the Hampton Roads Area are responsible for understanding and implementing this SOP.

4. **Action:**

   The following procedures must be followed when preparing an Erosion & Sediment Control Plan Package:

   A. Mailing Submittal Package: E&S Control Plan submittal packages shall be mailed to the Virginia DEQ Office of Stormwater Management; attention Stormwater Plan Review Coordinator. The mailing address is:

   1) Via Postal Mail:
      DEQ
      Office of Stormwater Management, 10th Floor
      Attn: Stormwater Plan Review Coordinator
      PO Box 1105 Richmond, VA 23218

2) Via FedEx or UPS:
   DEQ
   Office of Stormwater Management, 10th Floor
   Attn: Stormwater Plan Review Coordinator
   629 East Main Street
   Richmond, VA 23219

B. *Submittal Packages Contents:* E&S Control Plan submittal packages shall include the following items at minimum:
   1) Transmittal Form (See enclosure #1)
   2) Full Size E&S Control Plan Sheets; folded to 8-1/2 x 11 (2 copies)
   3) Erosion and Sediment Control Narrative, including all required calculations. (2 copies)
   4) Completed copy of E&S Control Plan Checklist found in Chapter 6 of VESCH (See enclosure #2)

C. *Transmittal Form Template:* Use the transmittal form template that is provided as enclosure #1 with this document and submit it along with your E&S plan submittal package. The transmittal template was developed to promote consistency and ensure the required project information is submitted to all applicable parties. Copy Shawn Fluharty of NAVFAC EV Core on submissions to the STATE as the representative for NAVFAC EV, and include half size plan sheets.

   1) ATTN: Mr. Shawn Fluharty
      NAVFAC Mid-Atlantic – Environmental
      1510 Gilbert Street
      Bldg N26, Rm 3208
      Norfolk, Va. 23511

D. *Note to add to E&S Control Plan:* Please ADD the following NOTE to your E/S plan to meet requirements in section 62.1-44.15:55.(B) and Section 62.1-44.15:52 of the E&S law that requires the person responsible for carrying out the plan to certify that he will properly perform the erosion and sediment control measures included in the plan and shall comply with the provisions of this article.

   1) ***ADD NOTE TO E&S CONTROL PLAN***
      "The Contractor selected to complete the regulated land disturbing activity as shown on these drawings is responsible for implementing the approved Erosion and Sediment Control Plan in conjunction with the project specification's. Prior to the commencement of this activity, in accordance with the Va. E&S Control Law, the Contractor shall designate an individual holding a certificate of competency with the State as the person responsible for carrying out the approved plan, and provide the name of this individual to the plan approving authority."

NAVFAC MID-ATLANTIC

LETTER OF TRANSMITTAL Date:

[INSERT ADDRESS]

eProjects Work Order No.: COMPLETE	Job Order No.: COMPLETE
Project Name: COMPLETE	
Location: COMPLETE	
REF: [E&S and/or SWM] Plan Review Submission Package	

NAVFAC Point of Contact
Engineer: COMPLETE
Telephone: COMPLETE
Fax: COMPLETE
Email: COMPLETE

TO Virginia Dept. of Environmental Quality
Office of Stormwater Management
629 East Main Street
Richmond, VA 23219
Telephone: (804) 698-4040
Attention: STORMWATER PLAN REVIEW COORDINATOR

WE ARE SENDING YOU ☒ Attached ☐ Under separate

☐ Plans ☐ Specifications ☐ Calculations ☐ Supporting Documentation

COPIES	DATE	DESCRIPTION

THESE ARE TRANSMITTED as checked below:

☒ For review and approval ☐ For your use ☐ As requested

SPECIAL INSTRUCTIONS:

Please copy all correspondence to the NAVFAC Environmental Compliance Representative at:
1510 Gilbert Street
Bldg N26, Rm 3208
Norfolk, Va. 23511
Phone: (757) 341-0382
Email: Shawn.Fluharty@navy.mil

REMARKS:

COPY TO: Shawn Fluharty, NAVFAC EV

PLAN SUBMITTER'S CHECKLIST

FOR EROSION AND SEDIMENT CONTROL PLANS

Please fill in all blanks and reference the plan sheets/pages where the information may be found, where appropriate, or write N/A by items that are not applicable.

GENERAL

Plan Submission Date _____
Project Name _____
VSMP Permit Number _____
Site Plan Number _____
Site Address _____
Applicant _____ Phone Number _____
Applicant Legal Address _____
Owner _____ Phone Number _____
Principal Designer _____ Phone Number _____
General Contractor _____ Phone Number _____

_____ Complete set of plans- Include all sheets pertaining to the site grading and stormwater and any activities impacting erosion and sediment control and drainage:

- ☐ Existing conditions
- ☐ Demolition
- ☐ Site grading
- ☒ Erosion and sediment control
- ☐ Storm sewer systems
- ☐ Stormwater management facilities
- ☐ Utility layout
- ☐ Landscaping
- ☐ On-site and off-site borrow and disposal areas that do not have separate approved ESC Plans

NA Professional's seal - The designer's original seal, signature, and date are required on the *cover* sheet of each Narrative and each set of Plan Sheets. A facsimile is acceptable for subsequent Plan Sheets.

_____ Number of plan sets - Two sets of ESC Plans should be submitted. The DEQ office will retain all submitted plans.

NA Variances - Variances requested at the time of plan submission are governed by Section 9VAC25-840-50 of the *Virginia Erosion and Sediment Control Regulations*.

NA Certified Responsible Land Disturber (RLD) - A certified RLD is required during all stages of construction, from the initial land disturbance through final site stabilization**. The name of the project RLD must be provided before any land disturbance may begin.** Notify DEQ in a

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

timely manner if the RLD changes during the course of the project.

_NA__ Local Consideration – Plans have been provided to the applicable jurisdictions.

- ☐ Dulles Airport (MWAA)
- ☐ Fairfax County
- ☐ Loudoun County
- ☐ Town of Herndon
- ☐ Dulles Greenway (Trip II)
- ☐ VDOT

CHECKLIST PREPARER

I certify that I am a professional in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia and attendant regulations. By signing this checklist I am certifying that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete.

SIGNATURE _____

PRINTED NAME _____

QUALIFICATIONS _____

DATE _____

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

NARRATIVE

Please reference plan sheet numbers where the information may be found.

_____ Project description - Briefly describe the nature and purpose of the land-disturbing activity. Provide the area (acres) to be disturbed.

_____ Existing site conditions - A description of the existing topography (% slopes), ground cover, and drainage (on-site and receiving channels).

_____ Adjacent areas - A description of all neighboring areas such as residential developments, agricultural areas, streams, lakes, roads, etc., that might be affected by the land disturbance.

_____ Off-site areas - Describe any off-site land-disturbing activities that may occur (borrow sites, disposal areas, easements, etc.). Identify the Owner of the off-site area and the entity responsible for plan review. Include a statement that any off-site land-disturbing activity associated with the project must have an approved ESC Plan. Submit documentation of the approved ESC Plan for each of these sites.

_____ Soils - Provide a description of the soils on the site, giving such information as soil name, mapping unit, erodibility, permeability, surface runoff, and a *brief* description of depth, texture and soil structure. Show the site location on the Soil Survey, if it is available. Include a plan showing the boundaries of each soil type on the development site.

_____ Critical areas - A description of areas on the site that have potentially serious erosion problems or that are sensitive to sediment impacts (e.g., steep slopes, watercourses, wet weather / underground springs, etc.).

_____ Erosion and sediment control measures - A description of the structural and vegetative methods that will be used to control erosion and sedimentation on the site. Controls should satisfy applicable minimum standards and specifications in Chapter 3 of the 1992 *Virginia Erosion and Sediment Control Handbook* (VESCH) or more stringent local requirements.

_____ Management strategies / Sequence of construction - Address management strategies, the sequence of construction, and any phasing of installation of ESC measures.

_____ Permanent stabilization - A brief description, including specifications, of how the site will be stabilized after construction is completed.

_____ Maintenance of ESC measures - A schedule of regular inspections, maintenance, and repair of erosion and sediment control structures should be set forth.

NA___ Calculations for temporary erosion and sediment control measures - For each temporary ESC measure, provide the calculations required by the standards and specifications.

_____ Stormwater management considerations - Will the development of the site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff, including during construction.

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

_____ Specifications / Detail Drawings for erosion and sediment control measures - For each erosion and sediment control measure employed in the plan, include, at a minimum, the detail from the standard and specification in the VESCH or more stringent local requirements. Include any approved variances or revisions to the standards and specifications.

NA___ Specifications for stormwater and stormwater management structures - Provide specifications for stormwater and stormwater management structures, i.e., pipe materials, pipe bedding, stormwater structures.

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

SITE PLAN

Please reference plan sheet numbers where the information may be found.

_____ Vicinity map - A small map locating the site in relation to the surrounding area. Include any landmarks that might assist in locating the site.

_____ Indicate north - The direction of north in relation to the site.

_____ Off-site areas - Include any off-site land-disturbing activities (e.g., borrow sites, disposal areas, etc.) not covered by a separate approved ESC Plan.

_____ Legend - Provide a complete listing of all ESC measures used, including the VESCH uniform code symbol and the standard and specification number. Include any other items necessary to identify pertinent features in the plan.

_____ Property lines and easements - Show all property and easement lines. For each adjacent property, list the deed book and page number and the property owner's name and address.

_____ Existing vegetation – Show the existing tree lines, grassed areas, or unique vegetation.

_____ Limits of clearing and grading – Delineate all areas that are to be cleared and graded.

_____ Protection of areas not being cleared - Fencing or other measures to protect areas that are not to be disturbed on the site.

_____ Critical areas – Note all critical areas on the plan.

_____ Existing contours – Show the existing contours of the site.

_____ Final contours and elevations – Show changes to the existing contours, including final drainage patterns.

_____ Site development – Show all improvements such as buildings, parking lots, access roads, utility construction, etc. Show all physical items that could affect or be affected by erosion, sediment, and drainage.

_____ Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the VESCH.

_____ Adequate Conveyances – Ensure that stormwater conveyances with adequate capacity and adequate erosion resistance have been for provided all on-site concentrated stormwater runoff. Off-site channels that receive runoff from the site, including those receiving runoff from stormwater management facilities, must be adequate. Increased volumes of sheet flows must be diverted to a stable outlet, adequate channel, pipe or pipe system, or a stormwater management facility.

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

☐ Provide exhibits showing the drainage divides, the direction of flow, and the size (acreage) of each of the site drainage areas that discharge runoff off-site, both existing and proposed.
☐ Provide calculations for pre- and post-development runoff from these drainage areas.
☐ Ensure that Minimum Standard 19 is satisfied for each off-site receiving channel, including those that receive runoff from stormwater management facilities.
☐ Provide calculations for the design of each permanent stormwater management facility.
☐ Ensure that increased volumes of sheet flows are diverted to a stable outlet, to an adequate channel, pipe or pipe system, or to a stormwater management facility.
☐ Provide adequacy calculations for all on-site stormwater conveyances.

_____ Calculations for permanent stormwater conveyances - For each permanent stormwater conveyance or structure, provide the following design calculations, as applicable:

☐ Drainage area map with time of concentration (T_C) path shown
☐ T_C calculation/nomograph
☐ Locality IDF curve
☐ Composite runoff coefficient or RCN calculation
☐ Peak runoff calculations
☐ Stormwater conveyance channel design calculations
☐ Storm drain and storm sewer system design calculations
☐ Hydraulic Grade Line if any pipe in the system is more than 90% full for a 10-year storm
☐ Culvert design calculations
☐ Drop inlet backwater calculations
☐ Curb inlet length calculations

_____ Direction of Flow for Conveyances - Indicate the direction of flow for all stormwater conveyances (storm drains, stormwater conveyance channels).

_____ Storm Drain Profiles - Provide profiles of all storm drains except roof drains. If the type of pipe (RCP, CMP, HDPE, etc.) is not called out on the profiles, then the most conservative pipe material that may be specified for the project must be used in the adequacy calculations.

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

MINIMUM STANDARDS
Plan Sheet #

_____ **Minimum Standards - All Minimum Standards must be addressed.**

Yes No NA

[] [] [] MS-1 Have temporary and permanent stabilization been addressed in the narrative?
[] [] [] Are practices shown on the plan?
[] [] [] Temporary and permanent seed specifications?
[] [] [] Lime and fertilizer?
[] [] [] Mulching?
[] [] [] Blankets/Matting?
[] [] [] Pavement/Construction Road Stabilization?

[] [] [] MS-2 Has stabilization of soil stockpiles, borrow areas, and disposal areas been addressed in the narrative and on the plan?
[] [] [] Have sediment trapping measures been provided?

[] [] [] MS-3 Has the establishment and maintenance of permanent vegetative stabilization been addressed?

[] [] [] MS-4 Does the plan specifically state that sediment-trapping facilities shall be constructed as a first step in land-disturbing activities?

[] [] [] MS-5 Does the plan specifically state that stabilization of earthen structures is required immediately after installation? Is this noted for each measure on the plan?

[] [] [] MS-6 Are sediment traps and sediment basins specified where needed and designed to the standard and specification?

[] [] [] MS-7 Have the design and temporary/permanent stabilization of cut and fill slopes been adequately addressed? Is Surface Roughening provided for slopes steeper than 3:1?

[] [] [] MS-8 Have adequate temporary or permanent conveyances (paved flumes, channels, slope drains) been provided for concentrated stormwater runoff on cut and fill slopes?

[] [] [] MS-9 Has water seeping from a slope face been addressed (e.g., subsurface drains)?

[] [] [] MS-10 Is adequate inlet protection provided for all operational storm drain and culvert inlets?

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

Yes No NA

[] [] [] MS-11 Are adequate outlet protection and/or channel linings provided for all stormwater conveyance channels and receiving channels? Is there a schedule indicating:
[] [] [] Dimensions of the outlet protection? Lining? Size of riprap?
[] [] [] Cross section and slope of the channels? Type of lining? Size of riprap, if used?

[] [] [] MS-12 Are in-stream protection measures required so that channel impacts are minimized?

[] [] [] MS-13 Are temporary stream crossings of non-erodible material required where applicable?

[] [] [] MS-14 Are all applicable federal, state and local regulations pertaining to working in or crossing live watercourses being followed?

[] [] [] MS-15 Has immediate restabilization of areas subject to in-stream construction (bed and banks) been adequately addressed?

[] [] [] MS-16 Have disturbances from underground utility line installations been addressed?
[] [] [] No more than 500 linear feet of trench open at one time?
[] [] [] Effluent from dewatering filtered or passed through a sediment-trapping device?
[] [] [] Proper backfill, compaction, and restabilization?

[] [] [] MS-17 Is the transport of soil and mud onto public roadways properly controlled? (i.e., Construction Entrances, wash racks, transport of sediment to a trapping facility, cleaning of roadways at the end of each day, no washing before sweeping and shoveling)

[] [] [] MS-18 Has the removal of temporary practices been addressed?
[] [] [] Have the removal of accumulated sediment and the final stabilization of the resulting disturbed areas been addressed?

[] [] [] MS-19 Are properties and waterways downstream from development adequately protected from sediment deposition, erosion, and damage due to increases in volume, velocity and peak flow rate of stormwater runoff? Have adequate channels been provided on-site?

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

Appendix C3 – Stormwater Management Plan Development and Submittal SOP

PRINTED COPIES OF THIS DOCUMENT ARE CONSIDERED UNCONTROLLED.
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DOCUMENT NO.:

HR-SOP-WA-07

TITLE:

Stormwater Management Plan Guidance for CI Community, Virginia AOR's– Standard Operating Procedures (SOP)

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DOCUMENT OWNER: EV14, MS4 Stormwater Program Manager	AUTHORIZED BY: Director, Water and Wastewater Compliance EV14 8/17/2016 X Phillip S. Winslow, Jr.

REV. NO.	EFFECTIVE DATE	DESCRIPTION OF REVISION Signed by: WINSLOW.PHILLIP.S.JR.1395793531
A	07/29/2016	ORIGINAL ISSUE
B	08/09/2016	FINALIZED AND SIGNED
C	08/17/2016	UPDATED AND SIGNED.

From: NAVFAC MIDLANT EV14 - Water and Wastewater Compliance

To: NAVFAC MIDLANT Capital Improvements Business Line and Installation Public Works Departments

Subj.: Stormwater Management Plan Guidance for CI Community, Virginia AOR's – Standard Operating Procedures (SOP)

1. **Purpose:**
A Stormwater Management Plan shall be developed and submitted to the Virginia Department of Environmental Quality (DEQ) for review and approval for all regulated land disturbing activities greater than or equal to 1 acre in size occurring at any Navy installations and annexes in Virginia. All Stormwater Management Plans submitted to the State for approval shall comply with the criteria, techniques and methods specified in the Virginia Stormwater Management Law and Regulations.

2. **References:**
   - Virginia Stormwater Management Act, Virginia Stormwater Management Program Regulations and General VPDES Permit for Discharges of Stormwater from Construction Activities Regulations

3. **Applicability:**
This SOP is applicable to all installations in Virginia that fall under the CNRMA-HR EMS. Personnel within the Environmental Business Line Core, Capital Improvements Business Line, and Public Works Departments at Naval Installations within the Hampton Roads Area are responsible for understanding and implementing this SOP.

4. **Action:**
The following procedures must be followed when preparing a Stormwater Management Plan:

   A. *Mailing Submittal Packages:* Stormwater Management Plan submittal packages shall be mailed to the Virginia DEQ Office of Stormwater Management; attention Stormwater Plan Review Coordinator. The mailing address is:

      1) Via Postal Mail:
      DEQ
      Office of Stormwater Management, 10th Floor
      Attn: Stormwater Plan Review Coordinator
      PO Box 1105 Richmond, VA 23218

      2) Via FedEx or UPS:
      DEQ
      Office of Stormwater Management, 10th Floor
      Attn: Stormwater Plan Review Coordinator
      629 East Main Street
      Richmond, VA 23219

B. *Submittal Packages Contents:* Stormwater Management Plan submittal packages shall include the following items at minimum:
   1) Transmittal form (See enclosure #1)
   2) Full Size SWM Plan Sheets; folded to 8-1/2 x 11 (2 copies)
   3) SWM plan supporting calculations. (2 copies)
   4) Completed copy of SWM Plan Submittal Checklist (See enclosure #2)
   5) VAR10 Construction Stormwater General Permit Registration Statement. (See C. below)

C. *VAR10 Construction Stormwater General Permit Registration Statement:* The Virginia Department of Environmental Quality requires that the VAR10 Registration Statement be included with SWM plan submittal packages. **ONLY** items **2-10** on the registration statement are to be filled in for this submittal to the STATE. Items 1 and 12 on the form shall only be completed by the Construction Activity Operator and re-submitted to the STATE prior to commencement of land disturbance. (enclosure #3)

D. *Transmittal Form:* Use the Transmittal form template that is provided as enclosure #1 with this SOP and submit it along with the SWM plan package. The transmittal form was developed to promote consistency and ensure the required project information is submitted to all applicable parties.

   Copy Shawn Fluharty of NAVFAC EV Core on submissions to the STATE as the representative for NAVFAC EV, and include half size plan sheets.

   1) ATTN: Mr. Shawn Fluharty
      NAVFAC Mid-Atlantic – Environmental
      1510 Gilbert Street
      Bldg N26, Rm 3208
      Norfolk, Va. 23511

NAVFAC MID-ATLANTIC

LETTER OF TRANSMITTAL Date:

[INSERT ADDRESS]

eProjects Work Order No.: COMPLETE	Job Order No.: COMPLETE
Project Name: COMPLETE	
Location: COMPLETE	
REF: [E&S and/or SWM] Plan Review Submission Package	

NAVFAC Point of Contact
Engineer: COMPLETE
Telephone: COMPLETE
Fax: COMPLETE
Email: COMPLETE

TO Virginia Dept. of Environmental Quality
Office of Stormwater Management
629 East Main Street
Richmond, VA 23219
Telephone: (804) 698-4040
Attention: STORMWATER PLAN REVIEW COORDINATOR

WE ARE SENDING YOU ☒ Attached ☐ Under separate

☐ Plans ☐ Specifications ☐ Calculations ☐ Supporting Documentation

COPIES	DATE	DESCRIPTION

THESE ARE TRANSMITTED as checked below:

☒ For review and approval ☐ For your use ☐ As requested

SPECIAL INSTRUCTIONS:

Please copy all correspondence to the NAVFAC Environmental Compliance Representative at:
1510 Gilbert Street
Bldg N26, Rm 3208
Norfolk, Va. 23511
Phone: (757) 341-0382
Email: Shawn.Fluharty@navy.mil

REMARKS:

COPY TO: Shawn Fluharty, NAVFAC EV

PLAN SUBMITTER'S CHECKLIST

FOR STORMWATER MANAGEMENT PLANS

Please fill in all blanks and **please reference the plan sheets/pages where the information may be found,** where appropriate, or write N/A by items that are not applicable.

GENERAL

Plan Submission Date _____
Project Name _____
VSMP Permit Number _____
Site Plan Number _____
Site Address _____
Applicant _____ Phone Number _____
Applicant Legal Address _____
Owner _____ Phone Number _____
Owner E-mail Address _____
Principal Designer _____ Phone Number _____
Principal Designer E-mail Address _____
Total Disturbed Area Figure _____

__NA__ Professional's seal - The designer's original seal, signature, and date are required on the *cover* sheet of each Narrative and each set of Plan Sheets. A facsimile is acceptable for subsequent Plan Sheets.

_____ Number of plan sets – Attach two sets of SWM Plans.

_____ Exceptions - Exceptions requested are governed by Section 9VAC25-870-57 of the *Virginia Stormwater Management Regulations*.

_____ Local Consideration – Provide contact information for the locality's plan review coordinator.

Name _____ Phone Number _____
Address _____

_____ Grandfathering - Attach supporting documentation consistent with the requirements of Section 9VAC25-870-48 of the *Virginia Stormwater Management Regulations*.

_____ Offsite Compliance – Attach letter of availability from the off-site provider as governed by Section 9VAC25-870-55 of the *Virginia Stormwater Management Regulations*.

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

CHECKLIST PREPARER

I certify that I am a professional in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia and attendant regulations. By signing this checklist I am certifying that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete.

SIGNATURE _____

PRINTED NAME _____

QUALIFICATIONS _____

DATE _____

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

SITE PLANS

Please reference the plan sheet numbers where specific information may be found in the blanks below.

_____ Common address and legal description of the site, including the tax reference number(s) and parcel number(s) of the property or properties affected.

_____ A narrative that includes a description of current site conditions and proposed development and final site conditions, including proposed use of environmental site design techniques and practices, stormwater control measures, relevant information pertaining to long-term maintenance of these measures, and a construction schedule.

_____ Existing and proposed mapping and plans (recommended scale of 1" = 50', or greater detail), which illustrates the following at a minimum:

☐ North arrow
☐ Legend
☐ Vicinity map
☐ Existing and proposed topography (minimum of 2-foot contours recommended)
☐ Property lines
☐ Perennial and intermittent streams
☐ Mapping of predominant soils from USDA soils surveys as well as the location of any site-specific test bore hole investigations that may have been conducted and information identifying the hydrologic characteristics and structural properties of soils used in the installation of stormwater management facilities
☐ Boundaries of existing predominant vegetation and proposed limits of clearing and grading
☐ Location and boundaries of natural feature protection and conservation areas (e.g.,wetlands, lakes, ponds, aquifers, public drinking water supplies, etc.) and applicable setbacks (e.g., stream buffers, drinking water well setbacks, septic drainfield setbacks, building setbacks, etc.)
☐ Identification of any on-site or adjacent water bodies included on the Virginia 303(d) list of impaired waters
☐ Current land use and location of existing and proposed roads, buildings, parking lots and other impervious areas
☐ Location and description of any planned demolition of existing structures, roads, etc.
☐ Proposed land use(s) with a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, parking lots, stormwater management facilities, and easements
☐ Location of existing and proposed utilities [e.g., water (including wells), sewer (including septic systems), gas, electric, telecommunications, cable TV, etc.] and easements
☐ Earthwork specifications
☐ Show the BMP name, **geographic coordinates** and design of both structural and non-structural stormwater control measures, including maintenance access and limits of disturbance
☐ Storm drainage plans for site areas not draining to any BMP(s)
☐ Location of existing and proposed conveyance systems, such as storm drains, inlets, catch basins, channels, lateral groundwater movement interceptors (French drains, agric. tile drains, etc.), swales, and areas of overland flow, including grades, dimensions, and direction of flow
☐ Final drainage patterns and flow paths
☐ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainage systems

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

☐ Location of all contributing drainage areas and points of stormwater discharge, receiving surface waters or karst features into which stormwater discharges, the pre-development and post-development conditions for drainage areas, and the potential impacts of site stormwater on adjoining parcels
☐ Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
☐ Final stabilization and landscaping plans

_____ Hydrologic and hydraulic analysis, including the following:

☐ Site map with locations of design points and drainage areas (size in acres) for runoff calculations
☐ Identification and calculation of stormwater site design credits, if any apply
☐ Summary description of the water quantity and water quality compliance strategy.
☐ Time of concentration (and associated flow paths)
☐ Imperviousness of the entire site and each drainage area
☐ NRCS runoff curve numbers or volumetric runoff coefficients
☐ A hydrologic analysis for the existing (pre-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
☐ A hydrologic analysis for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
☐ Hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms
☐ Pollution load and load reduction requirements and calculations
☐ Final good engineering and sizing calculations for stormwater control measures, including contributing drainage areas, storage, and outlet configurations, verifying compliance with the water quality and water quantity requirements of the regulations
☐ Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities
☐ Final analysis of the potential downstream impacts/effects of the project, where necessary
☐ Downstream analysis, where detention is proposed
☐ Dam safety and breach analysis, where necessary

_____ Representative cross-section and profile drawings and details of stormwater control measures and conveyances which include the following:
☐ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.)
☐ Design water surface elevations
☐ Structural details of BMP designs, outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.

_____ Applicable construction and material specifications, including references to applicable material and construction standards (ASTM, etc.)

_____ Landscaping plans for stormwater control measures and any site reforestation or revegetation

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

_____ Long term operations and maintenance plan/agreement as governed by 9VAC25-870-112 of the Virginia Stormwater Management Program Regulations.

_____ Evidence of acquisition of all applicable local and non-local permits

_____ Waiver/exception requests

_____ Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts, etc.)

_____ Applicable supporting documents and studies (e.g., infiltration tests, geotechnical investigations, TMDLs, flood studies, etc.)

Yes Other required permits: Erosion & Sediment Control Plan

PROJECT NAME: _____ SUBMITTAL#: _____

PLANS DATED: _____

Registration Statement
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

(Please Type or Print All Information)

1. **Construction Activity Operator:** *(General permit coverage will be issued to this operator. The Certification in Item #12 must be signed by the appropriate person associated with this operator.)*

   Name:_____

   Contact:_____

   Mailing Address:_____

   City:_____ State:_____ Zip:_____ Phone:_____

   Email address (if available):_____

   Indicate if DEQ may transmit general permit correspondence electronically: Yes ☐ No ☐

2. **Existing General Permit Registration Number (for renewals only):**_____

3. **Name and Location of the Construction Activity:**

   Name:_____

   Address (if available):_____

   City:_____ State:_____ Zip:_____

   County (if not located within a City):_____

   Latitude (decimal degrees):_____ Longitude (decimal degrees):_____

   Name and Location of all Off-site Support Activities to be covered under the general permit:

   Name:_____

   Address (if available):_____

   City:_____ State:_____ Zip:_____

   County (if not located within a City):_____

   Latitude (decimal degrees):_____ Longitude (decimal degrees):_____

4. **Status of the Construction Activity (check only one):** Federal ☐ State ☐ Public ☐ Private ☐

5. **Nature of the Construction Activity (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.):**

   _____

6. **Name of the Receiving Water(s) and Hydrologic Unit Code (HUC):**

   Name:_____ Name:_____

   HUC:_____ HUC:_____

7. **If the discharge is through a Municipal Separate Storm Sewer System (MS4), the name of the MS4 operator:**

   _____

8. **Estimated Project Start and Completion Date:**

   Start Date (mm/dd/yyyy):_____ Completion Date (mm/dd/yyyy):_____

9. **Total Land Area of Development (to the nearest one-hundredth acre):**_____

   Estimated Area to be Disturbed (to the nearest one-hundredth acre):_____

10. **Is the area to be disturbed part of a larger common plan of development or sale?** Yes ☐ No ☐

11. **A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities <u>prior to</u> submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.**

12. **Certification:** "I certify under penalty of law that I have read and understand this Registration Statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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:_____ Title:_____

    Signature:_____ Date:_____

    (Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)

Instructions for Completing the Registration Statement
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

GENERAL

A. Coverage Under this General Permit.

Any operator applying for coverage under this general permit who is required to submit a Registration Statement (see Section B below) must submit a complete Registration Statement to the Department. The Registration Statement serves as a Notice of Intent for coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10).

B. Single-family Detached Residential Structures.

Operators with an existing stormwater discharge or proposing a new stormwater discharge associated with the construction of a single-family detached residential structure are not required to submit a Registration Statement or the Department of Environmental Quality (DEQ) portion of the general permit fee.

Operators of these types of discharges are authorized to discharge under this general permit immediately upon the general permit's effective date of July 1, 2014.

C. To Apply for Permit Coverage.

1. New Construction Activities. Any operator proposing a new stormwater discharge from construction activities shall submit a complete Registration Statement to the Department prior to the commencement of land disturbance, unless exempted by Section B above. Any operator proposing a new stormwater discharge from construction activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment is immediately authorized to discharge under this general permit and must submit a complete Registration Statement to the Department no later than 30 days after commencing land disturbance; documentation to substantiate the occurrence of the public emergency must accompany the Registration Statement.

2. Existing Construction Activities. Any operator that was authorized to discharge under the general permit issued in 2009, and who intends to continue coverage under this general permit, shall submit a complete Registration Statement to the Department on or before June 1, 2014, unless exempted by Section B above.

D. Where to Submit Registration Statements.

All Registration Statements should be submitted to:

Department of Environmental Quality
Office of Stormwater Management, 10th Floor
P.O. Box 1105
Richmond, VA 23218

LINE-BY-LINE INSTRUCTIONS

Item 1: Construction Activity Operator Information.

"Operator" means the owner or operator of any facility or activity subject to the Stormwater Management Act and regulations. In the context of stormwater associated with a large or small construction activity, operator means any person associated with a construction project that meets either of the following two criteria: (i) the person has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications or (ii) the person has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other state permit or VSMP authority permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the stormwater pollution prevention plan or comply with other permit conditions).

The entities that are considered operators will commonly consist of the owner or developer of a project (the party with control of project plans and specifications) or the general contractor (the party with day to day operational control of the activities at the project site which are necessary to ensure compliance with the general permit).

Provide the legal name (do not use a colloquial name), contact, mailing address, telephone number, and email address (if available) of the construction activity operator; general permit coverage will be issued to this operator. Indicate if the Department may transmit general permit correspondence electronically.

Item 2: Existing General Permit Registration Number.

For reapplications only, provide the existing general permit registration number for the construction activity. This item does not need to be completed for new construction activities applying for general permit coverage.

Item 3: Name and Location of the Construction Activity Information.

Provide the official name, street address (if available), city or county (if not located within a City) of the construction activity. Also, provide the latitude and longitude in decimal degrees of the approximate center of the construction activity (e.g., N 37.5000, W 77.5000).

Name and Location of Off-site Support Activity Information.

This general permit also authorizes stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that (i) the support activity is directly related to a construction activity that is required to have general permit coverage; (ii) the support activity is not a commercial operation, nor does it serve multiple unrelated construction activities by different operators; (iii) the support activity does not operate beyond the completion of the construction activity it supports; (iv) the support activity is identified in the registration statement at the time of general permit coverage; (v) appropriate control measures are identified in a SWPPP and implemented to address the discharges from the support activity areas; and (vi) all applicable state, federal, and local approvals are obtained for the support activity.

Provide the official name, street address (if available), City and County (if not located within a City) of all off-site support activities to be covered under this general permit. Also, provide the latitude and longitude in decimal degrees of the approximate center of the off-site support activities (e.g., N 37.5000, W 77.5000). Also, if an off-site support activity is going to be covered under this general permit the total land area of the off-site support activity and the estimated area to be disturbed by the off-site support activity need to be included in Item #9.

Item 4: Status of the Construction Activity.

Indicate the appropriate status (Federal, State, Public, or Private) of the construction activity.

Item 5: Nature of the Construction Activity.

Provide a brief description of the construction activity, such as commercial, residential, agricultural, oil and gas, etc. This list is not all inclusive.

Item 6: Receiving Waters(s) and HUC Information.

Provide the name of the receiving water(s) and corresponding HUC for all stormwater discharges including any stormwater discharges from off-site support activities to be covered under this general permit. Hydrologic Unit Code or HUC is a watershed unit established in the most recent version of Virginia's 6th order national watershed boundary dataset.

Item 7: MS4 Information.

If stormwater is discharged through a municipal separate storm sewer system (MS4), provide the name of the MS4 operator. The name of the MS4 operator is generally the Town, City, County, Institute or Federal facility where the construction activity is located.

Item 8: Construction Activity Start and Completion Date Information.

Provide the estimated start date (month/day/year) of the construction activity. Provide the estimated completion date (month/day/year) of the construction activity.

Item 9: Construction Activity Area Information.

Provide the total area (to the nearest one-hundredth acre) of the development (i.e.., the total acreage of the larger common plan of development or sale). Include the total acreage of any off-site support activity to be covered under this general permit.

Provide the estimated area (to the nearest one-hundredth acre) to be disturbed by the construction activity. Include the estimated area of land disturbance that will occur at any off-site support activity to be covered under this general permit.

Item 10: Common Plan of Development or Sale Information.

Indicate if the area to be disturbed by the construction activity is part of a larger common plan of development or sale. Larger common plan of development or sale is defined as a contiguous area where separate and distinct construction may be taking place at different times on different schedules. Plan is broadly defined as any announcement or documentation, including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, etc., or physical demarcation such as boundary signs, lot stakes, or surveyor markings indicating that construction activities may occur.

Item 11: Stormwater Pollution Prevention Plan (SWPPP).

A Stormwater Pollution Prevention Plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10) prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.

Item 12: Certification.

A properly authorized individual associated with the operator identified in Item 1 of the Registration Statement is responsible for certifying and signing the Registration Statement. **Please sign the Registration Statement in INK.**

State statutes provide for severe penalties for submitting false information on the Registration Statement. State regulations require that the Registration Statement be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means:

(i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or

(ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes:

(i) The chief executive officer of the agency, or

(ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

Appendix C4 – Stormwater Permit Coverage for Construction Activity SOP

PRINTED COPIES OF THIS DOCUMENT ARE CONSIDERED UNCONTROLLED. IT IS THE USER'S RESPONSIBILITY TO VERIFY *THE PRINTED COPY AGAINST THE CURRENT CONTROLLED DOCUMENT, WHICH IS MAINTAINED ELECTRONICALLY.*

DOCUMENT NO.: **HR-SOP-WA-05**

TITLE:

Procedure to Secure Stormwater Permit Coverage for Construction Activity

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DOCUMENT OWNER:	AUTHORIZED BY:
EV14 Construction Activities Stormwater Program Manager	EV14 Director, Water and Waste Water Compliance _____

REV. NO.	EFFECTIVE DATE	DESCRIPTION OF REVISION
A	06/24/2016	Revised to conform to document retention requirements.
B	08/03/2016	Finalized and Signed by EV14 Director

From: NAVFAC MIDLANT EV14 Water and Wastewater Compliance

To: _____

Subject: Guidance Document For Virginia Stormwater Discharge Permit For Construction Activities

1. Purpose:

To establish uniform guidance and procedures for securing construction stormwater permit coverage for construction or maintenance related land-disturbing activities at U.S. Navy installations in Virginia. This document identifies procedures for complying with Virginia Law and Regulations and Navy stormwater program requirements.

2. References:

(a) EFDLANT Memorandum OPA-E dated 31 March 2004
(b) CNI ltr. 5090 Ser CNI N45/045 dated 28 Dec. 2004
(c) CONNAVFACENGCOM ltr Ser 05007ENQ/FP dated 14 June 2005
(d) Virginia Stormwater Management Regulations [9-VAC-870]
(e) Virginia Erosion and Sedimentation Control Handbook

3. Enclosures:

(1) General Permit No.VAR10, General Permit for Discharges of Storm Water from Construction Activities [VAR10]
(2) Registration Statement for Storm Water Discharges from Construction Activities [VAR10]
(3) VAR10 General Permit Fact Sheet
(4) VAR10 Permit Fee Form and Fee Schedule
(5) U.S. EPA Stormwater Pollution Prevention Plan (SWPPP) Template
(6) U.S. EPA SWPPP Development Guide
(7) VAR10 General Permit Notice of Termination Form
(8) NAVFAC ML – VA E&S Control Plan Submittal Guidance
(9) NAVFAC ML – VA SWM Plan Submittal Guidance

4. Background:

A Virginia Stormwater Management Program (VSMP) Construction General Permit is required for many construction projects in Virginia executed by NAVFAC MIDLANT Public Works offices, including the Facilities Engineering Departments, shops, and the SEABEEs. Coverage under the VSMP Construction General Permit provides for the lawful discharge of stormwater from construction sites and the protection of water quality in Virginia. On 01 July 2004 Virginia promulgated the VSMP General Permit regulations to allow storm water discharges from construction activities for project sites where one (1) acre or more will be disturbed or for smaller projects that are part of a larger plan of development. For activities undertaken at Navy installations in Virginia, a common plan of development is defined as construction that is planned for multiple and distinct locations and or phases and documented in the same 1391, contract, Coastal Consistency Determination, NEPA document, or memorandum of agreement with the Virginia State Historical Preservation Office.

The current VSMP permit regulations were revised and reissued on 01 July 2014 and will be effective until 30 June 2019, or until revised by the State, and allows for stormwater discharges from all regulated land disturbing activities. Land disturbance is defined as any manmade change

to the land surface that potentially changes its runoff characteristics including clearing, grading, or excavation. The Construction General Permit dictates the terms and conditions for controlling stormwater runoff, the lawful discharge of stormwater, and administrative procedures prescribed by state and federal regulations. NAVFAC MIDLANT construction contract bid documents and RFPs generally indicate the need for this permit in the specifications. However, failure of the requirement to appear in the specifications, submittals, or in shop work plans, does not relieve the operator a regulated construction activity from complying with this requirement. Therefore, coverage under this permit is effectively required for all construction projects that disturb one acre or more, or for projects that meet the "common plan of development" definition. An electronic copy of the permit and permit forms can be viewed at:

http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx

5. **Policy**:
In accordance with reference documents (b) and (c) Public Works Officers (PWOs) shall ensure that permit coverage is secured for all NAVFAC managed construction and maintenance related activities that are required to be permitted by reference (d).

6. **Definitions**:
The "operator" of a regulated construction project is the person(s) with day-to-day operational control and responsible for ensuring permit compliance. The operator is defined in the Virginia Stormwater Management Regulations as any person associated with a construction project that meets either of the following two criteria: (i) the person who has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications OR (ii) the person has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other state permit or VSMP authority permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the stormwater pollution prevention plan or comply with other permit conditions). For In-house PWD and SEABEE related work, the PWO is the Navy's official permittee. For contracted construction operations, the general contractor is the Navy's onsite construction agent and will be the official permittee responsible for submitting all documents required by reference (d).

7. **Procedures**:

A. *Permit Registration:*

The Operator of the construction activity must submit a single Registration Statement to the Virginia Department of Environmental Quality (VDEQ) prior to the commencement of land disturbing activities. Land disturbance must not take place until the permit coverage has been approved in writing by the VDEQ. Enclosure (2) is the VAR10 Permit Registration Statement to be used by the Operator to apply for permit coverage. The signed original Registration Statement, enclosure (2), and a completed Permit Fee Form, enclosure (4), with applicable fee must be sent by the Operator to the VDEQ. The Registration Statement should be completed and submitted at least 60 days prior to the commencement of construction activities. The Operator will receive a response from the VDEQ that identifies the projects specific permit number. The mailing address for the registration statement is:

Virginia Department of Environmental Quality
Office of Stormwater Management, 10th Floor
P.O. Box 1105
Richmond, VA 23218

B. *Permit Fees:*

The Permit Application Fee Form, enclosure (4), and payment of the applicable permit coverage fee must be provided by the Operator to the VDEQ. The permit coverage fee is variable and shall be submitted in accordance with Virginia's Permit Fee schedule identified in reference (d). A copy of the Permit Fee schedule is included with enclosure (4). Fee checks shall be made payable to the Treasurer of Virginia. The Permit Fee forms and payment shall be sent to:

Virginia Department of Environmental Quality
Receipts Control
P.O. Box 1104
Richmond, VA 23218

In addition to payment of the initial permit coverage fee, the Operator is responsible for payment of an annual permit maintenance fee. This maintenance fee will be due each year that a project's permit coverage remains in effect and responsibility for the payment of this fee will cease once the Operator submits a Notice of Termination (NOT) form to the State. The permit maintenance fee amount is variable depending upon the amount of land disturbance associated with a project. A copy of the Permit Fee schedule is included with enclosure (4).

C. *SWPPP:*

The Stormwater Pollution Prevention Plan (SWPPP) is the Operators onsite document that identifies the potential sources of pollutants that may be reasonably expected to affect the quality of stormwater discharges. A SWPPP identifies the roles and responsibilities for the implementation of control measures, and shall include an approved E&S Control Plan, an approved Stormwater Management Plan, and a pollution prevention plan. In accordance with Reference (d), the SWPPP shall be prepared by the Operator in advance of submitting the Registration Statement. Enclosure (5) is a SWPPP template and enclosure (6) is a SWPPP development guide that may be provided to personnel responsible for preparing the SWPPP. The Erosion and Sediment Control Plan, required as a component of the SWPPP, shall be prepared in accordance with reference (e) and enclosure (8). The Stormwater Management Plan, required as a component of the SWPPP, shall be prepared in accordance with reference (d) and enclosure (9). The SWPPP is a "living" document that must be modified by the Operator if it proves to be ineffective or changes are warranted to accommodate a change in site conditions, construction methods, and sequencing. An updated and signed copy of the SWPPP shall be held at the construction site at all times. Part II of the General Permit for Discharges of Stormwater from Construction Activities, enclosure (1), identifies the SWPPP permit conditions.

D. *Inspections:*

The Operator of a permitted project has a legal responsibility to ensure that the SWPPP is implemented and the project activities comply with the General Permit conditions. The construction site and the implemented Best Management Practices (BMPs) shall be inspected

by the Operator, or their qualified designee, in accordance with the requirements and frequency established in the General Permit, enclosure (1). At minimum inspections shall be conducted by qualified personnel (1) At least once every five business days; or (2) At least once every 10 business days and no later than 48 hours following a measurable storm event. "Measurable storm event" means a rainfall event producing 0.25 inches of rain or greater over 24 hours. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted no later than the next business day. All disturbed areas and areas used for the storage of materials and equipment shall be inspected by the Operator for evidence of pollution entering the drainage system. Erosion and sediment control measures shall also be inspected by the Operator to ensure they are functioning in accordance with reference (e). Locations where vehicles enter and exit the site shall be inspected daily by the contractor for signs that sediment is being tracked offsite. In areas where construction BMPs are not operating properly, maintenance shall be performed by the contractor prior to the next storm event. The Operator must retain all inspection logs and documentation as a component of the onsite SWPPP. Refer to Part II of the VAR10 General Permit, enclosure 1, for specific inspection criteria and reporting requirements.

E. ***Permit Termination:***

In order to close permit coverage the Operator shall submit the Permit Notice of Termination form, enclosure (7), after one or more of the following conditions on a project can be met: (1) Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. (2) Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge; (3) Coverage under an alternative VPDES or state permit has been obtained; or; (4) For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner. The submission of this notice terminates coverage under the permit and relieves the permittee of any future stormwater discharge liability associated with the construction site so long as the above conditions are satisfied. Non-compliance with permit conditions that occur during construction is not relieved by the submission of a Notice of Termination.

F. ***Signature Requirements****:*

The Permit Registration Statement, NOT, and all reports required by the permit, to include the SWPPP document, shall be signed in accordance with signatory requirements detail in Part III of the VAR10 General Permit, enclosure (1).

G. ***Record Keeping:***

Individual contracts or task orders should include language requiring contractors to establish and keep compliance records for a permitted project in accordance with reference (d). Projects requiring a permit shall require the contractor to create, maintain, and provide at the completion of the project an official permit compliance notebook. The notebook shall reside at the construction site and shall contain a copy of all permit required documents, submittals, and reports. Recordkeeping and reporting requirements are found in Part III of the VAR10 General Permit, enclosure (1).

H. *Site Visitors:*

The VDEQ is the State regulatory agency responsible for the administration and enforcement of the Virginia Stormwater Management Permit Program. The VDEQ has the right to inspect a project at any time for compliance with State E&S Control and Stormwater Management Laws and Regulations. If an inspection is announcement by a VDEQ inspector the notified parties must immediately send notification to the installation PWO, FEAD, EV14 Stormwater Program Manager, and the Installation EV Program Director.

NAVFAC EV Core personnel or their designee, or the Host Installation's Environmental personnel, may visit construction sites to provide oversight inspections. These site visits will substantively include a visual inspection of the effectiveness of the BMPs and a review of the documents in the permit compliance notebook. Any deficiencies identified by EV personnel during oversight inspections will be documented in a report and brought to the attention of the PWD or FEAD project staff for resolution.

8. <u>Implementation Roles</u>:

Compliance with the stormwater construction permit program is achieved through an integrated tiered approach using elements of the Facilities Engineering and Acquisition Department at each PWD, the construction contractor, and regulatory programmatic support from the EV Core. The expected duties and roles of each party involved in the permit process are summarized in the table provide below. However it should be noted that the ultimate responsibility for compliance with the VAR10 General Permit requirements falls to the party deemed to be the Operator of the regulated activity.

Action Item	**Responsible Parties**	
	Contract Projects	**In-House Navy Project**
Permit Requirement Identification	Project Planning and Design Engineer/ CI / EV Core	PWD/ CI / EV Core
SWPPP Preparation	Contractor	PWD / FEAD
SWPPP Document Maintenance	Contractor	PWD / FEAD
Registration Statement Submittal	Contractor	PWD / FEAD
Fee Form and Payment Submittal	Contractor	PWD / FEAD
Notice of Termination Submittal	Contractor	PWD / FEAD
General Permit Required Inspections	Contractor	PWD / FEAD
Oversight Inspections	EV Core / FEAD	EV Core

If you have questions about this permit requirement or the procedures identified in this guidance document, please contact Shawn Fluharty, EV14 Water Program Media Manager at (757) 341-0382 or shawn.fluharty@navy.mil.

Appendix C5– DOD EISA Implementation Memo

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

JAN 19 2010

MEMORANDUM FOR ACTING ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS AND ENVIRONMENT)
ACTING ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND ENVIRONMENT)
ACTING ASSISTANT SECRETARY OF THE AIR FORCE (INSTALLATIONS, LOGISTICS, AND ENVIRONMENT)

SUBJECT: DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act (EISA)

Reducing the impacts of storm water runoff associated with new construction helps to sustain our water resources. In October 2004, DoD issued Unified Facilities Criteria on Low Impact Development (LID) (UFC 3-210-10), a storm water management strategy designed to maintain the hydrologic functions of a site and mitigate the adverse impacts of storm water runoff from DoD construction projects. Using LID techniques on DoD facility projects can also assist in fulfilling environmental regulatory requirements under the Clean Water Act. Since 2004, DoD has implemented LID techniques for controlling storm water runoff on a number of projects.

EISA Section 438 (Title 42, US Code, Section 17094) establishes into law new storm water design requirements for Federal development and redevelopment projects. Under these requirements, Federal facility projects over 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow." Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the U.S. Environmental Protection Agency (EPA) to issue EISA Section 438 guidance. DoD shall implement EISA Section 438 and the EPA *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*, using LID techniques in accordance with the policy outlined in the attachment.

EISA Section 438 requirements are independent of storm water requirements under the Clean Water Act and should not be included in permits for storm water unless a State (or EPA) has promulgated regulations for certain EISA Section 438

requirements (i.e., temperature/heat criteria) that are applicable to all regulated entities under its Clean Water Act authority.

The attached policy will be incorporated into applicable DoD Unified Facilities Criteria within six months. My points of contact are Thadd Buzan at (703) 571-9079 and Ed Miller at (703) 604-1765.

Dorothy Robyn
Deputy Under Secretary of Defense
(Installations and Environment)

Attachment:
As stated

DoD Policy on Implementing Section 438 of the Energy Independence and Security Act (EISA)

1. EISA Section 438 requirements apply to projects that construct facilities with a footprint greater than 5,000 gross square feet, or expand the footprint of existing facilities by more than 5,000 gross square feet. The project footprint consists of all horizontal hard surfaces and disturbed areas associated with the project development, including both building area and pavements (such as roads, parking, and sidewalks). These requirements do not apply to internal renovations, maintenance, or resurfacing of existing pavements.

2. The overall design objective for each project is to maintain predevelopment hydrology and prevent any net increase in storm water runoff. DoD defines "predevelopment hydrology" as the pre-project hydrologic conditions of temperature, rate, volume, and duration of storm water flow from the project site. The analysis of the predevelopment hydrology must include site-specific factors (such as soil type, ground cover, and ground slope) and use modeling or other recognized tools to establish the design objective for the water volume to be managed from the project site.

3. Project site design options shall be evaluated to achieve the design objective to the maximum extent technically feasible. The "maximum extent technically feasible" criterion requires full employment of accepted and reasonable storm water retention and reuse technologies (e.g., bio-retention areas, permeable pavements, cisterns/recycling, and green roofs), subject to site and applicable regulatory constraints (e.g., site size, soil types, vegetation, demand for recycled water, existing structural limitations, state or local prohibitions on water collection). All site-specific technical constraints that limit the full attainment of the design objective shall be documented. If the design objective cannot be met within the project footprint, LID measures may be applied at nearby locations on DoD property (e.g., downstream from the project) within available resources.

4. Prior to finalizing the design for a redevelopment project, DoD Components shall also consider whether natural hydrological conditions of the property can be restored, to the extent practical.

5. Estimated design and construction costs for implementing EISA Section 438 shall be documented in the project cost estimate as a separate line item. Final implementation costs will be documented as part of the project historical file. Post-construction analysis shall also be conducted to validate the effectiveness of as-built storm water features.

The following flowchart illustrates the DoD implementation process for EISA Section 438, consistent with the U.S. Environmental Protection Agency's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (December 2009) (http://www.epa.gov/owow/nps/lid/section438/.

Flowchart for EISA §438 Implementation

1. Determine applicability

Requirement: apply to all Federal projects with a footprint greater than 5,000 square feet

2. Establish design objective

Requirement: maintain or restore predevelopment hydrology

OPTIONS

1
Total volume of rainfall from 95th percentile storm is to be managed on-site.

2
Determine predevelopment hydrology based on site-specific conditions and local meteorology by using continuous simulation modeling techniques, published data, studies, or other established tools. Determine water volume to be managed onsite.

Design water volume
(to be retained)

3. Evaluate design options

Requirement: meet design objective to maximum extent technically feasible (METF)

Design water volume
(to be retained)

TYPICAL ON-SITE DESIGN OPTIONS

- **Bio-retention areas**
- **Permeable pavements**
- **Cisterns / recycling**
- **Green roofs**

Use any combination of on-site options to achieve the design objective to the METF. Document site-specific constraints.

TECHNICAL CONSTRAINT EXAMPLES

- Retaining storm water on site would adversely impact receiving water flows
- Site has shallow bedrock, contaminated soils, high groundwater, underground facilities or utilities
- Soil infiltration capacity is limited
- Site is too small to infiltrate significant volume
- Non-potable water demand (for irrigation, toilets, wash-water, etc.) is too small to warrant water harvesting and reuse systems
- Structural, plumbing, or other modifications to existing buildings to manage storm water are infeasible
- State or local requirements restrict water harvesting
- State or local requirements restrict the use of green infrastructure/LID

Selected on-site design options

remaining water volume?

OFF-SITE OPTIONS
(optional)

Selected off-site design options

4. Finalize design and estimate cost

Appendix C6– DON LID Policy Memo

DEPARTMENT OF THE NAVY
THE ASSISTANT SECRETARY OF THE NAVY
(INSTALLATIONS AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

NOV 16 2007

MEMORANDUM FOR DEPUTY CHIEF OF NAVAL OPERATIONS
(FLEET READINESS AND LOGISTICS)
DEPUTY COMMANDANT OF THE MARINE CORPS
(INSTALLATIONS AND LOGISTICS)

SUBJECT: Department of the Navy Low Impact Development (LID) Policy for Storm Water Management

References: (a) 33 United States Code 1251 (Clean Water Act)
(b) Title 40 Code of Federal Regulations 122, 130
(c) Department of Defense Unified Facilities Criteria 3-210-10 Design for Low Impact Development, October 2004
(d) Executive Order 13423 "Strengthening Federal Environmental, Energy, and Transportation Management", January 2007
(e) OPNAVINST 5090.1C, Clean Water Ashore Requirement, October 2007
(f) MCO P5090.2A, Water Quality Management, July 1998

BRAC 05 implementation, Department of Defense (DoD) Grow the Force Initiatives, and ongoing installation sustainment and modernization, have resulted in significant construction activity on Department of the Navy (DON) installations. New construction results in loss of natural vegetation cover and drainage capacity and increased storm water runoff. Conventional storm water collection and conveyance systems and storm water treatment options do not and can not replicate natural systems, thus increasing the volume and flow of storm water as well as sediment and nutrient loadings to streams, wetlands, and other receiving water bodies. Because of continuing water quality problems, States and the US Environmental Protection Agency are considering mandatory treatment and control of storm water. Conversely, low impact development (LID) techniques offer a suite of Best Management Practices that maintain or restore predevelopment hydrology. It mitigates the adverse effects of construction projects on water quality by cost effectively reducing the volume and pollutant loading of storm water before it reaches the receiving water bodies. LID utilizes strategies that infiltrate, filter, store, evaporate, and/or retain runoff close to its source. LID further reduces installation reliance on aging storm water management infrastructure. References (a) thru (f) provide requirements and guidance for LID.

This DON policy sets a goal of no net increase in storm water volume and sediment or nutrient loading from major renovation and construction projects[1]. In order to support this goal, as well as reduce reliance on conventional storm water collection systems and treatment options, this policy directs that LID be considered in the design for all projects that have a storm water management element. LID will be implemented where possible to assist DON installations in complying with references (a) and (b), as well as all applicable State and Federal requirements for sustainable development. In those infrequent situations where LID is not appropriate given the characteristics of the site, the Navy and Marine Corps are authorized to establish a waiver process that, if used, would include regional engineer level review and approval.

The Navy and Marine Corps are directed to immediately plan, program, and budget to meet the requirements of this policy starting in FY 2011. All efforts shall be made to incorporate LID practices in the fiscal years 08, 09, and 2010. The services are further directed to submit to my office an annual report that summarizes all projects that have a storm water component and identify how LID was implemented or waived. If waived, the report must identify the approving official. Naval Facilities Engineering Command, as the Department's expert in acquisition, construction, and environmental management, shall assist Navy and Marine Corps installations in meeting these policies. My point of contact for this matter is CAPT Robin Brake, robin.brake@navy.mil, (703) 693-2931.

BJ Penn

[1] Major renovation projects are defined as having a storm water component and exceeding $5 million when initially approved by DASN (I&F). Major construction projects are defined as those exceeding $750K.

Appendix D– BMP Inspection and Maintenance Procedures

FINAL

BMP Inspection and Maintenance Procedures for Hampton Roads Installations

Implementation of MS4 Permit No. VAR040114

Contract #: N62470-10-D-3000: WE28

February 2015

Prepared for:

NAVFAC Mid-Atlantic
Water Compliance Section
Norfolk, VA 23511

Prepared by:

Michael Baker Jr., Inc.
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BMP Inspection and Maintenance Procedures

Final Report

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LIST OF ACRONYMS

Baker	Michael Baker, Jr. Inc.
Bay	Chesapeake Bay
BMP	Best Management Practice
CNRMA	Commander, Navy Region Mid-Atlantic
DoD	Department of Defense
DEQ	Department of Environmental Quality
EC	Erosion Control
ED	Extended Detention
MCM	Minimum Control Measure (of a Phase II stormwater permit)
MIDLANT	Mid-Atlantic
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NMP	Nutrient Management Plan
PWD	Public Works Director
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
VA	Virginia
VA DEQ	Virginia Department of Environmental Quality
VSMH	Virginia Stormwater Management Handbook
VSMP	Virginia Stormwater Management Program

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1. Overview

This section of the Inspection and Maintenance Procedures addresses the authorization and scope, project purpose, meetings, and provides background into the different types of structural Best Management Practices (BMPs).

Authorization and Scope

Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic Region's (MIDLANT) has retained Michael Baker, Jr. Inc. (Baker) under Contract No. N62470-10-D-3000, Delivery Order WE28 to develop a Best Management Practice Inspection and Maintenance Procedures (Task B.2.a) in compliance with NAVFAC MIDLANT's General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) issued by the Virginia Department of Environmental Quality (VA DEQ). Other deliverables for this project that are bound separately include the BMP tracking mechanism, the municipal stormwater pollution prevention plans (SWPPP), and the golf course nutrient management plans (NMP).

Project Purpose

The purpose of these BMP Inspection and Maintenance Procedures is to comply with the requirements in NAVFAC MIDLANT's MS4 permit and to develop comprehensive guidance that allows for consistent inspection and maintenance of hundreds of BMPs. Since all stormwater management facilities with the permitted MS4 are owned and operated by the Commander, Navy Region Mid-Atlantic (CNRMA), only the conditions in the permit relating to the owner-operated facilities apply.

These Inspection and Maintenance Procedures include information related to the procedures that will be used during annual inspections of BMPs, and maintenance procedures to be performed on an "as needed" basis. The inspection procedures were developed based on information found in Chapter 9 of the Virginia Stormwater Management Handbook and the Virginia BMP Clearinghouse.

Meetings

On September 24, 2014, NAVFAC MIDLANT and Baker staff members met at Naval Station Norfolk in Norfolk, VA to kick-off the 2014 MS4 Program Implementation for Hampton Roads Installations Project (WE28). One of the deliverables outlined in the project scope of work is the development of BMP Inspection and Maintenance Procedures.

Structural Best Management Practices Background

Bioretention Areas

Bioretention areas are shallow landscaped depressions that treat runoff. The primary components of this practice include a surface ponding area, plant material, a 2- to 3-inch organic material or mulch layer, and subsurface planting soil and storage bed. Bioretention area design may also include infiltration or a perforated underdrain system in soil conditions unsuitable for infiltration. Vegetation that is tolerant of frequent ponding should be selected. Smaller versions are typically called rain gardens.

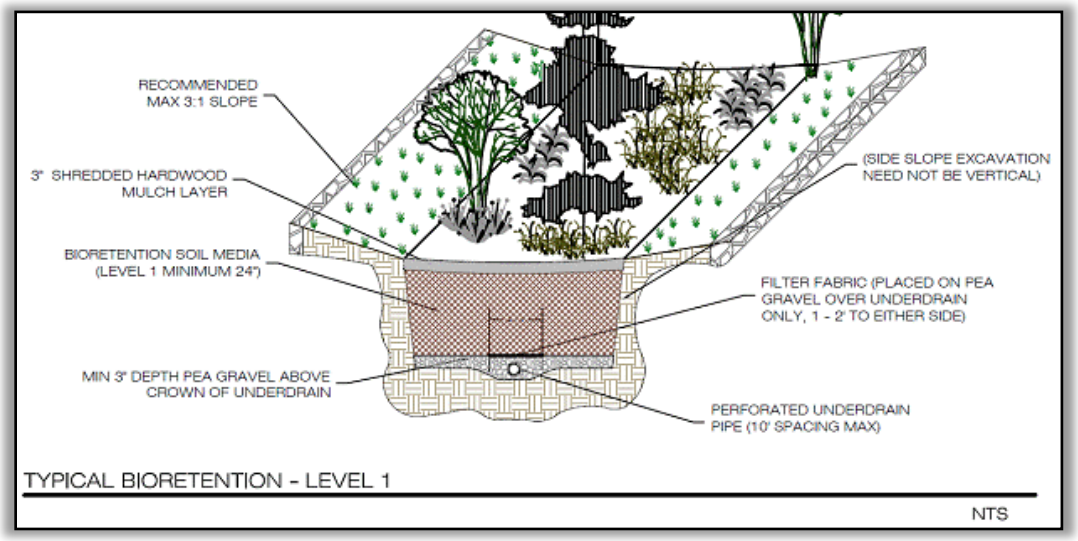

Figure 1-1 Section and Plan View of Bioretention (VA DEQ)

Detention, Retention, and Wetlands

Detention/Dry Ponds

A detention or dry pond consists of a temporary pool of water that is conveyed to the receiving waters over an extended period of time. An undersized outlet structure restricts stormwater flow so that it backs up and is stored within the basin. Most of these ponds have outlets consisting of a riser structure with multiple outlet openings to control different storm events. This practice aims to control peak flow rates but can also provide water quality benefits. Sediment and other particulate pollutants settle out in the temporary pool of water. Dry ponds typically include an offline sediment forebay to trap sediment and preserve the capacity of the main treatment cell.

Retention/Wet Pond

A wet or retention pond consists of a permanent pool of standing water that promotes a better environment for gravitational settling, biological uptake, and microbial activity. Runoff from each new storm enters the pond and partially displaces water in the pool from previous storms. The pool also acts as a barrier to re-suspension of sediments and other pollutants deposited during prior storms. Wet or retention ponds may contain multiple cells and/or wetland cells. Wet or

retention ponds can also provide extended detention above the permanent pool to help protect the outfall channel.

Wetlands

Constructed wetlands are shallow depressions with dense and diverse wetland cover that receive stormwater runoff. Typically, they are less than 1 foot deep, although they do include greater depths in the forebay and micropools. Generally, they include vegetation zones (typically less than 18 inches deep) and open water zones between 1.5 feet and 6 feet deep. This practice can provide peak rate control, runoff volume mitigation, and water quality benefits (gravitational settling, biological update, and microbial activity). Wetlands are organized into four groups:

1. Shallow wetlands for water quality treatment;
2. Extended detention shallow wetlands for water quality treatment and peak rate control;
3. Pocket wetlands with drainage areas between 5 and 10 acres located near the water table; and
4. Pond/wetland systems with constructed wetland and wet pond components for drainage areas over 10 acres.

Figure 1-2 Plan View of Stormwater Wetland (VA DEQ)

Green Roofs

Green or vegetated roofs are an alternative roof surface typically consisting of an engineered soil media with vegetation, waterproofing, and drainage materials. Runoff is stored and treated in the soil media before continuing through an underdrain. Plant uptake and evapotranspiration reduce the amount of runoff that enters the underdrain. There are two levels of green roofs: intensive and extensive. Extensive green roofs have growing media depths that range from 2 to 6 inches, while intensive systems have media depths of over 6 inches. This practice, especially the intensive system, will require additional load bearing capacity for the roof. Low-maintenance plants that do not need supplemental irrigation or fertilization after they are established are generally selected for installation.

Infiltration Practices

This practice uses temporary aboveground and underground storage to promote infiltration and is appropriate for high-permeability soils. Runoff should first flow through a pretreatment device before the infiltration practice to prevent clogging. The practice is associated with high water quantity benefits; however, it should not be used in areas that drain “hotspots” so not to contaminate the groundwater. Infiltration basins may be outfitted with pipes to increase the storage volume in the underground chamber, which otherwise consists of washed aggregate.

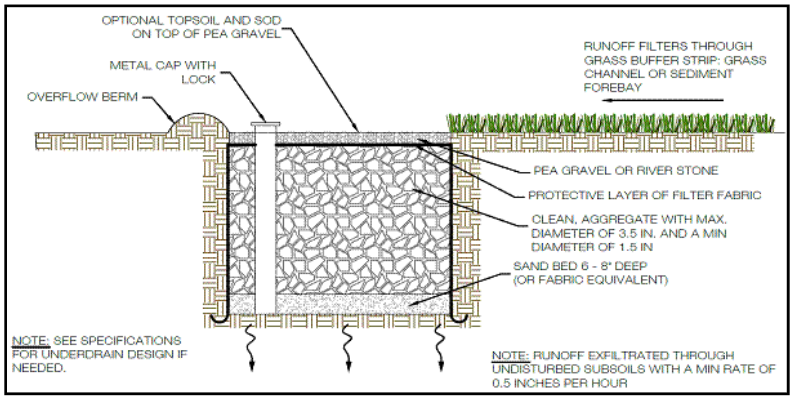

Figure 1-3 Small Scale Infiltration Cross Section (VA DEQ)

Proprietary Devices

Proprietary devices are devices that were designed and developed by a private manufacturer. Typical proprietary devices include Filterra® Tree Box Filters, hydrodynamic catch basin inserts, and Modular Wetlands®. Tree box filters are mini bioretention areas installed beneath trees. They are an example of an urban micro-practice (<1000 square feet contributing drainage area) that can be used adjacent to roads, buildings, and sidewalks to provide some level of biofiltration treatment. Hydrodynamic catch basin inserts include a large variety of structures that remove nonpoint source pollutants from runoff. Typically, each structure can provide water quality benefits to small drainage areas (less than 1 acre) and are most useful in combination with other BMPs. Modular wetlands are linear mini bioretention or wetland-type systems that are installed along parking lots, roads, and sidewalks to provide treatment through biofiltration and biological uptake.

Permeable Pavement

This practice includes any permeable surface, including porous asphalt, porous concrete, or interlocking concrete pavers laid on uncompacted soils. These practices use an underlying stone reservoir to store runoff until it can be infiltrated. The depth of the stone reservoir can vary and depends on both a structural and a hydrologic design analysis. Generally, permeable pavement is designed to treat the runoff falling directly on the actual pavement surface; however, it can also be designed to treat additional nearby impervious surface areas. This practice can be used in commercial, institutional, and residential applications. It is best implemented under flat parking lots, driveways, alleys, sidewalks, playgrounds, or other areas with minimal traffic loading.

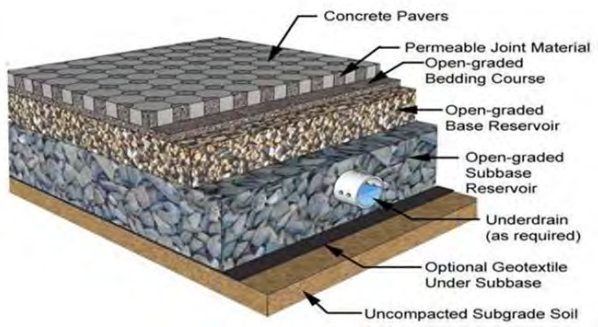

Figure 1-4 Permeable Pavement (VA DEQ)

Rooftop Disconnection

This practice redirects runoff from the stormwater system (including gutters) onto a pervious surface or into another practice (e.g., a tree box filter or rain barrel). Rooftop disconnection provides runoff reduction (water quantity), and may include a complementary practice. In addition to reducing runoff volume, rainwater harvesting mitigates the peak runoff flow rates for medium and smaller rainfall events.

Figure 1-5 Disconnect Roof Downspouts at Naval Station Norfolk

Swales, Bioswales, and Channels

Dry Swales/Bioswales

In the Virginia Stormwater BMP Clearinghouse specifications, the term dry swale refers to a linear "bioretention-like" cell that typically has a shallower media bed with fewer vegetative requirements than bioretention cells. Dry swales have a surface ponding area, plant material, an organic material or mulch layer, an engineered soil media, and a storage bed.

Figure 1-6 Dry Swale (VA DEQ)

Wet Swales

A wet swale is a cross between a wetland and a swale and intersects the groundwater table to support a wetland plant community. Check dams or other grade control devices can be used to create ponding conditions. The normal pool should not exceed 6 inches, and temporary storm ponding should not exceed 18 inches. Wet swales typically have low slopes and variable (2-8 feet) bottom width. On-line wet swales should pass minimum design storm events. Mosquito concerns are applicable, particularly in residential areas.

Channels

This practice is an alternative to conventional roadside drainage and is applicable to linear conveyance requirements. Performance is soil and vegetation dependent. The channel slope should be between 0.5 and 4 percent, and check dams are commonly used to meet maximum velocity requirements by reducing the effective slope. Channels generally use water-resistant native vegetation with high pollutant removal capabilities, and can also provide volume reduction and groundwater recharge benefits.

2. Maintenance Procedures

This section of the Inspection and Maintenance Procedures addresses the maintenance procedures to be performed for each type of BMP. Maintenance of the stormwater management facilities will be performed on an "as needed" basis and as a result of issues identified during the annual inspections. When the inspection reports identify deficiencies with a stormwater BMP, the report will be provided to the installaton's Public Works Director (PWD) or their designee to alert them of the required BMP maintenance needs. Reports from the public using the notification vessels (hotline, email, or website) will also prompt an inspection of the facility and possible maintenance.

Bioretention Areas

Table 2-1. Typical Maintenance Summary for Bioretention Areas

Activity	Frequency	Description
Structural Inspection	1 X per yr or more often as necessary	• Examine outlet structure and pretreatment area for blockage and to assess infiltration; • Check for clogging and for piping, conduct a wet weather assessment within 24 hrs of 1" rain event – water should be mostly or fully drawn down; • Conversely, also check if bed drains too fast – indicative of structural failures; • Look for broken underdrains or cleanouts, sinkholes in bed indicating short circuiting; and • Repair erosion, reseed and/or remulch any areas where erosion is present (determine root cause and address).
Fertilizer and other Chemicals	N/A	• Avoid use of compost and/or fertilizer to address plant growth, use limited amount of organic source to start plants at time of construction; • Do not use pesticides or herbicides or inorganic fertilizer; and • It is acceptable to mix in organic fertilizer/compost on banks to address problem areas where bank vegetation is not readily establishing.
Clean up	1 X per yr or more often as necessary	• Remove trash and debris
Mulch	1 X per yr	• Replenish as judged appropriate, in large part for aesthetics

Table 2-1. Typical Maintenance Summary for Bioretention Areas		
Activity	**Frequency**	**Description**
Sediment	1 X per yr	• Look for sediment in bed; • Check for sources of sediment in watershed and on slopes of practice; and • Pull soil cores and look for hydric indicators (if present, practice may not be draining properly).
Mowing	1-2 X per yr	• Mow when greater than 10-inches, applies to practices vegetated with turf, may also apply 1-2 X per year for native grasses where tree establishment is not desired
Plants	1 X per yr, or more often as necessary	• Water and care for intensively first year after installation; • Weeding and pruning, remove invasive species, reseed any bare areas that should be vegetated; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; and • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

Detention, Retention, and Wetlands

Dry/Detention Ponds

Dry/detention and extended detention (ED) ponds are prone to a high clogging risk at the low-flow orifice. Ideally, the orifice should be inspected at least twice a year after initial construction. The constantly changing water levels in detention ponds make it difficult to mow or manage vegetative growth. The bottom of detention ponds often become soggy, and water-loving tees such as willows may invade and will need to be managed. Periodic mowing of the stormwater buffer is only required along maintenance rights-of-way and the embankment. The remaining buffer may be managed as a meadow (mowing every other year) or forest. Frequent removal of sediment from the forebay (every 5-7 years, or when 50% of the forebay capacity is filled) is essential to maintain the function and performance of the detention pond. Sediments excavated from detention ponds are usually not considered toxic or hazardous, so they can be safely disposed of either by land application of land filling.

Table 2-2. Typical Maintenance Summary for Dry/Detention Ponds		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Check depth of forebay to assess sediment build-up, remove sediment at 50% of original volume; • Examine inlet structure for stable conveyance into pond; • Examine outlet structure and pretreatment area for blockage; • Protect dams by prohibiting tree growth, controlling animal borrows, and maintaining drawdown devices and emergency spillways; • Check for clogging and for piping/undermining of structures and pipes; • Check for excessive sediment accumulation; • Check for adequate access to the facility; • Repair erosion, reseed and/or remulch any areas where erosion is present determine root cause and address.
Clean up/Miscellaneous	1 X per yr or more often as necessary	• Remove trash and debris; • Inspect safety features (fencing) to make sure they are in good working order; • Fill animals borrows immediately; and • Check water levels in each cell to ensure they are not abnormally high or low.
Plants	1 X per yr, or more often as necessary	• Weeding and pruning, reseed any bare areas that should be vegetated; • Physically or chemically treat invasive species; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

Wet/Retention Ponds

During the first 6 months following construction, the wet/retention pond should be inspected twice after storm events that exceed 1/2 inch of rainfall. The aquatic benches should be planted with emergent wetland species, consistent with the Wet Pond design specifications. Bare or eroding areas in the CDA or around the pond buffer should be stabilized immediately with grass cover. Trees planted in the buffer need to be watered every 3 days for the first month, and then weekly during the remainder of the first growing season (April-October), depending on rainfall. Due to typical vegetation survival problems, it is typical to plan and budget for a round of reinforcement planting during the second growing season after construction.

Table 2-3. Typical Maintenance Summary for Wet/Retention Ponds		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Check depth of forebay to assess sediment build-up, remove sediment at 50% of original volume; • Examine inlet structure for stable conveyance into pond; • Examine outlet structure and pretreatment area for blockage; • Protect dams by prohibiting tree growth, controlling animal borrows, and maintaining drawdown devices and emergency spillways; • Check for clogging and for piping/undermining of structures and pipes; • Check for excessive sediment accumulation; • Check for adequate access to the facility; • Repair erosion and determine root cause and address.
Clean up/Miscellaneous	1 X per yr or more often as necessary	• Remove trash and debris; • Inspect safety features (fencing) to make sure they are in good working order; • Fill animal borrows immediately.
Plants	1 X per yr, or more often as necessary	• Physically or chemically treat invasive species; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

Wetlands

Table 2-4. Typical Maintenance Summary for Wetlands		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Check depth of forebay to assess sediment build-up, remove sediment at 50% of original volume; • Examine outlet structure and pretreatment area for blockage; • Protect dams by prohibiting tree growth, controlling animal borrows, and maintaining drawdown devices and emergency spillways; • Check for clogging and for piping/undermining of structures and pipes; • Repair erosion and determine root cause and address.
Clean up/Miscellaneous	1 X per yr or more often as necessary	• Remove trash and debris; • Inspect safety features (fencing) to make sure they are in good working order; • Fill animal borrows immediately.
Plants	1 X per yr, or more often as necessary	• Weeding and pruning, reseed any bare areas that should be vegetated; • Physically or chemically treat invasive species; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

Green Roofs

Ideally, following construction, this practice should be inspected monthly during the vegetation establishment period, and then every six months thereafter to assess the state of vegetative cover and to look for leaks, drainage problems and other functional or structural concerns. Maintenance may include watering, hand-weeding to remove invasive or volunteer plants, and to add plant materials to repair bare areas. The use of herbicides, insecticides, fungicides, and fertilizers should be avoided, since their presence could hasten degradation of the waterproof membrane. Also, power-washing and other exterior maintenance operations should be avoided in the contributing drainage area so that cleaning agents and other chemicals do not harm the vegetated roof plant communities.

Table 2-5. Typical Maintenance Summary for Green Roofs		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Examine outlet piping/structure for blockage and to assess infiltration; • Check for clogging and for piping, conduct a wet weather assessment within 24 hrs of 1" rain event – water should be mostly or fully drawn down; • Look for broken underdrains or cleanouts, sinkholes in bed indicating short circuiting; and • Examine waterproof membrane and root barrier for leaks and cracks.
Fertilizer and other Chemicals	N/A	• Avoid use of compost and/or fertilizer to address plant growth, use limited amount of organic source to start plants at time of construction; • Do not use pesticides or herbicides or inorganic fertilizer; and • It is acceptable to mix in organic fertilizer/compost on banks to address problem areas where bank vegetation is not readily establishing.
Clean up	1 X per yr or more often as necessary	• Remove trash and debris
Access	1 X per yr	• Ensure adequate access to the BMP.
Sediment	1 X per yr	• Look for sediment in bed; • Check for sources of sediment in watershed and on slopes of practice; and • Pull soil cores and look for hydric indicators (if present, practice may not be draining properly).
Plants	1 X per yr, or more often as necessary	• Water and care for intensively first 3 years after installation; • Water as needed after first 3 years to maintain sufficient plant cover; • Weeding and pruning, including removal of invasive species, reseed any bare areas that should be vegetated; • Other care specified in design – other care should not create erosion or other situations that would compromise BMP; and • Ensure healthy dense vegetative cover.

Infiltration Practices

Table 2-6. Typical Maintenance Summary for Infiltration Practices		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Examine outlet structure and pretreatment area for blockage and to assess infiltration; • Check for clogging and for piping, conduct a wet weather assessment within 24 hrs of 1" rain event – water should be mostly or fully drawn down; • Conversely, also check if bed drains too fast – indicative of structural failures; • Look for broken underdrains or cleanouts, sinkholes in bed indicating short circuiting; and • Repair erosion, reseed and/or remulch any areas where erosion is present (determine root cause and address).
Fertilizer and other Chemicals	N/A	• Avoid use of compost and/or fertilizer to address plant growth, use limited amount of organic source to start plants at time of construction; • Do not use pesticides or herbicides or inorganic fertilizer; and • It is acceptable to mix in organic fertilizer/compost on banks to address problem areas where bank vegetation is not readily establishing.
Clean up	1 X per yr or more often as necessary	• Remove trash and debris
Mulch	1 X per yr	• Replenish as judged appropriate, in large part for aesthetics
Sediment	1 X per yr	• Look for sediment in bed; • Check for sources of sediment in watershed and on slopes of practice; and • Pull soil cores and look for hydric indicators (if present, practice may not be draining properly).
Mowing	1-2 X per yr	• Applies to practices vegetated with turf, may also apply 1-2 X per year for native grasses where tree establishment is not desired

Table 2-6. Typical Maintenance Summary for Infiltration Practices		
Activity	**Frequency**	**Description**
Plants	1 X per yr, or more often as necessary	• Water and care for intensively first year after installation; • Weeding and pruning, reseed any bare areas that should be vegetated; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; and • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

Permeable Pavement

Routine maintenance is essential to the success of a permeable pavement system. With proper maintenance, the permeable pavement will slow the stormwater flow, which will decrease the stress on existing traditional stormwater systems downstream. Maintenance of the permeable pavement will include removing debris before it causes clogging. This is generally accomplished by performing periodic vacuuming. Maintenance includes the monitoring and testing of the stormwater functions. For paver systems, maintenance will also include care, inspection, and replacement of the joint material. For systems that include pavers with vegetation, the vegetation will also require maintenance. Ideally, each permeable pavement installation should be inspected in the spring of each year, especially at large-scale installations.

Table 2-7. Typical Maintenance Summary for Permeable Pavement		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Examine outlet piping/structure for blockage and to assess infiltration; • Check for clogging and evidence of staining, conduct a wet weather assessment within 3 days of 1/2" rain event – water in observation well should be fully drawn down; • Examine the joint material and replenish as needed; • Look for broken underdrains or cleanouts; and • Look for evidence of surface deterioration such as slumping, spalling, cracking, or broken pavers.

Fertilizer and other Chemicals	N/A	• Avoid use of compost and/or fertilizer to address plant growth, use limited amount of organic source to start plants at time of construction; • Do not use pesticides or herbicides or inorganic fertilizer; and • It is acceptable to mix in organic fertilizer/compost on banks to address problem areas where bank vegetation is not readily establishing.
Clean up/Miscellaneous	1 X per yr or more often as necessary	• Remove trash and debris; • Avoid use of de-icing compounds to the greatest extent possible; and • Do not mound snow on permeable pavers.
Sediment	1 X per yr	• Look for excess sediment in grid paver areas and remove as necessary; and • Check for sources of sediment in watershed and on slopes of practice.
Plants	1 X per yr, or more often as necessary	• Prune or remove vegetation that limits access to, or interfers with the successful operation of the permeable pavers;

Proprietary Devices

Follow the manufacturer's recommended operations and maintenance schedule and guidelines for any proprietary stormwater BMPs.

Rooftop Disconnection

Table 2-8. Typical Maintenance Summary for Rooftop Disconnection		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Ensure rooftop runoff is not being piped to an impervious area; • Ensure disconnection is not causing ponding or erosion; • If downstream treatment is present, ensure runoff is entering the downstream practice; •
Clean up	1 X per yr or more often as necessary	• Remove trash and debris

Swales, Bioswales, and Channels

Dry Swales, Bioswales, and Channels

Table 2-9. Typical Maintenance Summary for Dry Swales, Bioswales, and Channels		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Examine outlet structure and pretreatment area for blockage and to assess infiltration; • Check for clogging and for piping, conduct a wet weather assessment within 24 hrs of 1" rain event – water should be mostly or fully drawn down; • Conversely, also check if bed drains too fast – indicative of structural failures; • Look for broken underdrains or cleanouts, sinkholes in bed indicating short circuiting; • Repair erosion, reseed and/or remulch any areas where erosion is present (determine root cause and address).
Fertilizer and other Chemicals	N/A	• Avoid use of compost and/or fertilizer to address plant growth, use limited amount of organic source to start plants at time of construction; • Do not use pesticides or herbicides or inorganic fertilizer; • Ok to mix in organic fertilizer/compost on banks to address problem areas where bank vegetation is not readily establishing.

Table 2-9. Typical Maintenance Summary for Dry Swales, Bioswales, and Channels		
Activity	**Frequency**	**Description**
Clean up	1 X per yr or more often as necessary	• Remove trash and debris.
Mulch	1 X per yr	• Replenish as judged appropriate, in large part for aesthetics.
Sediment	1 X per yr	• Look for sediment in bed; • Check for sources of sediment in watershed and on slopes of practice; • Pull soil cores and look for hydric indicators (if present, practice may not be draining properly).
Mowing	1-2 X per yr	• Applies to practices vegetated with turf, may also apply 1-2 X per year for native grasses where tree establishment is not desired.
Plants	1 X per yr, or more often as necessary	• Water and care for intensively for the first year after installation; • Weeding and pruning, reseed any bare areas that should be vegetated; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

Wet Swales

Table 2-10. Typical Maintenance Summary for Wet Swales		
Activity	**Frequency**	**Description**
Structural Inspection	1 X per yr or more often as necessary	• Examine outlet structure, check dams, and pretreatment areas for blockage; • Repair erosion, reseed and/or remulch any areas where erosion present (determine root cause and address).
Fertilizer and other Chemicals	N/A	• Avoid use of compost and/or fertilizer to address plant growth, use limited amount of organic source to start plants at time of construction; • Do not use pesticides or herbicides or inorganic fertilizer; and • It is acceptable to mix in organic fertilizer/compost on banks to address problem areas where bank vegetation is not readily establishing.
Clean up	1 X per yr or more often as necessary	• Remove trash and debris
Sediment	1 X per yr	• Look for sediment in bed; • Check for sources of sediment in watershed and on slopes of practice.
Mowing	1-2 X per yr	• Applies to practices vegetated with turf, may also apply 1-2 X per year for native grasses where tree establishment is not desired
Plants	1 X per yr, or more often as necessary	• Water and care for intensively first year after installation; • Weeding and pruning, reseed any bare areas that should be vegetated; • Mowing or other care specified in design – mowing or other care should not create erosion or other situations that would compromise BMP; and • Ensure healthy dense vegetative cover, particularly on banks when/if vegetation is primary source of bank stability.

3. Inspection Procedures

Each stormwater management facility should be inspected annually. Strategies such as periodic inspections, outreach and education, and other methods targeted at promoting the long-term maintenance of stormwater control measures on individual residential lots are documented in NAVFAC MIDLANT's MS4 Program Plan.

Inspections are currently conducted in accordance with Chapter 9, "BMP Inspection and Maintenance," of the Final 2013 Virginia Stormwater Management Handbook. Baker has developed inspections forms for the different types of BMPs, including:

- Bioretention;
- Detention, Retention and Wetlands;
- Green Roofs;
- Infiltration Practices;
- Permeable Pavers;
- Proprietary Devices
- Rooftop Disconnection; and
- Swales, Bioswales, and Channels.

These inspection forms can be found in **Appendix A**. During the inspection, each BMP will be given a rating of satisfactory, unsatisfactory, or satisfactory with notes. The definitions of these ratings are:

- **Satisfactory –** There were no deficiencies requiring immediate corrective action identified during the BMP inspection. For record keeping purposes, the date of inspection must be recorded on the BMP inventory spreadsheet and "SAT" noted in the inspection results column.
- **Unsatisfactory –** There were deficiencies identified during inspection which require immediate corrective action to ensure the BMP will function as designed. For record keeping purposes, the date of inspection must be recorded on the BMP inventory spreadsheet, "UNSAT" shall be noted in the inspection results column, and an inspection report shall be completed, distributed, and a copy retained on file.
- **Satisfactory with Notes –** The BMP is properly functioning however the inspector observed areas of concern which may develop into a deficiency if routine maintenance is not performed. For record keeping purposes, the date of inspection shall be recorded on the BMP inventory spreadsheet, "SAT / Notes" shall be noted in the inspection results column, and all applicable notes from the inspection shall be recorded and retained on file.

When an inspection report categorizes a BMP as unsatisfactory, the inspection form will be provided to the installaton's PWD or their designee to alert them of the required BMP maintenance needs.

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4. References

Chapter 9 BMP Inspection and Maintenance; Virginia Stormwater Management Handbook; July 2013.

Draft Post Construction Stormwater Runoff Management Instruction; Commander, Navy Region, Mid-Atlantic.

Michael Baker Jr., Inc. Regional MS4 Program Plan for Small Municipal Separate Storm Sewer Systems Virginia General Permit. Prepared for NAVFAC Mid Atlantic. July 2013.

Virginia Department of Environmental Quality. General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems. July 1, 2013.

Virginia Stormwater BMP Clearinghouse. Accessed October 20, 2014. http://vwrrc.vt.edu/swc/NonProprietaryBMPs.html

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APPENDIX A

BMP Inspection Forms

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
BIORETENTION AREAS

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**
Facility Type ☐ Conventional (Surface) ☐ Manufactured (Underground) ☐ Planter	**Filtration Media** ☐ Engineered Soil Mixture ☐ Sand ☐ Peat ☐ No Filtration Media (Dry Well) ☐ Other:	**Pretreatment Facilities** ☐ Sediment Forebay / Sedimentation Chamber ☐ Grass Swale / Channel ☐ w/ Check Dams ☐ Grass Filter Strip ☐ Stone Diaphragm ☐ Gravel Flow Spreader ☐ Other:
Structural Elements ☐ Drop Inlet / Catch Basin / Overflow Control ☐ Underdrain ☐ Monitoring Well ☐ Other:		

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Overall / Contributing Drainage Area	Maintenance access to facility and components			
	Poor condition or damage to structural components			
	Excessive trash/debris			
	Evidence of oil/chemical accumulation caused by activities within the drainage area			
	Evidence of standing water, excessive ponding, poor drainage or clogging			
	Bare soil or sediment sources are seen in the contributing drainage area			
Pretreatment	Excessive trash/debris/sediment			
	Evidence of erosion			
	Dead vegetation/exposed soil			
Observation Well	Is the observation well capped?			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Inlets	Inlets provide stable, unobstructed conveyance into facility			
	Excessive trash/debris/sediment accumulating at inlet			
	Evidence of erosion at/around inlet			
Side Slopes	Exposed soil or inadequate stabilization; flow channels, rills or gullies are forming			
	Side slopes are supporting nuisance animals (burrows or holes)			
Vegetation	Plants experience unsatisfactory growth or mortality, evidence of contamination			
	Invasive species contribute >10% of vegetation within facility			
	Vegetation is dead, dying or diseased			
	Plant composition is consistent with approved plans			
	Vegetation and mulch contribute to 75% − 90% cover in the bed			
Filter Media	Filter media is too low, too compacted, or composition is inconsistent with design specs.			
	Mulch is older than 3 years or in poor condition			
	Evidence of chemicals, fertilizers, and/or oil/grease			
	Evidence of concentrated flows, erosion, or exposed soils			
	Sediments are greater than 20% of design depth			
	Filter bed is blocked or inappropriately filled			
Planters	Planter is able to detain stormwater prior to infiltration			
	Planter has structural deficiencies/cracks/does not contain vegetation or filter media			
Outlet	Outlet provides stable conveyance out of BMP			
	Outlet is in good structural condition			
	Excessive trash/debris/sediment accumulating at outlet			
	Evidence of erosion at/around outlet			
	Evidence that underdrain is not delivering drainage as designed			
	Evidence of standing water and potential clogging of underdrain. Water ponds on surface of BMP for more than 48 hours after storm event.			

Additional notes or observations:

NAVFAC Naval Facilities Engineering Command
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Norfolk, Va. 23511

BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
DETENTION, RETENTION & WETLANDS

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**

Facility Type	Basin Features	Structural Elements	Pretreatment Facilities
☐ Extended Detention Basin	☐ Permanent pool sized for full Tv	☐ Inlet Structures	☐ Sediment Forebay / Sedimentation Chamber
☐ Enhanced Extended Detention Basin	☐ Shallow wetland sized for full Tv	☐ Riser Structure	☐ Grass Filter Strip
☐ Dry Pond	☐ Micropool	☐ Emergency Spillway	☐ Vegetated Buffer Area
☐ Retention Basin	☐ Extended Detention Included	☐ Underground detention	☐ Grass Channel
☐ Wet Pond	☐ Other:	☐ Other:	☐ Other:
☐ Multiple Pond System			
☐ Pond with Wetland Plantings			
☐ Constructed Wetland			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Contributing Drainage Area	Excessive trash/debris			
	Excessive landscape waste or yard clippings			
	Bare/exposed soil or sediment sources			
	Adequate vegetation			
Pretreatment	Maintenance access to pretreatment facility			
	Excessive trash/debris/sediment accumulation			
	Evidence of clogging			
	Evidence of erosion			
	Dead vegetation/exposed soil			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Inlet	Inlets provide stable, unobstructed conveyance into facility			
	Excessive trash/debris/sediment accumulating at inlet			
	Evidence of erosion at/around inlet			
	The inlet alignment is incorrect.			
Forebay	Sediments are not properly filtering down			
	50% or more of forebay capacity is filled with sediment			
	The sediment marker is not vertical			
	Woody vegetation on forebay dam			
	Structural damage to forebay dam			
	There is more than 1 inch of settlement.			
Side Slopes / Embankment	Exposed soil or inadequate stabilization or vegetation cover; flow channels, rills or gullies are forming			
	Excessive trash/debris/sediment accumulation			
	Soft spots, seepage, boggy areas or sinkholes			
	Presence of woody vegetation			
	Side slopes are supporting nuisance animals (burrows or holes)			
Vegetation	Plants experience unsatisfactory growth or mortality, evidence of contamination			
	Reinforcement planting recommended			
	Invasive species contribute >10% of vegetation within facility			
	Vegetation is dead, dying or diseased			
	Plant composition is consistent with approved plans			
	Overgrown and not developing into mature wetland (wetlands only)			
Wetland Cells and Pools (wetlands only)	Sediment accumulation is 50% or more of capacity			
	Evidence of floating debris, sparse vegetative cover, erosion or slumping of side slopes			
	Open water is becoming overgrown			
	Evidence of nuisance animals (burrows or holes)			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Outlet / Riser Structure	Outlet provides stable conveyance out of BMP			
	Evidence of clogging of outlet orifices			
	Excessive trash/debris/sediment accumulating at outlet			
	Evidence of erosion at/around outlet			
	Control valves are accessible and operational			
	Seepage into conduit			
	Maintenance access to riser			
	Structural damage to riser structure			
Outfall	Treated stormwater is not leaving the practice			
	Presence of woody vegetation within 5 feet of the outfall pipe			
Overflow / Emergency Spillway	Excess stormwater does not drain properly from the facility			
	Undercut, eroded or bare soils areas; Evidence of insufficient armoring			
	Structural damage to spillway pad			
	Soft spots, seepage, boggy areas or sinkholes			
	Presence of woody vegetation			
Hardened Pad	All or part of pad is worn or cracked			
Safety Bench and Safety Features	Vegetation is overgrown			
	Area is disheveled			
	Abnormally high or low water levels			
	Fences are inadequate			
	Safety signage is inadequate			

Additional notes or observations:

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1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
GREEN ROOFS

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**

After construction, this practice should be inspected frequently (once a month) or as needed for plant establishment, leaks, and other functional or structural concerns. Maintenance may include watering and weeding, for which the greatest need occurs in the first two years, as plants become established.

The use of herbicides, insecticides, fungicides, and fertilizers should be avoided, since their presence could hasten degradation of the waterproof membrane. Irrigation and fertilization is only required during the first year as plants are established. After the first year, maintenance consists of **two** visits a year for weeding of invasive species, and membrane inspections.

Care must also be taken with certain activities near the green roof. Activities such as power-washing or use of cleaning agents, detergents, or other chemicals that may drift onto the green roof may harm the roof's plant communities.

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Vegetation	Plants or grass experience unsatisfactory growth (less than 90% plant cover) or mortality or show evidence of contamination			
	Plants are wilting			
	Drought conditions are present			
	Invasive or nuisance plant species are present			
	Plants or grasses have become overgrown or unruly			
	Excessive trash/debris			
	Water sufficient to assure plant establishment and do not exceed ¼ inch of water once every 3 days (first 3 years)			
	Water sufficient to assure plant establishment and do not exceed ¼ inch of water once every 14 days (After 3+ years)			
Structural Components	Waterproof membrane is leaking or cracked			
	Root barrier is perforated			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Drainage Layer / Inlet Pipes	Soil substrate, vegetation, litter, or debris are clogging the inlet pipe			
	Drain inlet pipe is in poor condition			
Soil Substrate / Growing Medium	Evidence of erosion from wind or water			
	Soil media has become clogged			
Overall	Evidence of standing water/ponding, water stains			
	Access to the green roof is unsafe or inefficient			
	Evidence of damage or vandalism			
	Threat of spill from rooftop mechanical equipment is imminent			

Additional notes or observations:

NAVFAC Naval Facilities Engineering Command
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Norfolk, Va. 23511

BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
INFILTRATION PRACTICES

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**
Facility Type ☐ Basin ☐ Trench ☐ Vegetated	**Infiltration Media** ☐ Engineered Soil Mixture ☐ Sand ☐ Peat ☐ Stone or Aggregate ☐ No Filtration Media (Dry Well) ☐ Other:	**Pretreatment Facilities** ☐ Sediment Forebay / Sedimentation Chamber ☐ Grass Swale / Channel ☐ w/ check dams ☐ Grass Filter Strip ☐ Stone Diaphragm ☐ Other:
Structural Elements ☐ Drop Inlet / Catch Basin / Overflow Control ☐ Underdrain ☐ Monitoring Well ☐ Other:		

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Overall / Contributing Drainage Area	Maintenance access to facility			
	Poor condition or damage to structural components			
	Excessive trash/debris			
	Evidence of oil/chemical accumulation caused by activities within the drainage area			
	Evidence of standing water, excessive ponding, poor drainage or clogging			
	Bare soil or sediment sources are seen in the contributing drainage area			
Pretreatment	Excessive trash/debris			
	Evidence of erosion			
	Evidence of sediment build-up or clogging			
	Dead vegetation/exposed soil			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Inlets	Inlets provide stable, unobstructed conveyance into facility			
	Evidence of flow bypassing BMP			
	Excessive trash/debris/sediment accumulating at inlet			
	Evidence of erosion at/around inlet			
Embankment / Side Slopes	Exposed soil or inadequate stabilization; flow channels, rills or gullies are forming			
	Water is not retained within the BMP			
	Excess sediment accumulation			
	Side slopes are supporting nuisance animals (burrows or holes)			
Vegetation	Plants or grass experience unsatisfactory growth or mortality, evidence of contamination			
	Vegetation is dead, dying or diseased			
	Plant composition is consistent with approved plans			
	Pioneer trees are growing in the base of the BMP			
Infiltration Media	Weedy growth on rock surfaces might indicate sediment deposition or clogging			
Structural Components	Evidence of structural damage/deterioration			
Overflow Outlet / Emergency Spillway	Outlets provide stable conveyance out of BMP			
	Excessive trash/debris/sediment accumulating at outlet			
	Evidence of erosion at/around outlet			
	Spillway is not effectively conveying water to an adequate receiving system			
Underdrain (Every 5 years)	The drawdown rate should be measured at the observation well for 3 days following a storm event in excess of 0.5 inches in depth. If standing water is still observed after 48 hours, the underdrain may be clogged.			
Observation Well	Well is uncapped or in poor condition			

Additional notes or observations:

NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
PERMEABLE PAVEMENT

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**
Structural Elements ☐ Underdrain ☐ Monitoring Well ☐ Other:	**Facility Type** ☐ Interlocking concrete pavers ☐ Concrete grid pavers ☐ Plastic reinforced grid pavers ☐ Pervious concrete ☐ Porous asphalt ☐ Other:	**Pretreatment Facilities** ☐ Gravel Filter Strip ☐ Grass Filter Strip ☐ Other:

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Overall / Contributing Drainage Area	Maintenance access to facility			
	Poor condition or damage to structural components			
	Excessive trash/debris			
	Evidence of oil/chemical accumulation caused by activities within the drainage area			
	Evidence of standing water, excessive ponding, poor drainage or clogging			
	Bare soil or sediment sources are seen in the contributing drainage area			
Inlets, Pretreatment Cells, and Flow Diversion Structures	Excessive trash/debris/sediment			
	Evidence of erosion/exposed soil			
	Evidence of sediment accumulation/clogging			
Structural Integrity	Evidence of pavement deterioration, such as slumping, cracking, spalling, or broken pavers			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Pavement Surface	Evidence of erosion/exposed soil in grid paver areas			
	Evidence of loose materials (e.g. bark, sand, etc.) stored on the pavement surface			
	Evidence of sediment accumulation/clogging			
	Evidence of standing water/ponding/stained pavement			
Adjacent Vegetation	Trees and shrubs within 5 feet of the pavement surface			
	Evidence that roots have impacted pavement surface			
	Evidence of leaves/vegetation clogging pavement			
Observation Wells	Is each well in good condition and capped?			
Outlet	Outlet provides stable conveyance out of BMP			
	Excessive trash/debris/sediment accumulating at outlet			
	Evidence of erosion at/around outlet			
	Evidence that underdrain is not delivering drainage as designed			
	Evidence of standing water and potential clogging of underdrain. Water ponds on surface of BMP for more than 48 hours after storm event.			

Additional notes or observations:

NAVFAC Naval Facilities Engineering Command
NAVFAC Mid-Atlantic / Environmental Compliance
1510 Gilbert St., Bldg. N-26
Norfolk, Va. 23511

BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
PROPRIETARY DEVICES

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**

Facility Type	Pretreatment Facility	Structural Elements
☐ Hydrodynamic Structure	☐ Sediment Forebay	☐ Drop Inlet / Catch Basin / Overflow Control
☐ Organic Media Filter	☐ Grass Filter Strip	☐ Underdrain
☐ Detention Facility	☐ Stone Diaphragm	☐ Monitoring Well
☐ Other:	☐ Gravel Flow Spreader	☐ Other:
	☐ Other:	

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Overall / Contributing Drainage Area	Maintenance access to facility and components			
	Poor condition or damage to structural components			
	Excessive trash/debris			
	Evidence of oil/chemical accumulation caused by activities within the drainage area			
	Evidence of standing water, excessive ponding, poor drainage or clogging			
	Bare / exposed soil, evidence of erosion			
Pretreatment	Excessive trash/debris/sediment accumulation			
	Evidence of clogging			
	Evidence of erosion			
	Dead vegetation/exposed soil			
Inlet	Inlets provide stable, unobstructed conveyance into facility			
	Excessive trash/debris/sediment accumulating at inlet			
	Evidence of erosion at/around inlet			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Outlet	Evidence of erosion at/around outlet			
	Outlets provide stable conveyance out of BMP			
	Excessive trash/debris/sediment accumulation			
	Outlet is in good structural condition			
Manufacturer Specific Requirements	Any manufacturer specific inspection requirements that should be conducted			

Additional notes or observations:

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BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
ROOFTOP DISCONNECTION

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**

Facility Type

☐ Foundation Planter

☐ Dry Well

☐ Other: _____

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Piping, Gutters & Drains	Sediment and debris accumulation			
	Evidence of oil / chemical accumulation			
	Mosquito proliferation			
	The downspouts are not disconnected			
	Runoff is not entering receiving pervious area			
Downstream Treatment	Stormwater discharge is ponding at point of disconnection			
	Evidence of erosion is evident within the practice			
	Evidence of clogging or poor drainage			
	Dead or dying vegetation; lack of adequate vegetation			
Proprietary or Manufactured Products	Product or component is broken or not functioning correctly			
	Any additional inspection requirements according to guidelines from manufacturer			

Additional notes or observations:

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BEST MANAGEMENT PRACTICE (BMP) INSPECTION FORM
SWALES, BIOSWALES AND CHANNELS

General BMP Information		
BMP Inventory I.D.:	**Installation:**	**Bldg / Area:**
Inspector:	**Date of Inspection:**	**Date of Last Inspection:**

Facility Type	Filtration Media	Pretreatment Facility	Structural Elements
☐ Grass Channel	☐ Engineered Soil Mixture	☐ Sediment Forebay	☐ Drop Inlet / Catch Basin / Overflow Control
☐ Wet Swale	☐ Sand	☐ Grass Filter Strip	☐ Underdrain
☐ Dry Swale	☐ Peat	☐ Stone Diaphragm	☐ Monitoring Well
☐ Bioswale	☐ Other:	☐ Gravel Flow Spreader	☐ Other:
		☐ Other: _____	

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Overall / Contributing Drainage Area	Maintenance access to facility and components			
	Poor condition or damage to structural components			
	Excessive trash/debris			
	Evidence of oil/chemical accumulation caused by activities within the drainage area			
	Evidence of standing water, excessive ponding, poor drainage or clogging			
	Bare / exposed soil, evidence of erosion			
Pretreatment	Excessive trash/debris/sediment accumulation			
	Evidence of clogging			
	Evidence of erosion			
	Dead vegetation/exposed soil			
Swale Inlet	Inlets provide stable, unobstructed conveyance into facility			
	Excessive trash/debris/sediment accumulating at inlet			
	Evidence of erosion at/around inlet			

Element of BMP:	Potential Problem	Satisfactory (Y/N)	N/A	Comments / Observations
Side Slopes / Embankment	Side slopes do not prevent erosion and introduce sediment into the swale			
	Evidence of rills / gullies present, poor embankment integrity			
	Side slopes are supporting nuisance animals (burrows or holes)			
Swale Bottom	Soil / sand has become compacted. Practice does not draw down within 48 hours after a rain event			
	Accumulation of fallen leaves and other debris from plants outside of the swale			
Swale Outlet	Outlet does not maintain sheet flow of water exiting swale (unless a collection drain is used).			
	Outlets provide stable conveyance out of BMP			
	Excessive trash/debris/sediment accumulation			
Vegetation	Plants experience unsatisfactory growth or mortality, evidence of contamination			
	Invasive species contribute >10% of vegetation within facility			
	Vegetation is dead, dying or diseased			
	Plant composition is consistent with approved plans			
Filter Media	Filter media is too low, too compacted, or composition is inconsistent with design specs.			
	Evidence of chemicals, fertilizers, and/or oil/grease			
	Evidence of concentrated flows, erosion, or exposed soils			
Check Dams	Dam is not evenly controlling and distributing flow			
	Evidence of flow undercutting, side cutting or other erosion			
	Large buildup of sediment / debris			
	Good overall condition of check dam			
Underdrain / Perforated Pipe	Practice does not dewater within 48 hours of significant rainfall event			
	Underdrain appears to be broken or clogged			
Outlet	Outlet provides stable conveyance out of BMP			
	Evidence of erosion at/around outlet			
	Outlet is in good structural condition			

Additional notes or observations:

Appendix E– Illegal Discharge and Illegal Dumping Instruction

DRAFT

COMNAVREG MIDLANT INSTRUCTION

Subj: ILLEGAL DISCHARGE AND ILLEGAL DUMPING INSTRUCTION

Ref: (a) 4 VAC 50-60 – Virginia Stormwater Management Program (VSMP) Permit Regulations for Small Municipal Separate Storm Sewer Systems (Effective January 1, 2005)
(b) COMNAVREG MIDLANT INSTRUCTION 5090.3 – Prevention, Reporting, Response and Cleanup of Oil and Hazardous Substance Spills for Hampton Roads Installations

1. Purpose. To prevent illegal discharges and illegal dumping into the storm drainage systems located at installations and annexes under the purview of Commander, Navy Region, Mid-Atlantic (COMNAVREG MIDLANT) and located in the Hampton Roads area, with the exception of the Norfolk Naval Shipyard.

2. Definitions.

a. **Best Management Practices (BMPs)** Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

b. **Clean Water Act** The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

c. **Hazardous Materials** Any material, including any substance, waste, or combination thereof, which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

d. **Illegal Discharge** Any direct or indirect non-stormwater discharge of liquids to the storm drainage system, except as exempted by this instruction.

e. **Illegal Dumping** Any dumping of solid materials that are allowed to enter the storm drainage system.

f. **Illicit Connection** An illicit connection is defined as either of the following:

(1) Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drainage system and any connections to the storm drainage system from indoor drains and sinks or,

(2) Any drain or conveyance connected from a commercial or industrial land use to the storm drainage system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

g. **Non-Stormwater Discharge** Any discharge to the storm drainage system that is not composed entirely of stormwater, that causes or contributes to pollution. Pollutants may include, but are not limited to: hazardous materials such as paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes such as garbage, yard wastes or other discarded or abandoned objects; ordnance; pesticides, herbicides, and fertilizers; sewage; dissolved and particulate metals; animal wastes; wastes and residues that result from construction; and noxious or offensive matter of any kind. Illegal discharges, illegal dumping, and illicit connections can result in non-stormwater discharges.

i. **Storm Drainage System** Facilities by which stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and man-made or altered drainage channels, reservoirs, and other drainage structures.

j. **Stormwater** Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

k. **Uncontaminated Groundwater** Groundwater that does not contain pollutants including but not limited to sediment, petroleum or other known or suspected contaminants.

l. **Virginia Pollutant Discharge Elimination System (VPDES) Stormwater Discharge Permit** A permit issued by the State of Virginia that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

m. **Wastewater** Any water or other liquid, other than uncontaminated stormwater.

n. **Waterways** Includes all bodies of water not limited to rivers, lakes, bays, oceans, streams, wetlands and drainage ditches.

3. Policy. Reference (a) requires the establishment of an enforceable policy that prohibits non-stormwater discharges. Reference (b) describes the procedure for reporting incidents of illegal discharges and illegal dumping.

a. No person shall discharge or cause to be discharged into an installation's storm drainage system or local waterways any unauthorized materials (liquid or solid).

b. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

c. The following are prohibited from entering an installation's storm drainage system:

(1) Non-stormwater discharges unless allowed by a VPDES permit issued by the State of Virginia;
(2) Discharges from connections of the sanitary sewer to the storm drainage system, including sewage and sewage sludge;
(3) Discharge of any polluted household wastewater, such as, but not limited to, laundry wash water and dishwater;
(4) Commercial, industrial or public vehicle wash discharge;
(5) Trash and other debris;
(6) Animal fecal waste;
(7) Sediment including sand, dirt and concrete;
(8) Chemical waste and hazardous waste;

d. Discharges from the following activities are allowed unless the Regional Environmental Group Water Program Manager identifies them as significant contributors of pollutants:
(1) Any activity authorized by a valid VPDES permit.
(2) Water line flushing;
(3) Landscape irrigation;
(4) Diverted stream flows;
(5) Rising ground waters;
(6) Infiltration of uncontaminated groundwater;
(7) Pumping of uncontaminated groundwater;

(8) Discharges from potable water sources, foundation drains, air conditioning condensation, irrigation waters, or springs;

(9) Water from crawl spaces, footing drains, or lawn watering;

(10) Individual residential car washing;

(11) Car washing at specifically designated locations for fund raising activities;

(12) Flows from riparian habitats and wetlands;

(13) Dechlorinated swimming pool discharges;

(14) Street washing;

(15) Any water resulting from firefighting;

(16) Non-toxic dye testing; requires a verbal notification to CNRMA Regional Environmental Group prior to the time of the test.

(17) Other discharges approved by the Regional Environmental Water Program Manager on a case-by-case basis.

4. Inspections. Periodic inspections will be performed to detect illicit connections and discharges. If a person or command is found to have failed to meet a requirement of this instruction, the Regional Environmental Group may require the tenant command to immediately prevent further discharges from occurring. The tenant command will be responsible for funding clean-up, construction measures or BMPs necessary to permanently remove the prohibited discharge.

5. Reporting. As soon as any person has information of any known or suspected release of materials that result or may result in illegal discharges to the storm drainage system or waterways, they must immediately notify the installation's Emergency Control Center in accordance with reference (b).

Emergency Control Center Numbers:

NNSY, Southgate Annex, Scott Center Annex	**396-3333**	**Ykt / CAX**	**887-4333**	**NAVSTA**	**444-3333**
St. Js	**396-3333**	**LCreek**	**462-4444**	**NSA**	**444-3333**
St. Helena	**494-4370**	**Ykt Fuels**	**877-4911**	**Dam Neck**	**492-6911**
Craney Is	**322-9911**	**Oceana**	**433-9111**	**Northwest**	**421-8244**

- **If the discharge is headed off base, or actually occurs off base, also call the CNRMA Regional Operations Center 322-2607.**

6. Enforcement. Any activity that violates this instruction may be subject to enforcement actions under the Clean Water Act; including Warning Letters, Notices of Violation, and penalties from the Environmental Protection Agency, the

Virginia Department of Conservation and Recreation and the Virginia Department of Environmental Quality. The party that causes the violation will be responsible for all required corrective actions and will have to provide a written description of why the violation occurred to the Regional Environmental Group.

7. Responsibilities

a. Regional Environmental Group

(1) Water Program Manager. The Regional Environmental Group Water Program Manager must administer and implement the provisions of this instruction. Any powers granted or duties imposed upon the Regional Environmental Group may be delegated to other departments.

(2) Environmental Protection Specialists. The Installation Environmental Compliance Department Environmental Protection Specialists must conduct periodic inspections throughout their installations. If during those inspections, an illicit connection or evidence of illegal discharge or dumping is noted, written and verbal notification must be made to the Water Program Manager. Written documentation must be retained at the installation.

b. Installation Emergency Control Center. As stated in ref (b) the installation's Emergency Control Center (ECC) will take incoming calls about illegal discharges and dumping. The ECC will make the appropriate notifications and dispatch the appropriate response personnel in accordance with ref (b).

8. Review Authority. The Regional Environmental Group Water Program Manager is responsible for the reviewing and updating of this instruction.

Appendix F– Spill Reporting and Documentation SOP

DOCUMENT NO.:

SOP-Spills-Regional-01

TITLE:

Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedure

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DOCUMENT OWNER: NAVFAC MIDLANT Spill Program Manager	AUTHORIZED BY:

REV. NO.	EFFECTIVE DATE	DESCRIPTION OF REVISION
1	9/10/2010	ORIGINAL ISSUE
2	3/14/2011	REVISION
3	4/28/2011	ADDED EMS COVER SHEET
4	6/8/2011	REVISION
5	8/23/2011	REVISION
6	1/3/2012	REVISION
7	3/1/2012	REVISION
8	8/7/2012	REVISION
9	9/5/2012	REVISION
10	10/25/2012	REVISION- Added Attachment 2 and 3, Revised Reporting Matrices
11	10/15/2015	REVISION- Revised reporting matrices, added Foreign Garbage spill requirements.
	10/15/2015	Approval Signature: Tiffany Wilkerson, Director-EV11- Tiffany Wilkerson

Form EMS 1 (Revision A)

HAMPTON ROADS NAVAL INSTALLATION
SPILL REPORTING AND DOCUMENTATION
STANDARD OPERATING PROCEDURE

1) Purpose:

This Standard Operating Procedure (SOP) was created by NAVFAC MIDLANT Environmental and provides the reporting and documentation actions that must be taken in response to a spill/ release of oil, sewage, hazardous, or non-hazardous substance (solid or liquid) from a building, vessel, aircraft, etc. at any Hampton Roads Naval installation or annex (excluding spills at Norfolk Naval Shipyard, except those caused by NAVFAC entities). In this SOP, the term "spill" also includes gaseous releases of hazardous substances to the air, but does not pertain to radiological or infectious waste incidents.

This SOP will be updated by NAVFAC MIDLANT Environmental. For updates contact the Hampton Roads Spill Program Manager at 757-341-0390.

2) References:

(a) OPNAVINST 5090.1D & OPNAV M-5090.1, - Navy Environmental Readiness Program Manual.
(b) OPNAVINST F3100.6J, Special Incident Reporting (OPREP 3, Navy Blue and Unit SITREP) Procedures; (NOTAL).

3) Procedures and Responsibilities:

The following section outlines the responsibilities of the Responsible Party and/or the party who discovers the spill. Subsequent sections outline the responsibilities of Environmental staff.
The responsible party (RP) is the activity/ command that caused the spill.

a) <u>Party that discovers the spill/release shall:</u>

i) Determine the release source and stop it if safe to do so. **(If Untrained, or Unsure of Chemical, Avoid area and Contact the Emergency Communications Center (ECC)**
ii) If possible and safe to do so, prevent spills from entering storm drains or waterways. This can be accomplished by covering storm drains or pier drains or by diverting the spill using dikes or man-made berms.
iii) **Immediately** report the spill to the Emergency Communications Center (ECC), or applicable Emergency Service. **Contact information for each installation is listed in Table 1.**
-RP must pay for all cleanup and disposal costs
Note: The ECC contacts the base Fire Department, Command Duty Officer (CDO) and/or General Duty Supervisor (after hours), and Installation Environmental (EV). If required, the National Response Center (NRC) and Navy On-Scene Coordinator (NOSC) are also contacted.

The following spills must be reported to the Installation ECC:

(1) If the spill was a result of any operation conducted on the installation (including military personnel, contractors, tenants, civilians, etc.) outside or inside of a building and has

reached utility drains or the environment (air, land, water, or pavement) or provides a significant threat to reach utility drains or the environment, or is a threat to human health.

(2) Spills of **Regulated Garbage (Foreign Garbage)** must also be reported to the installation ECC to ensure proper regulatory reporting follows. **Regulated garbage (Foreign Garbage)** is any garbage that was on board, or removed from any means of conveyance during international movements. This includes food scraps, food wrappers, table scraps, food refuse and wrappers from passenger and crew quarters, and unconsumed meals that were available for passengers and crew which were not consumed. Garbage that is commingled with **regulated garbage** also becomes **regulated garbage**.

(3) Indoors- **Any Hazardous Substance spill** (PCB's, Mercury, Methyl Ethyl Ketone (MEK), etc. that meet the applicable Reportable Quantity (RQ) threshold), or **ANY** spill that has reached a floor drain, or exited the building.

iv) **Navy Message**- The Responsible Party or Pier SOPA (if responsible party has not been determined) has 24 hours to generate a Navy Spill Message if any the following occurs per **Reference (a):**

(1) If the spill requires outside agency reporting.
(2) Any discharge of oil has reached the water or storm drain.
(3) Any oil or Hazardous Substance spill that may endanger critical water areas, has the potential to generate public concern, become the focus of an enforcement action, or pose a threat to public health or welfare that warrants an operations event and OPREP-3 special incident report as per **Reference (b).**
(4) Sewage spills or other pollutants which endanger critical water areas, have the potential to generate public concern, become the focus of enforcement action, or pose a threat to public health or welfare shall be reported by OPREP-3 NAVY BLUE or OPREP-3 NAVY UNIT SITREP in accordance with **Reference (b)**. Spills of oil and hazardous substances shall be reported in accordance with the requirements in **Reference (a)** Chapter 39, using formats in Appendix C.
(5) If original spill information differs as per **Reference (a)**, or if spilled amount differs by more than 50% of original Message, then an updated Message must be generated.6) Spills, leaks, and unauthorized discharges involving pesticides and their application.

***Required formats for oil, hazardous substance, AFFF spill messages- Attachment 2 (OPNAV 5090.1D, Appendix C). For sewage spill messages, see reference (b).**

The following section outlines the duties of Environmental personnel:

b) **<u>EV Procedures:</u>**

i) Once release (or threat of a release) is determined, ECC is immediately contacted by the Responsible Party or discoverer of spill. If spill is discovered by EV staff, the EV staff member makes the notification call to ECC. If EV was contacted in lieu of ECC, the person discovering the spill will be directed to contact ECC with the pertinent information.
ii) Once an Environmental Protection Specialist (EPS) receives notification of a spill from ECC, he/she will contact the caller who made the spill report and/or report to the scene of the spill. If needed, CDO and NOSC (if applicable) also respond to spill scene.

iii) EPS, in conjunction with CDO, conducts preliminary investigation as to the extent and cause of the spill. When appropriate, Hampton Roads Spill Manager (SM) along with Installation Environmental Program Director (IEPD) conducts a more in-depth investigation.

iv) Using the acquired spill information, the EPS determines the reporting and documentation requirements for the spill utilizing the matrix presented later in this SOP. An explanation/discussion of the reporting requirements and documentation is listed in the matrix **(Attachment 1)**.

v) EPS notifies SM of all reportable spills and any hazardous materials spills **(see Attachment 1)**.

vi) EPS notifies the state/local regulatory authorities and the applicable installation Media Manager(s) (MM). If the reporting/notification requirements are unclear, EPS will contact the SM and together they will ensure each regulatory agency's reporting requirements are being met. The proper communication channels will be followed to ensure the various MMs fulfill additional regulatory reporting requirements not identified in the matrix below.

vii) EPS provides on-site guidance for spill clean-up when necessary. EPS, CDO, or a Duty General Foreman determines if additional assistance from Environmental Services or other resources are needed to clean up the spill. CDO or Duty General Foreman contacts the Environmental Service Desk as needed for Oil or Hazardous Substance releases (757-341-0412) or Utilities for sewage releases. The Service Desk dispatches NAVFAC Oil Recovery or Hazmat personnel, as appropriate. If oil spill is >100 gallons and NOSC is not on-site or was obviously not contacted by the ECC, the EPS or CDO should contact the NOSC immediately at 757-636-4378.

viii) Upon commencement of any oil recovery activities, Oil Recovery will supply an initial incident and cost logistics report to the Oil Recovery Commodity Manager as soon as practicable or within six hours of discovery of spill, if feasible. The Commodity Manager will then supply information to the Installation Environmental Program Director (IEPD) and SM as soon as practicable. This initial report may include such summarized information as: spill discovery timeline, estimated volume spilled, any completed and ongoing recovery operations, and estimated clean-up costs to date. During ongoing recovery efforts, a daily summary will also be provided at the end of each day with updated/additional information. At the conclusion of the recovery activities, a final spill summary will be provided (through the chain of command, as noted), which shall contain the final amount of recovered product, final clean-up costs, and any updated or additional observed information. ***CNRMA Hazardous Waste disposal JON shall NOT be used for spill clean-up billing.**

ix) If required, EPS informs the RP of their obligation to generate a Navy Spill Message in proper format within 24 hours (see Message Formats in Responsible Party's Duties). In the event that the RP cannot be determined, EPS informs the CDO or Pier SOPA **(Reference a)** of their responsibility to submit the Navy Spill Message. EPS will communicate to the message generator the estimated clean-up costs and recovered volume (if available) so the message will be as complete as possible. If specifics are unknown, the initial message must not be delayed and an updated Message may be released as additional information becomes available.

x) IEPD, EPS, and SM should follow up with CDO or Pier SOPA to ensure they have released initial Navy message within 24 hours of discovery. Additionally, it is the IEPD's responsibility to inform the message author if an updated message is required. If original spill information differs as per **(References a or b)** or if spilled amount differs by more than 50% of original message, then an updated message must be generated.

xi) EPS is to make initial notifications to appropriate regulators (except HRSD) as per the agency's preferred reporting method within 12 hours of the discovery of the spill. Initial notifications should include other agency incident numbers (such as NRC numbers) for cross-

referencing by the regulators. See **Spill Reporting** section for important reporting procedures.

xii) EPS must draft the DEQ 5-day spill report and submit to the IEPD for review, finalization, signatures, and distribution to the appropriate regulatory agencies within the established deadline. Impacted MM for the installation where the spill occurred is responsible for all communication with HRSD and for follow-up regulatory reporting regarding releases to the sanitary sewer system.

xiii) The Emergency Planning and Community Right-to-Know Act (EPCRA) program manager (PM) is primarily responsible for any necessary EPCRA (SERC and LEPC) reporting. Any correspondence of this nature should be forwarded to the SM and installation EV staff.

xiv) SM and MMs will continue regulatory communications as appropriate and provide updated information when/if it becomes available.

xv) If regulatory enforcement action is imposed, SM and MMs will comply with communication requirements.

xvi) EPS files all spill documents together in the appropriate reportable or non-reportable spills folder/binder.

Table 1			
INSTALLATION	**Emergency Contact**	**CDO**	**Environmental**
NWS Yorktown Cheatham Annex Yorktown Fuels	**757-887-4911** (ECC)	757-268-6250	757-887-4086 or 757-887-4881 or 757-636-4494 or 757-887-4095
Naval Air Station Oceana Dam Neck Annex Naval Auxiliary Landing Field Fentress	**911** (ECC)	757-433-2366	757-433-3435 or 757-433-3437 or 757-433-3439 757-433-2131
Dare County Bombing Range	**911** (Local Emergency Services)	757-433-2366	757-421-8114 757-433-3435 or 757-433-3437 or 757-433-2131 after hours: 757-636-4256 or 757-943-0991
Defense Fuel Support Point Craney Island (see DFSP Craney Island's 'Red Plan')	**757-444-3333** (NSN ECC)	757-438-3860	757-341-0516 or 757-341-0523
Joint Expeditionary Base Little Creek	**757-462-4444** (ECC)	757-462-7385 or 757-438-3930	757-462-5350 or 757-462-5361 or 757-462-5355 757-462-5356
Joint Expeditionary Base Fort Story	**757-422-7141** (ECC)	757-462-7385or 757-438-3930	757-422-7344 ext 225 or 757-462-5353 or 757-462-5361
Naval Station Norfolk	**757-444-3333** (ECC)	757-438-3860	757-341-0523 or 757-341-0516 After hours notification 757-635-5740
Naval Support Activity Hampton Roads	**757-444-3333** (ECC)	757-438-3402	757-836-1862
Norfolk Naval Shipyard St. Juliens Creek Annex Scott Center Annex Southgate Annex	**757-396-3333** (NNSY ECC)	757-396-3222	757-396-8270
St. Helena Annex	**911** (Local Emergency Services)	757-396-3222	757-396-8270
Naval Support Activity Northwest	**911** (Chesapeake Emergency Services)	757-438-3503	757-421-8114 or 757-650-7286 after hours: 757-636-4256 or 757-943-0991
ROTHR New Kent	**757-887-4911** (ECC)	757-268-6250	757-887-4086 or 757-887-4881
Naval Medical Center Portsmouth	**757-396-3333**	757-396-3222	757-396-8270

Attachment 1

REPORTING/DOCUMENTATION MATRIX

Material Spilled: Sewage/Grey-Water				
Spill Caused By	**Area Affected**	**Volume Spilled**	**EV Reporting Requirements**	**Navy Documentation**
All Cases	State Waters Storm Drains	Any Quantity	DEQ Reporting NRC Reporting **5 Day Letter**	Navy OPREP **(OPNAV 5090.1D Ch. 20)** Logbook Spill Folder
All Cases	Land	≥500 Gallons	NRC Reporting DEQ Reporting **5 Day Letter**	Navy OPREP **(OPNAV 5090.1D Ch. 20)** Logbook Spill Folder
All Cases	Land	< 500 Gallons	None	Logbook Spill Folder
Material Spilled: Oil				
Spill Caused By	**Area Affected**	**Volume Spilled**	**EV Reporting Requirements**	**Navy Documentation**
All Cases	State Waters Storm Drains	Any Quantity	NRC Reporting **5 Day Letters**	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
POV	Land	<25 Gallons	None	None
Navy	Land	<25 Gallons	None	Logbook Spill Folder
All Cases	Land	≥25 Gallons	NRC Reporting **>150 Gallons= 5 Day Letters**	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
Note: All oil spills greater than 100 gallons require Navy On-Scene Coordinator notification.				
Air Releases				
Spill Caused By	**Area Affected**	**Volume Spilled**	**EV Reporting Requirements**	**Navy Documentation**
Air Releases of Refrigerants or Halons	Air	Any Quantity	Air Program Manager	Logbook
Air Releases of Ammonia	Air	Any Quantity	Air Program Manager & EPCRA Manager	Logbook
Air Releases of Hazardous Substance	Air	≥Reportable Quantity	Air Program Manager & EPCRA Program Manager	Logbook
Excess Air Emissions	Air	1 Hour or More	Air Manager	Logbook

Material Spilled: AFFF				
Spill Caused By	**Area Affected**	**Volume Spilled**	**EV Reporting Requirements**	**Navy Documentation**
All Cases	State Waters Storm Drains	Any Quantity	DEQ Reporting	Navy Message **(Appendix C)** Logbook Spill Folder
All Cases	Sanitary Sewer	Any Quantity	Water Program Manager (WPM) HRSD (reporting by WPM)	Navy Message **(Appendix C)**Logbook Spill Folder
All Cases	Land	Any Quantity	DEQ Reporting	Navy Message **(Appendix C)** Logbook Spill Folder

Material spilled : Hazardous Substance/Hazardous Waste				
Spill Caused By	**Area Affected**	**Volume Spilled**	**EV Reporting Requirements**	**Navy Documentation**
All Cases	State Waters Storm Drains	Any Quantity	DEQ Reporting NRC Reporting NOSC	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
All Cases	Sanitary Sewer	Any Quantity	Water Program Manager HRSD (by WPM)	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
All Cases	Land	≥Reportable Quantity (for spilled substance)	DEQ Reporting NRC Reporting LEPC NOSC	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
All Cases	Land	<Reportable Quantity (for spilled substance)	None	Logbook Spill Folder
Hazardous Waste	All Cases	Any Quantity	HW Media Manager (DEQ Reporting) *****If ≥ Reportable Quantity: NRC Reporting	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
CERCLA Haz Substances, EPCRA Toxic Chemicals, and EPCRA Extremely Haz Substances	All Cases	≥Reportable Quantity***** (for spilled substance)	DEQ Reporting NRC Reporting EPCRA MM will Notify: LEPC NREMDNOSC	Navy Message **(OPNAV 5090.1D Appendix C)** Logbook Spill Folder
Material Spilled: Foreign Garbage				
Any Cause	All Cases	Any Quantity	US Customs and Border Patrol by Phone	Logbook Spill Folder

Note 1: DEQ Reporting = 24 hour initial notification and follow up 5-DayLetter
Note 2: NRC reporting must occur **immediately** upon discovery of spill

Attachment 1

***Reportable Quantity (RQ)**

The reportable quantity is the federally determined amount of a hazardous substance that when released in a 24 hour period is used to determine when spills have to be reported; any spill involving an amount of a hazardous substance greater than or equal to its reportable quantity value must be reported. The EPCRA PM is responsible for providing support to the installation environmental staff for RQ calculations and necessary EPCRA (SERC and LEPC reporting). Any correspondence of this nature should be forwarded to the SM and EPCRA PM.

Navy Message

EPS is to notify responsible party of their duty to generate a Navy message regarding the spill incident in proper format within 24 hours (see Message Formats in responsible party's Duties). In the event that the responsible party cannot be determined, EPS informs the CDO or Pier SOPA (as applicable) of their responsibility to deliver the message. EPS will communicate the estimated clean-up costs and recovered volume (if available) so the message will be complete. If specifics are unknown, the initial message must not be delayed and an updated message may be released as additional information becomes available.

IEPD and SM are to ensure that the responsible party releases initial Navy message within 24 hours of discovery of spill and in proper format. Additionally, it is their responsibility to inform the message author if an updated message is required. If original spill information differs significantly (i.e., spilled amount differs by more than 50% of original message), then an updated message must be submitted.

A copy of the Navy message should be made for environmental recordkeeping and to ensure that the correct format has been used per **References (a)** and **(b)**. Also see previous section on Navy messaging.

Spill Reporting

EPS is to provide or ensure spill reporting to Virginia Department of Environmental Quality (DEQ). Spill reporting includes both an initial report of the spill within 24 hours of spill discovery (which presents awareness of the spill) and a 5-day Spill Letter (which documents specific details). Provided NRC has been notified, this meets the initial DEQ reporting requirement.

Initial spill report can be made within 24 hours of the spill discovery on the DEQ Reporting Website. Once the report is submitted, a WEB Reference ID Number (not the same as an Incident Report number) will be populated and must be recorded as proof of notification (recommend printing this page to an electronic file). Following incident submittal, an Incident Report number (IR#) will be generated by the DEQ . The IR# or Web Reference number should be used in all remaining correspondence pertaining to that incident. If initial DEQ requirement is met by the NRC reporting, EPS must e-mail DEQ to obtain the IR or Reference number.

In certain situations for oil spills <150 gallons, but >25 gallons the DEQ may not generate an IR# and may not require a follow-up 5-day Spill Letter. In this instance, EPS is to keep a hardcopy of the ruling or request something in writing for EV documentation.

If a 5-Day Spill Letter is required, it must be submitted to DEQ within 5 calendar days of discovery of the spill. These letters should contain a brief explanation of the following:

→Date of Release/Discovery	→Quantity Released
→Time of Release/Discovery	→Quantity Recovered
→Location	→Receiving Waterway
→Substance Released	→Cause of Release
→NRC # (if applicable)	→Cleanup Actions Taken

Attachment 1

The preferred method of delivery to DEQ is electronic. An email attachment of the document to troprep@deq.virginia.gov will suffice and no paper copy is required for follow-up. Original signatures are not required by DEQ, although digital signatures are to be used at the discretion of NAVFAC. The point of contact (POC) information for regulatory spill reporting is shown below:

VDEQ	•John Settle (POC)	--- --- **757-518-2179**	http://www.deq.virginia.gov/Programs/PollutionResponsePreparedness/PollutionReportingForm.aspxtroprep@deq.virginia.gov john.settle@deq.virginia.gov
US Customs and Border Patrol		**757-533-4225**	**Immediate Telephone Notification**
NRC		**1-800-424-8802**	**Immediate Telephone Notification** http://www.nrc.uscg.mil/

Note: This contact information is subject to change at any time, and should be updated as needed.

National Response Center (NRC)

The NRC is the federal agency that collects information on oil spills that enter waterways and storm drains. The NRC must be notified immediately upon discovery of spill by phone:
1-800-424-8802

The ECC will report all applicable spills to the NRC prior to sending EV a spill report.

Each spill that is reported to the NRC is assigned a unique NRC spill number; this NRC number is recorded on the spill notification form that the ECC will fax to EV. The presence of this number can therefore be used as a confirmation that the NRC has received a spill report. **This number should also be noted in the Navy Spill Message**. If the NRC spill number is not present, the EPS is to contact the ECC to verify if the NRC was notified. If they have not been notified, EPS should ensure that the NRC is notified immediately.

Logbook

A hand-written spill logbook is kept at each installation to quickly reference spills and to ensure all necessary actions are taken for each spill. This logbook is used to track both reportable and non-reportable spills. The EPS is to enter spill information into the logbook as it is obtained so that the logbook can be used as a checklist to ensure that all necessary spill response actions are taken for all spills.

Local Emergency Planning Committees (LEPCs)

LEPCs are groups of local officials from various disciplines formed to enforce the requirements of EPCRA. LEPC develops local emergency response plans based on local activities, business, etc.

State Emergency Response Commission (SERC)

The SERC oversees the implementation of the EPCRA requirements in each state.

APPENDIX C

MESSAGE FORMATS

Table of Contents

C-1 Notices of Violation C-1

C-2 Hazardous Substance Release Report C-6

C-3 Oil Spill Report C-12

C-1 Notices of Violation

a. One written notice, regardless of the number of individual violations, findings, or citations, counts as one notice of violation (NOV), unless more than one environmental media is cited. Do not include items found to be out of compliance by a regulator but not set forth in writing.

b. If the NOV cites violations in more than one environmental media, it will be counted as multiple NOVs, one under each of the applicable media categories. Only one message is required; however, include specific information in the message separately for each environmental media. As outlined in section C-1.2, make steps 1 through 9 of this message the same for each of the different media violations that result from a multimedia inspection. Repeat steps 10 through 25 with detailed information for each different environmental media cited.

C-1.1. General Guidelines for Preparing the Following Messages

a. If the line item is a question, do not answer just "yes" or "no." Provide a response with the assumption that the reader does not have access to this document. For example, if Item 14 of the close-out message asks, "Was a fine assessed or requested?," the response in line 14 of the message would then read, "No, fine was assessed," instead of "No."

b. If the line item is a phrase, repeat or paraphrase the phrase followed by the response. For example, if Item 12 of the initial information message reads, "Date of inspection (mm/dd/yy)," the response in line 12 of the message would then read, "Date of inspection: 03/05/11," instead of "03/05/11."

C-1.2. Required Initial Information on NOVs/Significant Non-Compliances

FROM: NAVY INSTALLATION//CODE//

TO: CNO WASHINGTON DC//N45//
CHAIN OF COMMAND
NAVY REGIONAL ENVIRONMENTAL
COORDINATOR//JJJ//

INFO: NAVFAC EXWC PORT HUENEME CA//424//
NAVFACENGCOM//ENV//
NAVFACENGCOM FEC//JJJ//
//UNCLAS //N05090//

SUBJ: RECEIPT OF NOTICE OF ENVIRONMENTAL VIOLATION

MSGID/GENADMIN/ORIGINATOR//CODE//
REF/A/DOC/OPNAV M-5090.1//
RMKS/

1. Installation name in violation.

2. Navy unit identification code (UIC) number.

3. State (use two letter state abbreviations).

4. Point of contact for additional information.

5. Point of contact telephone number.

6. Point of contact e-mail address.

7. Budget submitting office (BSO).

8. Environmental Protection Agency (EPA) region.

9. Name of issuing agency and violation number(s).

10. Identify the environmental media cited in the violation notice. This refers to the law under which the violation was issued. If a state or local violation is received, report under the applicable Federal statutes from which the state law or local regulation was derived.

11. Date of notification (mm/dd/yy). The date the regulatory agency initiated the NOV (preferably the date on the letterhead).

12. Date of inspection (mm/dd/yy). The date of the inspection during which the violation was detected. If the inspection took place over several days use the date noted on the NOV or the date the inspection started.

13. Was the NOV a result of a self-inspection or reporting? Y or N

14. Description of NOV.

15. Classify the violation cited into one of the following categories. Note: For multiple violations cited under an NOV, use the category that applies to the highest threat. Descriptions and examples are included in section C-1.4.

a. Class A: Release to the environment

b. Class B: Potential to cause release or damage to the environment

c. Class C: Administrative

16. Root Cause. Choose one of the root causes listed in table C-1 at the end of this appendix. Note: For multiple root causes, select the largest contributor and cite the remainder under Comments.

17. Was a fine assessed or requested? Y or N

18. Dollar amount of fines assessed. Total dollar amount of the fine assessed.

19. Dollar amount of fines paid to regulatory agency.

20. Nature of response required and date due (mm/dd/yy) to the regulatory authority (e.g., regulator requests answer to complaint by 09/25/11).

21. Provide date installation corrected all violations (mm/dd/yy).

22. Is the NOV resolved? Y or N

23. Date of NOV resolution (mm/dd/yy).

24. Has the issuing agency closed the NOV? Y or N

25. Date of concurrence by the regulator (mm/dd/yy).

26. Date of last annual installation inspection and BSO inspection. Was the discrepancy noted during these inspections?

27. Comments (i.e., additional information, unusual circumstances or events leading to NOV).

Note: If the NOV is closed within 3 months of the NOV issue date, then no quarterly status message is required.

C-1.3. Required Follow-Up Information on NOVs/Significant Non-Compliances. A follow-up message is required on a quarterly basis for each open NOV/significant non-compliance for which an initial message was sent under section C-1.2.

```
FROM:          NAVY INSTALLATION//CODE//

TO:       CNO WASHINGTON DC//N45//
               CHAIN OF COMMAND
               NAVY REGIONAL ENVIRONMENTAL
         COORDINATOR//JJJ//

INFO:          NAVFAC EXWC PORT HUENEME CA//424//
               NAVFACENGCOM//ENV//
         NAVFACENGCOM FEC//JJJ//
               //UNCLAS //N05090//

SUBJ:          NOTICE OF ENVIRONMENTAL VIOLATION RESPONSE PLAN

         MSGID/GENADMIN/ORIGINATOR//CODE//
         REF/A/DOC/OPNAV M-5090.1//
         RMKS/
```

1. Installation name in violation.

2. Navy UIC number.

3. State (use two letter state abbreviations).

4. Point of contact for additional information.

5. Point of contact telephone number.

6. Point of contact e-mail address.

7. BSO.

8. EPA region.

9. Name of issuing agency and violation number(s).

10. Identify the environmental media cited in the violation notice. This refers to the law under which the violation was issued. If a state or local violation is received, report under the applicable federal statutes from which the state law or local regulation was derived.

11. Date of original notification (mm/dd/yy). The date the regulatory agency initiated the NOV (preferably the date on the letterhead).

12. Root Cause. If additional analysis results in a different root cause, choose one of the root causes listed in table C-1. Note: For multiple root causes, select the largest contributor, and cite the remainder under Comments.

13. Reason for open NOV.

14. Was a fine assessed or requested?

15. Dollar amount of fines assessed. Total dollar amount of the fine assessed.

16. Dollar amount of fines paid to regulatory agency.

17. Provide date installation corrected all violations (mm/dd/yy).

18. Is the NOV resolved? Y or N. For final resolution, an NOV requires the satisfaction of the issuing agency. Note: All individual findings, violations, or citations within the NOV must be resolved for the NOV to be considered resolved.

19. Date of NOV resolution (mm/dd/yy).

20. Date of concurrence by the regulator (mm/dd/yy). The date on which the regulatory agency confirms that all findings are resolved. Notification may be in formal written form or a documented conversation.

21. Estimated completion date for issues not yet corrected (mm/dd/yy).

22. Summary of reasons for not resolving the identified issues.

23. Is a compliance project required to achieve compliance with the NOV?

24. Has an environmental program requirement or military construction project been submitted and in what year?

25. Comments (i.e., additional information, unusual circumstances or events leading to the NOV).

26. Original Naval Message Number (Date and Time Group – day, zulu time, month, and year).

C-1.4. NOV Class Code Descriptions

a. Class A - Release to the Environment. The NOV resulted from spills, overflows, or other unauthorized discharges or releases. This category includes NOVs that resulted from wastewater or stormwater discharges that exceeded effluent limits, air emissions that exceeded emission standards, or potable water samples that exceeded primary drinking water standards.

b. Class B - Potential to Cause Release or Damage to the Environment. This category includes NOVs resulting from inspections that note conditions with potential for release or damage to the environment such as improper storage or handling of waste or regulated substances (e.g., oil, hazardous materials).

c. Class C - Administrative. The NOV resulted from administrative errors such as failure to submit or update, complete in a timely manner, or properly prepare required permit applications, monitoring or compliance reports, and plans. This category also includes improper or incomplete documentation of waste storage and disposal and notifications required in advance of taking action.

C-2 Hazardous Substance Release Report

C-2.1. Precedence (for messages only). Provided that prior voice reports have been made both to the U.S. Coast Guard (USCG)

National Response Center (NRC) and the reporting command's chain of command, use "Routine" precedence for Hazardous Substance (HS) Release Report Messages not classified as an extremely hazardous substance (EHS). If either voice report has not been made, use "Priority" precedence. If EHS, always use "Priority" precedence.

C-2.2. Classification or Special Handling Marks. HS Release Report Messages are unclassified and do not warrant special handling marks unless classified or sensitive business information must be incorporated. Avoid inclusion of such information to the maximum extent possible to allow HS Release Report Messages to be handled on a solely unclassified basis.

C-2.3. Correcting HS Release Report Messages. HS Release Report Messages should be updated with a follow-up message as soon as the reporting activity becomes aware of new information concerning the origin, amount, nature of substance, type of operation at source or root cause, or lessons learned of release. Similarly, if the final estimate of the amount released differs substantially from the amount initially reported, the reporting activity must send an update message to all action and info addresses on the original message.

C-2.4. Action and Info Addressees

FROM: Navy activity/ship responsible for or discovering spill

TO: Navy On-Scene Coordinator
Chain of Command

INFO: Area Environmental Coordinator
Host Activity
CNO WASHINGTON DC//N45//
CNIC WASHINGTON DC//N45//
CHINFO WASHINGTON DC//JJJ//
COMNAVSEASYSCOM WASHINGTON DC//00C//
NAVFAC EXWC PORT HUENEME CA//424//
NAVJAG WASHINGTON DC//11//
[Add NRC for releases into or upon the navigable waters of the United States, its contiguous zone (generally within 12 nautical miles (NM) of U.S. shores), and adjacent shorelines.]
COAST GUARD NATIONAL RESPONSE CENTER WASHINGTON DC//JJJ//

C-2.5. Body of Report. Use the following format for the body of all HS Release Report Messages. It is important for data management purposes that the format be followed.

UNCLAS//N05090//
SUBJ: HAZARDOUS SUBSTANCE RELEASE REPORT (MIN: CONSIDERED)
MSGID/GENADMIN/ORIGINATOR//
RMKS/

1. LOCAL TIME AND DATE RELEASE [OCCURRED/DISCOVERED].

2. [FACILITY/VESSEL] ORIGINATING RELEASE:

a. For Navy ships, list ship name and hull number.

b. For Navy shore facilities, list facility name.

c. For release occurring during transportation, list name of activity responsible for shipment.

d. For non-Navy spills, list name of the responsible party, if known.

e. For organizations under contract to Navy, list firm name and contracting Navy activity.

f. If the source is unknown at time of this report, list only "Unknown" until such time as definitively established.

3. RELEASE LOCATION:

a. For release at sea, list latitude, longitude, and distance to nearest land.

b. For release in port, list port name, host naval command (NAVSTA, Shipyard), and specific location.

c. For release ashore, list city, state, facility name, and specific location (building designation).

d. For release during transportation, give exact location (highway mile marker or street number and city).

4. AMOUNT RELEASED:

a. Use convenient units of weight or volume (e.g., kg, lb, gal, liters).

b. For continuous release, estimate rate of release and amount left in container.

c. Estimates should be made by examining loss at source (e.g., checking the sounding tank, calculating flow rate of spill).

d. Unreliable estimates of volume using visual observation of HS on water may not be reported here.

e. If amount unknown at time of this report, list only "Unknown" until such time as definitively established.

5. HAZARDOUS SUBSTANCE RELEASED:

a. If EHS, headline this paragraph "EXTREMELY HAZARDOUS SUBSTANCE RELEASED:" Refer to chapter 39 (Oil and Hazardous Substance Spill Preparedness and Response) section 39-3.6.a for additional notification requirements.

b. Consult container labels, user directions, reference books, and experts for advice.

c. Provide chemical and product names, formula, synonym, physical and chemical characteristics, and inherent hazards. For example, "Container label identifies substance as acrylonitrile. Synonyms: cyansethylene, vintleyanide. Characteristics and hazards: poisonous liquid and vapor, skin irritant, highly reactive or flammable."

d. Describe appearance, physical and chemical characteristics, and actual or potential hazards observed. For example, "Substance released is colorless to light yellow unidentified liquid; highly irritating to eyes and nose; smells like kernels of peach pits; vaporizing quickly, posing ignition problem."

6. TYPE OF OPERATION AT SOURCE: Plating shop, painting shop, hazardous waste (HW) facility, truck, ship, pipeline, ship rebuilding, entomology shop, etc.

7. CAUSE OF RELEASE:

a. Provide narrative description of specific cause of release.

b. Account for personnel error, equipment failure, etc., directly contributing to release. For example: "Railing supporting 55-gal drums on a flatbed truck gave way because it was not securely fastened, causing seven drums to fall and rupture."

c. If cause unknown at time of this report, list only "Unknown" until such time as definitively established.

8. TYPE OF CONTAINER FROM WHICH SUBSTANCE ESCAPED:

a. 55-gal drums, 5-lb bags, tank truck, storage tank, can, etc.

b. Estimate number of containers damaged or dangerously exposed.

9. RELEASE ENVIRONMENT:

a. Describe scene of release.

b. Include information on physical characteristics, size and complexity of release, and weather conditions. For example: "Solvent released formed shallow pool covering area about 30 ft by 45 ft of bare concrete. Solvent slowly running into storm drain. Pool emitting highly toxic, flammable vapors. Dark clouds threatening rain. Light wind drifting vapors northbound to residential area about 30 ft above ground."

10. AREAS DAMAGED OR THREATENED:

a. Describe actual and potential danger or damage to surrounding environment.

b. Identify body of water, area, or resources threatened or affected.

c. Describe nature and extent of damage to property, wildlife, or other natural resources (if any).

11. NOTIFICATIONS MADE AND ASSISTANCE REQUESTED:

a. List all organizations informed of release within and beyond Navy jurisdiction. Include Navy, Federal, State, and local authorities, response teams, fire departments, hospitals, etc.

b. Specify type of assistance requested from these organizations.

c. If telephonic report to NRC made, list: Date, time, group of telephonic report; NRC report and case number; name of NRC official taking report; quantity of HS released; and Navy command making telephonic report.

12. FIELD TESTING: Indicate findings and conclusions as to concentration, pH, etc.

13. CONTROL AND CONTAINMENT ACTIONS [PLANNED/TAKEN]:

a. If none, explain why.

b. Specify method used to control and contain release. For example: "Gas barriers used to control and contain vapor emissions. Runoff contained by excavating ditch circumscribing affected area."

14. CLEAN-UP ACTIONS [PLANNED/TAKEN]:

a. If none, explain why.

b. Identify on-site or off-site treatment, method used, parties involved in clean-up and removal, and disposal area. For example: "No clean-up action taken. Toxic vapors present, potential danger to clean-up crew. Contaminated soil will be excavated and shipped by NAS personnel to Class I HW disposal site in Portstown, CA when conditions allow."

15. AMOUNT OF SUBSTANCE RECOVERED [VOLUME/WEIGHT] (Pure product):

16. PARTIES PERFORMING [CONTAINMENT/CLEAN-UP] ACTIVITIES:

a. Identify lead organization in charge (e.g., Navy command, USCG, EPA).

b. Identify all other parties involved: Commercial firms, supporting Navy activities, and state or local agencies.

17. FEDERAL, STATE, OR LOCAL REGULATORY ACTIVITY DURING THIS INCIDENT:

a. Identify by name and agency any regulatory official attending on-scene or making telephonic inquiry.

b. Note whether officials boarded vessel and include date, time, and spaces inspected.

18. ASSISTANCE REQUIRED/ADDITIONAL COMMENTS.

19. LESSONS LEARNED: How could this release have been avoided?

20. ACTIVITY CONTACT FOR ADDITIONAL INFORMATION: List name, rank and rate, command, code, DSN, e-mail address, and or commercial telephone numbers.//

C-3 Oil Spill Report

C-3.1. Precedence (for messages only). Provided that prior voice reports have been made both to the USCG NRC and the reporting command's chain of command, use "Routine" precedence for Oil Spill Report Messages. If either voice report has not been made, use "Priority" precedence.

C-3.2. Classification or Special Handling Marks. Oil Spill Report Messages are unclassified and do not warrant special handling marks unless classified or sensitive business information must be incorporated. Avoid inclusion of such information to the maximum extent possible to allow Oil Spill Report Messages to be handled on a solely unclassified basis.

C-3.3. Spill Volume Classification. To better advise the Navy on-scene coordinator and Navy leadership of the magnitude of each oil spill, the subject line of an Oil Spill Report Message should bear a volume estimate of the spill, if known, in the following format:

a. OIL SPILL REPORT, X GALLONS, [ACTIVITY NAME] (MINIMIZE CONSIDERED);

b. OIL SPILL REPORT, UNKNOWN VOLUME, [ACTIVITY NAME] (MINIMIZE CONSIDERED); or

c. OIL SPILL REPORT, SHEEN SIGHTING (MINIMIZE CONSIDERED).

C-3.4. Updating Oil Spill Report Messages. Oil Spill Report Messages shall be updated with a follow-up message as soon as the reporting activity becomes aware of new information concerning the origin, quantity, type, operation under way, root cause, or lessons learned of the spill. Similarly, if the final estimate of the amount spilled differs substantially from the

amount initially reported, the reporting activity must send an update message to all action and information addresses on the original spill message.

C-3.5. Action and Information Addressees

FROM: Navy activity/ship responsible for or discovering spill

TO: Navy On-Scene Coordinator
Chain of Command

INFO: Area Environmental Coordinator
Host Activity
OPNAV WASHINGTON DC//N45//
CNIC WASHINGTON DC//N45//
CHINFO WASHINGTON DC//JJJ//
COMNAVSEASYSCOM WASHINGTON DC//00C//
NAVFAC EXWC PORT HUENEME CA//424//
NOLSC DC FT BELVOIR VA//JJJ//
NAVJAG WASHINGTON DC//11//
NAVSURFWARCENCARDIV PHILADELPHIA PA//923//
[Add NRC for spills into or upon the navigable waters of the United States, its contiguous zone (generally within 12 NM of U.S. shores) and adjacent shorelines.]
COAST GUARD NATIONAL RESPONSE CENTER WASHINGTON DC//JJJ//

C-3.6. Body of Report. Use the following format for the body of all Oil Spill Report Messages. It is important for data management purposes that this format be followed.

UNCLAS//NO5090//
SUBJ: OIL SPILL REPORT, X GALLONS, [ACTIVITY NAME] (MINIMIZE CONSIDERED) or OIL SPILL REPORT, UNKNOWN VOLUME, [ACTIVITY NAME] (MINIMIZE CONSIDERED) or OIL SPILL SHEEN SIGHTING, (MINIMIZE CONSIDERED)
MSGID/GENADMIN/ORIGINATOR//
RMKS/

1. LOCAL TIME AND DATE SPILL [OCCURRED/DISCOVERED]

2. [FACILITY/VESSEL] ORIGINATING SPILL:

a. For Navy ships, list ship name and hull number.

b. For Navy shore facilities, list facility name.

c. For non-Navy spills, list name of responsible party, if known.

d. For organizations under contract to Navy, list firm name and contracting Navy activity.

e. If the facility or vessel of spill is unknown at time of this report, list only "Unknown" until such time as definitively established.

3. SPILL LOCATION:

a. For spills at sea, list latitude, longitude, and distance to nearest land.

b. For spills in port, list port name, host naval command (NAVSTA, Shipyard), and specific location (pier or mooring designation).

c. For spills ashore, list city, state, facility name, and specific location (building designation).

4. VOLUME SPILLED IN GALLONS:

a. Estimates must be made by examining loss at source (e.g., checking the sounding tank, calculating flow rate of spill).

b. If amount is unknown at time of this report, list only "Unknown" until such time as definitively established.

c. Estimating volume by visual observation of oil on water can be very unreliable.

d. If volume estimate can only be made by visual observation of oil on water, do not report estimate here.

e. If oil and water mixture, indicate percent oil.

5. TYPE OF OIL SPILLED:

a. List whether marine gas oil, naval distillate (F-76), jet fuel (JP-4 or 5), aviation or automotive gasoline, automotive diesel, heating fuels (e.g., grade 1 or 2, kerosene), residual burner fuel (e.g., grade 4, 5, or 6), lubricating oil; hydraulic oil, oil/oil mixture (including slops and waste oil), or oil/water mixture (including bilge waste).

b. If type unknown at time of this report, list only "Unknown" until such time as definitively established.

6. OPERATION UNDER WAY WHEN SPILL [OCCURRED/DISCOVERED]:

a. If fueling or defueling, list whether underway or in port by pipeline, truck, or barge.

b. Specify whether conducting internal fuel oil transfer operations (including movement from one storage tank to another), pumping bilges, conducting salvage operations, aircraft operations, or "Other" (specify).

c. Include any evolution or operation that had been conducted within 4 hours of spill discovery that may have resulted in oil discharge.

d. If operation unknown or if no evolution can be attributable at time of this report, list only "Operation Not Known" or "To Be Determined" until such time as definitively established.

7. SPILL CAUSE:

a. Classify the spill cause by citing one or more of the following categories and then provide a narrative description of the specific spill cause: Structural; electrical; hose; valve or fitting; tank level indicator; oil and water and separator and oil content monitor; other equipment (specify component that failed); collision, grounding, or sinking; valve misalignment; monitoring error; procedural and communications error; chronic or recurring; or weather related. This information will be used by Commander, Naval Sea Systems Command for causal analysis and spill prevention.

b. If the spill resulted from a mechanical or equipment failure, identify failed equipment or suspected failed equipment by system, nomenclature, allowance part list, service, part number, and or location.

c. If cause unknown or undetermined at time of this report, list only "To Be Determined" or "Under Investigation" until such time as definitively established.

8. SLICK DESCRIPTION AND MOVEMENT:

a. Size: Length and width (yards or NM) and percentage of that area covered.

b. Color: Silver transparent, gray, rainbow, blue, dull brown, dark brown, black, brown-orange mousse.

c. Odor: Noxious, light, undetectable.

d. Slick movement: Set (degrees true toward) and drift (knots).

9. SPILL ENVIRONMENT:

a. Weather: Clear, overcast, partly-cloudy, rain, snow, etc.

b. Prevailing wind at scene: Direction (degrees true from), speed (knots), and fetch (yards or NM).

c. Air and water temperature: Indicate ice cover.

d. Sea state: Beaufort Force number.

e. Tide: High, low, ebb, flood, or slack or current: Set (degrees true toward) and drift (knots).

10. AREAS DAMAGED OR THREATENED:

a. Body of water, area, or resources threatened or affected.

b. Nature and extent of damage to property, wildlife, or other natural resources (if any).

11. TELEPHONIC REPORT TO NATIONAL RESPONSE CENTER [WAS/WAS NOT] MADE:

a. If made, list:

(1) Time and date of telephonic report.

(2) NRC report and case number.

(3) Name of NRC official taking report and quantity of oil reported.

b. If not made, provide reason why: Beyond 12 NM from U.S. shores, no threat to navigable water, etc.

c. Navy command making telephonic report.

12. SAMPLES [WERE/WERE NOT] TAKEN: If taken, identify location(s) from which taken (e.g., tanks, hoses, piping, slip, jetty, etc.) and collecting officer by name, rank, and agency.

13. CONTAINMENT METHOD [PLANNED/USED]:

a. If none, state reason.

b. Otherwise, indicate equipment utilized (e.g., boom, ship's hull, camel, water spray, chemical agent).

14. SPILL REMOVAL METHOD [PLANNED/USED]:

a. If none, state reason.

b. Equipment planned and used (e.g., Rapid Response Skimmer or Dip 3001 skimmer, portable skimmer, absorbent materials (oil absorbent pads, chips, etc.), dispersants, vacuum trucks or pumps, other (specify)).

15. VOLUME OF OIL RECOVERED IN GALLONS (Decanted pure product).

16. PARTIES PERFORMING SPILL REMOVAL:

a. Identify lead organization in charge (e.g., Navy command, USCG, EPA).

b. Identify all other parties involved (e.g., commercial firms, supporting Navy activities, state or local agencies).

17. FEDERAL, STATE, OR LOCAL REGULATORY ACTIVITY DURING THIS INCIDENT:

a. Identify by name and agency any official attending on-scene or making telephonic inquiry.

b. Note whether officials boarded vessel and include date, time, and spaces inspected.

18. ASSISTANCE REQUIRED OR ADDITIONAL COMMENTS

19. LESSONS LEARNED: How could this spill have been avoided?

20. COST OF RECOVERY: Probably not known for initial report. Include in follow up report to the extent known.

21. ACTIVITY CONTACT FOR ADDITIONAL INFORMATION: List name, rank and rate, command, code, e-mail address, and DSN and or commercial telephone numbers.//

Table C-1. Navy Root Cause Analysis Codes

Root Cause Code		International Organization for Standardization 14001:2004(E)
	PLAN (Environmental Policy/Planning)	
	Leadership/Policy/Organizational Management	**4.1 - 4.3**
LPM01	Leadership lacks commitment and or sufficient organizational framework, stature, independence, and authority.	4.1/4.2
LPM02	Formal policies are not appropriate to the nature, scale and environmental impacts of the activities, products, and services.	4.2
LPM03	Environmental requirements and significant aspects are not adequately considered.	4.3.1
LPM04	Procedure is not in place for updating applicable legal requirements.	4.3.2
	DO (Implementation)	
	Resources/Roles/Responsibility and Authority	**4.4.1**
RRA01	Programmatic roles, responsibilities, and authorities are not clearly defined, assigned, documented, and or communicated.	4.4.1
RRA02	Specific management representatives (e.g., line management supervisors, practice owners) do not show commitment and or responsibility for the performance of the environmental management system (EMS).	4.4.1
RRA03	Funds for program-related activities are not sufficient.	4.4.1
RRA04	Staffing levels are not sufficient to	4.4.1

Root Cause Code		International Organization for Standardization 14001:2004(E)
	manage all program-related activities or requirements.	
RRA05	Resources for controlling or improving daily operations including the procurement of appropriate materials or equipment, technology, or services are absent or inadequate.	4.4.1
RRA06	Lack of proper or adequate materials, equipment, and or contract deliverables.	4.4.1
RRA07	Lack of adequate maintenance caused failure or discrepancy.	4.4.1
RRA08	Inadequate design of facility or selection of material or equipment caused failure or discrepancy.	4.4.1
	Competence/Training and Awareness	**4.4.2**
CTA01	No training is conducted.	4.4.2
CTA02	Training is inadequate or ineffective.	4.4.2
CTA03	Personnel do not perform duties as trained.	
	Communication	**4.4.3**
COM01	Internal communication is missing or ineffective.	4.4.3
COM02	External communication is missing or ineffective.	4.4.3
	Documentation/Control of Documents	**4.4.4/4.4.5**
DOC01	Necessary details within documents and records are absent or are inadequate.	4.4.4
DOC02	Procedure(s) to approve, review and update, and retain relevant versions of information is not established or is not adequately implemented.	4.4.5
	Operational Control/Emergency Preparedness and Response	**4.4.6/4.4.7**
OCP01	Documented plans or procedures are inadequate.	4.4.6
OCP02	Documented plans or procedures not properly implemented to control activities.	4.4.6
OCP03	Appropriate contingency planning for	4.4.7

Root Cause Code		International Organization for Standardization 14001:2004(E)
	emergency preparedness and response is missing or ineffective.	
	CHECK (Checking and Corrective Action)	
	Monitoring and Measurement/Evaluation of Compliance	**4.5.1/4.5.2**
MMC01	Calibrated and verified monitoring or measurement equipment is not used or maintained.	4.5.1
MMC02	Internal compliance evaluation is not effective.	4.5.2
	Nonconformity, Corrective Action and Preventive Action/Control of Records/Internal Audit	**4.5.3/4.5.4/4.5.5**
NCA01	The corrective action and preventive action process is not effective.	4.5.3
NCA02	Control and tracking procedure(s) for documents and records is absent or is inadequate.	4.5.4
NCA03	Internal audit program is not implemented or is ineffective.	4.5.5
	IMPROVE (Management Review)	
	Management Review	**4.6**
MRV01	Documented procedure describing the management review process is inadequate.	4.6
MRV02	Roles, responsibilities and authorities are not clearly defined, documented, and or communicated.	4.6
MRV03	Management review process or procedure is **not** implemented effectively.	4.6
MRV04	Management review process is **insufficient to** create change, provide leadership, or effectively improve the EMS.	4.6

TEMPLATE FOR OIL SPILL MESSAGE

FM Navy activity/ship responsible for or discovering spill
TO COMNAVREG MIDLANT NORFOLK VA//N34/N45//
INFO:
NAVFAC MIDLANT NORFOLK VA
NAVSTA NORFOLK VA
OPNAV WASHINGTON DC//N45//
CNIC WASHINGTON DC//N45//
CHINFO WASHINGTON DC//JJJ//
COMNAVSEASYSCOM WASHINGTON DC//00C//
NAVFAC EXWC PORT HUENEME CA//424//
NOLSC DC FT BELVOIR VA//JJJ//
NAVJAG WASHINGTON DC//11//
NAVSURFWARCENCARDIV PHILADELPHIA PA//923//
(Add NATIONAL RESPONSE CENTER (NRC) for releases into or upon the navigable waters of the US)
COGARD NATIONAL RESPONSE CENTER WASHINGTON DC//JJJ//
COGARD MSO HAMPTON ROADS//JJJ//
NAVFAC LANT//EV//
YOUR PARENT COMMANDS AS APPROPRIATE
UNCLAS//NO5090//
MSGID/GENADMIN/ORIGINATOR//
SUBJ/OIL SPILL REPORT, X GALLONS, (ACTIVITY NAME)//
REF/A/DOC/OPNAVINST 5090.1D//
REF/B/DOC/OPNAV M-5090.1//
REF/C/DOC/COMNAVREGMIDLANT HRINST 5400.1A//
NARR/REF A IS THE 10JAN14 CHIEF OF NAVAL OPERATIONS ENVIRONMENTAL READINESS PROGRAM INSTRUCTION. REF B IS THE NAVY ENVIRONMENTAL READINESS PROGRAM MANUAL OPNAV M-5090.1 FROM 10JAN14. REF C IS THE COMMANDER NAVY REGION MIDATLANTIC HAMPTON ROADS SOPA/ADMIN INSTRUCTION//
RMKS/1. LOCAL TIME AND DATE SPILL (OCCURRED/DISCOVERED):
2. (FACILITY/VESSEL) ORIGINATING SPILL: YOUR COMMAND UNLESS YOU ARE REPORTING AS SOPA AND SPILL ORIGIN IS UNKNOWN
3. SPILL LOCATION: NAVSTA NORFOLK, LOCATION/BUILDING NUMBER
4. VOLUME SPILLED IN GALLONS: XXX GALLONS
5. TYPE OF OIL SPILLED: DIESEL FUEL/ASPHAULT/JP-5/ETC
6. OPERATION UNDERWAY WHEN SPILL OCCURRED/DISCOVERED:
7. SPILL CAUSE:
8. SLICK DESCRIPTION AND MOVEMENT:
9. SPILL ENVIRONMENT: LAND/SOIL/GRASSY AREA/CONCRETE/WATER/PIER
10. AREAS DAMAGED OR THREATENED: SURROUNDING WATER NEAR THE PIER
11. TELEPHONIC REPORT TO NATIONAL RESPONSE CENTER WAS/WAS NOT MADE: BASE ECC AND NRC (REPORT #XXXXXXX IF HAVE IT)
12. SAMPLES WERE/WERE NOT TAKEN:
13. CONTAINMENT METHOD (PLANNED/USED):
14. SPILL REMOVAL METHOD (PLANNED/USED):
15. VOLUME OF OIL RECOVERED IN GALLONS:
16. PARTIES PERFORMING SPILL REMOVAL: USUALLY WILL BE NAVFAC MIDLANT OIL RECOVERY
17. FEDERAL, STATE, OR LOCAL REGULATORY ACTIVITY DURING THIS INCIDENT: MAY BE COAST GUARD BUT USUALLY WILL ONLY BE NAVFAC MIDLANT ENVIRONMENTAL ON SCENE
18. ASSISTANCE REQUIRED OR ADDITIONAL COMMENTS:
19. LESSONS LEARNED:
20. COST OF RECOVERY: CAN BE GOTTEN FROM OIL RECOVERY IF THEY PERFORMED CLEAN-UP
21. ACTIVITY CONTACT FOR ADDITIONAL INFORMATION:

TEMPLATE FOR HAZARDOUS SUBSTANCE SPILL MESSAGE

FM NAVY ACTIVITY/SHIP RESPONSIBLE FOR, OR DISCOVERER OF RELEASE
TO COMNAVREG MIDLANT NORFOLK VA//N34/N45//
INFO:
NAVFAC MIDLANT NORFOLK VA
INSTALLATION/HOST ACTIVITY, (IE. NAVSTA NORFOLK VA)
OPNAV WASHINGTON DC//N45//
CNIC WASHINGTON DC//N45//
CHINFO WASHINGTON DC//JJJ//
COMNAVSEASYSCOM WASHINGTON DC//00C//
NAVFAC EXWC PORT HUENEME CA//424//
NOLSC DC FT BELVOIR VA//JJJ//
NAVJAG WASHINGTON DC//11//
NAVSURFWARCENCARDIV PHILADELPHIA PA//923//
(Add NATIONAL RESPONSE CENTER (NRC) for releases into or upon the navigable waters of the US)
COGARD NATIONAL RESPONSE CENTER WASHINGTON DC//JJJ//
COGARD MSO HAMPTON ROADS//JJJ//
NAVFAC LANT//EV//
YOUR PARENT COMMANDS AS APPROPRIATE
UNCLAS//NO5090//
MSGID/GENADMIN/ORIGINATOR//
SUBJ/OIL SPILL REPORT, X GALLONS, (ACTIVITY NAME)//
REF/A/DOC/OPNAVINST 5090.1D//
REF/B/DOC/OPNAV M-5090.1//
REF/C/DOC/COMNAVREGMIDLANT HRINST 5400.1A//
NARR/REF A IS THE 10JAN14 CHIEF OF NAVAL OPERATIONS ENVIRONMENTAL READINESS PROGRAM INSTRUCTION. REF B IS THE NAVY ENVIRONMENTAL READINESS PROGRAM MANUAL OPNAV M-5090.1 FROM 10JAN14. REF C IS THE COMMANDER NAVY REGION MIDATLANTIC HAMPTON ROADS SOPA/ADMIN INSTRUCTION//
RMKS/
1. LOCAL TIME AND DATE SPILL (OCCURRED/DISCOVERED):
2. (FACILITY/VESSEL) ORIGINATING SPILL: YOUR COMMAND UNLESS YOU ARE REPORTING AS SOPA AND SPILL ORIGIN IS UNKNOWN
3. SPILL LOCATION: INSTALLATION, LOCATION/BUILDING NUMBER OR LAT LONG
4. VOLUME SPILLED IN GALLONS: XXX GALLONS
5. HAZARDOUS SUBSTANCE RELEASED: PB-680 TYPE 1/MEKP/ ETC
6. OPERATION UNDERWAY WHEN SPILL OCCURRED/DISCOVERED:
7. SPILL CAUSE:
8. SLICK DESCRIPTION AND MOVEMENT:
9. SPILL ENVIRONMENT: LAND/SOIL/GRASSY AREA/CONCRETE/WATER/PIER
10. AREAS DAMAGED OR THREATENED: SURROUNDING WATER NEAR THE PIER
11. TELEPHONIC REPORT TO NATIONAL RESPONSE CENTER WAS/WAS NOT MADE: BASE ECC AND NRC (REPORT #XXXXXXX IF HAVE IT)
12. SAMPLES WERE/WERE NOT TAKEN:
13. CONTAINMENT METHOD (PLANNED/USED):
14. SPILL REMOVAL METHOD (PLANNED/USED):
15. VOLUME OF SUBSTANCE RECOVERED IN GALLONS:
16. PARTIES PERFORMING SPILL REMOVAL: USUALLY WILL BE NAVFAC ENVIRONMENTAL SERVICES
17. FEDERAL, STATE, OR LOCAL REGULATORY ACTIVITY DURING THIS INCIDENT: MAY BE COAST GUARD BUT USUALLY WILL ONLY BE NAVFAC MIDLANT ENVIRONMENTAL ON SCENE
18. ASSISTANCE REQUIRED OR ADDITIONAL COMMENTS:
19. LESSONS LEARNED:
20. ACTIVITY CONTACT FOR ADDITIONAL INFORMATION:

Appendix G – Good Housekeeping Policies and Procedures for Municipal Operations

Good Housekeeping Policies and Procedures for Municipal Operations
Commander, Navy Region Mid-Atlantic

Introduction and Organization of Procedures Document

This document presents the good housekeeping policies and procedures for municipal operations covered under NAVFAC Mid-Atlantic's Regional MS4 Program Plan. The document includes the following sections:

- Overview of Permit Requirements
- Objective of Procedures
- Application of Procedures
- NAVFAC Mid-Atlantic Policies (illegal discharges and illegal dumping; construction site runoff control; post construction runoff management; and spill reporting and documentation)
- Site Investigations and Inspections (industrial permit; and municipal SWPPPs)
- Daily Operations Procedures (vehicle and associated equipment washing; vehicle fueling; storage areas; vehicle and equipment storage areas; recycle facilities and storage; road, street, and parking lot maintenance; landscaping; construction activities; and storm drain/utility line maintenance)
- Equipment Maintenance Procedures (vehicle maintenance and storage)
- Pesticide, Herbicide, and Fertilizer Procedures (application; storage; transport; disposal; and nutrient management plans)
- Miscellaneous (inspections; general spill and discharge response procedures; general dewatering; training; and contractor requirements/oversight)

In addition to detailing the appropriate policies and procedures for good housekeeping, Attachment includes an illustration of best management practices (BMPs) developed by Commander, Navy Region Mid-Atlantic (CNRMA).

Overview of Permit Requirements

The following Good Housekeeping Procedures have been developed in accordance with Section II.B.6.a through g of the Virginia Department of Environmental Quality's (DEQ) Phase II General Permit No. VAR040114 (page 20 of 31) as excerpted in portions below. Note that not all of the procedures below will be applicable to all installations since the same activities are not conducted at all of the installations.

a. ***Operations and Maintenance Activities.*** *The MS4 Program Plan submitted with the registration statement shall be implemented by the operator until updated in accordance with this state permit. In accordance with Table 1 of this section, the operator shall develop and implement written procedures designed to minimize or prevent pollutant discharge from: (i) daily operations such as <u>road, street, and parking lot maintenance</u>; (ii) <u>equipment maintenance</u>; and (iii) <u>the application, storage and transport and disposal of</u>*

pesticides, herbicides and fertilizers. The written procedures shall be utilized as part of the employee training. At a minimum, the procedures shall be designed to:

1. *Preventing illicit discharges;*
2. *Ensuring the proper disposal of waste materials, including landscape wastes;*
3. *Preventing the discharge of municipal vehicle wash water into the MS4 without authorization under a separate Virginia Pollutant Discharge Elimination System (VPDES) permit;*
4. *Preventing the discharge of wastewater into the MS4 without authorization under a separate VPDES permit;*
5. *Requiring implementation of best management practices when discharging water pumped from utility construction and maintenance activities;*
6. *Minimizing the pollutants in stormwater runoff from bulk storage areas (e.g., salt storage, topsoil stockpiles) through the use of best management practices;*
7. *Preventing pollutant discharge into the MS4 from leaking municipal automobiles and equipment; and*
8. *Ensuring that the application of materials, including fertilizers and pesticides, is conducted in accordance with the manufacturer's recommendations.*

(Note that these procedures are discussed throughout this document.)

b. ***Municipal facility pollution prevention and good housekeeping.*** *(Note that this has been addressed under Contract Number N62470-D-10-3000; WE28 and municipal SWPPPs have been submitted under separate cover to address BMP 6.2, High-Priority Facilities and SWPPPs in the Regional MS4 Program Plan.)*

c. ***Turf and Landscape Management.*** *(Note that this has been addressed under Contract Number N62470-D-10-3000; WE28 and Nutrient Management Plans have been submitted under separate cover to address BMP 6.3, Turf and Landscape Nutrient Management in the Regional MS4 Program Plan.)*

d. ***Training.*** *The operator shall conduct training for employees. (Note that there are additional specific requirements in the permit and these are discussed later in this document. Also note that this document does not address the training plan requirements of BMP 6.4 in the Regional MS4 Program Plan.*)

e. *The operator shall require that municipal contractors use appropriate controls measures and procedures for stormwater discharges to the MS4 system. Oversight procedures shall be described in the MS4 Program Plan. (Note that this requirement is discussed later in this document.)*

f. *At a minimum, the MS4 Program Plan shall contain:*

   (1) The written protocols being used to satisfy the daily operations and maintenance requirements;

(2) A list of all municipal high priority facilities that identifies those that have a high potential for chemicals or other materials to be discharged in stormwater and a schedule that identifies the year in which an individual SWPPP will be developed for those facilities required to have a SWPPP.

(Note that these requirements are associated with BMP 6.1 [addressed in this document] and BMP 6.2, High-Priority Facilities and SWPPPs in the Regional MS4 Program Plan [addressed by a different task order under separate cover]).

Objective of Procedures

The objective of the procedures is to comply with the permit requirements (described above) by addressing BMP 6.1, Written Policies and Procedures included in the Regional MS4 Program Plan. In addition, this document briefly discusses associated training requirements (BMP 6.4) but does not address the training plan requirements of this BMP. As previously noted, BMP 6.2 (High-Priority Facilities and SWPPPs) and BMP 6.3 (Turf and Landscape Nutrient Management) are addressed by a separate delivery order and submitted under separate cover. The only remaining BMP under MCM #6 for Pollution Prevention and Good Housekeeping is BMP 6.5 which addresses tracking and reporting of the BMP implementation status in the annual report.

It is the responsibility of the MS4 Permit Manager to effectively communicate these procedures to the appropriate staff and ensure that the procedures are followed by Navy employees as well as contractors.

Application of Procedures

These procedures apply to the installations covered by the Regional MS4 permit including:

- Naval Station Norfolk (excluding Craney Island) (NSN)
- Naval Support Activity, Hampton Roads (excluding NSA Northwest) (NSA HR)
- Joint Expeditionary Base, Little Creek (JEB LC)
- Joint Expeditionary Base, Fort Story (JEB FS)
- Naval Air Station Oceana (NASO)
- Dam Neck Annex (NASO DN)
- NSA Hampton Roads Portsmouth Annex (Portsmouth Annex)
- Scott Center Annex (SCA)

NAVFAC Mid-Atlantic Policies

This section discusses the NAVFAC Mid-Atlantic's current policies including illegal discharges and illegal dumping; construction site runoff control; post construction runoff management, and spill reporting and documentation.

Illegal Discharges and Illegal Dumping

CNRMA has developed Draft Standard Operating Procedures (SOPs) with the purpose of preventing illegal discharge and illegal dumping into the storm drainage systems. The draft SOPs require that periodic inspections occur to detect illicit connections, discharges, and dumping.

Construction Site Runoff Control

CNRMA has two sets of draft instructions related to construction site runoff control. The first, entitled "COMNAVREG MIDLANT Virginia Stormwater Management Program Construction Permit Instruction," establishes a procedure for obtaining coverage under the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities at installations and annexes and applies to projects with a disturbance of one acre or greater. The second set of instructions, entitled "COMNAVREG MIDLANT Erosion and Sediment Control Instruction," establishes minimum standards for the effective control of soil erosion, sediment deposition, and non-agricultural runoff from land-disturbing activities at installations and applies to projects with a disturbance of 10,000 square feet or greater.

Post Construction Runoff Management

CNRMA has developed a draft set of instructions related to post-construction site runoff control, entitled "COMNAVREG MIDLANT Post Construction Stormwater Runoff Management Instruction." These instructions require minimum post-construction BMPs at installations and annexes. The instruction applies to all development and redevelopment activities greater than or equal to one acre in size. The instruction also applies to land development activities for an area smaller than one acre, if the activities are part of a larger common plan of development.

Spill Reporting and Documentation

NAVFAC Mid-Atlantic has implemented the "Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedures," which outlines reporting and documentation actions that must be taken in response to a spill/release of oil, sewage, or hazardous or non-hazardous substance (solid or liquid). In accordance with the Spill Reporting and Documentation SOP, spills are reported to the Virginia DEQ and the Virginia Department of Conservation and Recreation (DCR). Spill reporting includes both an initial report of the spill within 24 hours of the spill discovery and a 5-day spill letter, which documents specific details of the spill. The 5-day spill letter includes:

- Date of release/discovery;
- Time of release/discovery;
- Location;
- Substance released;
- NRC # (if applicable);
- Quantity released;
- Quantity recovered;
- Receiving waterway;
- Cause of release; and
- Cleanup actions taken.

Site Investigations and Inspections

This section discusses the site investigation and inspection requirements under the Industrial and Municipal SWPPPs per their respective permits.

Industrial Permit

Many of the installations covered under the MS4 Permit are also covered under the Virginia DEQ Industrial Stormwater Permit. As a result, updates to the Industrial SWPPP, Site Compliance Evaluations (SCEs), and Illicit Discharge Surveys are completed on a regular (annual or other) basis. The SCEs are comprehensive surveys that closely examine the potential for pollutants associated with industrial activities to be conveyed into the storm drain system. The SWPPP reports identify potential pollutants and include recommendations of BMPs to be implemented with corresponding priority categorization (low, medium, or high). Certain industrial facilities (e.g., Transportation Facilities) must be inspected quarterly to ensure that areas related to the operation of that facility are implementing the necessary BMPs.

Municipal Stormwater Pollution Prevention Plans

In addition, Section II.B.6.b (3) of the MS4 Permit requires the development of municipal SWPPPs. As of July 2015, NAVFAC Mid-Atlantic has developed 13 Final SWPPP reports for locations that were identified as high-priority facilities.

1. Dam Neck Annex – Group 1 of 2 (Building 372)
2. Dam Neck Annex – Group 2 of 2 (Buildings 552, 553, 585B, 613)
3. Joint Expeditionary Base (JEB) Little Creek – Group 1 of 2 (Buildings 3107, 3165, 3292, 3293, 3653, 3661, 3664)
4. JEB Little Creek – Group 2 of 2 (Buildings 3895, 3903)
5. Naval Air Station (NAS) Oceana – Group 1 of 2 (Buildings 721, 820)
6. NAS Oceana – Group 2 of 2 (Buildings 3034, 3035)
7. Portsmouth Annex – Group 1 of 4 (Building 107)
8. Portsmouth Annex – Group 2 of 4 (Building 273)
9. Portsmouth Annex – Group 3 of 4 (Building 277)
10. Portsmouth Annex – Group 4 of 4 (Building 289)
11. Naval Support Activity (NSA) Hampton Roads – Group 1 of 1 (Building SC-401)
12. Naval Station Norfolk – Group 1 of 2 (Building LP-131[A-D])
13. Naval Station Norfolk – Group 2 of 2 (Building NM-37)

Daily Operations Procedures

This section provides good housekeeping procedures for vehicle and associated equipment washing; vehicle fueling; storage areas; vehicle and equipment storage areas; recycle facilities and storage; road, street, and parking lot maintenance; landscaping; construction activities; and storm drain/utility line maintenance.

Vehicle and Associated Equipment Washing

Government-owned as well as private vehicles and equipment are washed as needed at designated wash racks equipped with an oil water separator (OWS) and/or a diversion valve to direct flow to the sanitary sewer and prevent non-permitted discharges.

The below Good Housekeeping Procedures should be followed:

- Perform cleaning operations only within designated areas
- Ensure all personnel are properly trained on wash rack operational procedures and use appropriate signage to reinforce training
- Utilize automatic shutoff valves as appropriate to prevent polluted wash waters from entering the storm drain system
- Perform cleaning operations indoors where practicable
- Provide cover over the cleaning operation where practicable
- Ensure all wash waters drain to the appropriate collection system and the system is clear, operational, and properly functioning. The appropriate collection system will either be the sanitary system if full treatment is needed or the storm drain system with pretreatment (as appropriate) if minor treatment is needed. Otherwise, the wash waters should be directed to a grassy area to encourage infiltration into the ground.
- Treat and/or recycle the collected stormwater runoff were practicable

Vehicle Fueling

During motor vehicle and equipment fueling, fuel products are transferred from bulk fueling sites, mobile refuelers, underground storage tanks (USTs), or aboveground storage tanks (ASTs) to the serviced vehicle or equipment. Activities associated with fueling include delivery and transfer, storage, and dispensing. In areas with high risk associated with large quantities of fueling activities such as large fuel tanks, NAVFAC Mid-Atlantic has developed detailed prevention and response procedures in SPCC Plans.

To prevent or reduce accidental spills and overfills, leak detection systems and overfill alarms are installed on all USTs. ASTs have liquid level gauges, overflow alarms, and are typically located within secondary containment or have an environmental equivalent.

The below Good Housekeeping Procedures should be followed:

- Conduct fuel transfer operations only within designated areas
- Provide cover over the fueling area to prevent contact with stormwater
- Maintain and utilize overflow protection; e.g., spill buckets, high-level alarms, automatic tank gauges (ATGs), etc. as appropriate
- Maintain and utilize appropriate spill cleanup equipment; i.e., spill kits
- Minimize run-on/runoff of stormwater to the fueling area
- Utilize dry cleanup methods
- Treat and/or recycle collected stormwater runoff where practicable

- Avoid topping off fuel tanks
- Divert runoff from fueling areas
- Utilize automatic shutoff valves as appropriate
- Provide secondary containment for fuel storage and transfer operations

Storage Areas

Storage areas require regular maintenance to ensure that they stay in a clean and orderly state. It is important to limit or minimize the amount of exposure the bulk materials have to stormwater in order to prevent the suspension and transportation of the materials into the storm drain system.

All bulk storage piles of salt or piles containing salt used for deicing or other purposes are enclosed or covered to prevent exposure to precipitation. All salt storage piles are located on an impervious surface and runoff is collected and contained, maintained in storage tank(s), or disposed of through a sanitary system. Salt-contaminated stormwater is not permitted to be discharged into the stormwater system.

The below Good Housekeeping Procedures should be followed:

- Maintain storage vessels in good condition with proper labeling
- Complete inventories of stored materials to track/monitor
- Provide indoor storage for materials, where practicable
- If indoor storage is not practicable, provide storm-resistant cover (tarp or outdoor shed) for material storage
- Install berms or dikes to minimize run-on/runoff of stormwater to these areas
- Use dry cleanup methods
- Treat and/or recycle collected stormwater runoff where practicable
- Confine loading/unloading activities to a designated area outside drainage pathways and away from surface waters
- Load/unload indoors or in designated covered areas
- Close/cover storm drains during loading/unloading activities in surrounding areas
- Install barriers around catch basins and storm drain inlets to prevent wet or dry material from entering the storm drain system (Note: Select the barrier type based on the pollutant with the highest probability of entering the system. For example, some barriers are best for preventing sediments from entering the system while others are better for oily materials.)
- Utilize drip pans, berms, dikes, absorbent materials, roofs, or covered storage areas to minimize contamination of the stormwater runoff from these areas
- Keep flammable and hazardous materials in designated storage cabinets and lockers
- Provide secondary containment, as appropriate
- Install diversion berms or grassed swales and disconnect storm/roof drains to minimize run-on/runoff of stormwater to these areas
- Enclose or cover salt storage piles or piles containing salt
- Store salt piles on an impervious surface

Vehicle and Equipment Storage Areas

There are several locations where vehicles and/or parts, such as batteries, belts, hoses, tires, and other materials, are stored outdoors. At these locations, precautions should be taken to ensure that leaks from the vehicles and equipment do not occur.

The below Good Housekeeping Procedures should be followed:

- Confine storage of vehicles and equipment awaiting maintenance to designated areas that are under cover to prevent contact with stormwater
- Store vehicles and equipment indoors where practicable
- Utilize drip pans, berms, dikes, absorbent materials, roofs, or covered storage areas to minimize contamination of the stormwater runoff from these areas
- Install barriers around catch basins and storm drain inlets to prevent wet or dry material from entering the storm drain system (Note: Select the barrier type based on the pollutant with the highest probability of entering the system. For example, some barriers are best for preventing sediments from entering the system while others are better for oily materials.)
- Maintain and utilize appropriate spill cleanup equipment; i.e., spill kits
- Clean pavement surface to remove oil and grease but prevent the oil and grease from entering the storm drain system
- Cover storage areas with roofs or tarps
- Confine storage of equipment to designated area away from high traffic, drainage patterns, and surface waters
- Install diversion berms or grassed swales and disconnect storm/roof drains to minimize run-on/runoff of stormwater to these areas
- Ensure that all containers are properly labeled and sealed
- Complete inventories of stored materials to track/monitor
- Keep flammable and hazardous materials in designated storage cabinets and lockers
- Provide secondary containment, as appropriate

Recycle Facilities and Storage

Many of the installations have active recycling programs and facilities. In general, recycled materials include glass, plastic, cardboard, metals, paper, and other goods. A recyclable material inspection program minimizes the likelihood of receiving materials that may be significant pollutant sources to stormwater discharges. At the recycling center yard at JEB Little Creek, a containment boom (floating barrier) is used to prevent spill and other pollution sources from entering open water courses.

The below Good Housekeeping Procedures should be followed:

- Develop information and education measures to inform suppliers of recyclable materials about the types of materials that are acceptable and those that are not recyclable
- Provide training measures for drivers responsible for pickup of recyclable materials

- Reject non-recyclable wastes or household hazardous waste at the source
- Develop procedures for handling and disposing of non-recyclable materials
- Provide totally enclosed or covered drop-off containers for the public
- Install a sump pump with each containment pit and discharge collected fluids to a sanitary sewer
- Provide dikes and curbs for secondary containment
- Divert surface runoff away from outside material storage areas
- Provide covers over containment bins, dumpsters, and roll-off boxes
- Store the equivalent of one day's volume of recyclable materials indoors
- Schedule routine good housekeeping measures for all storage and processing areas

Road, Street, and Parking Lot Maintenance

In general, road, street, and parking lot maintenance is managed by the individual facility managers at each installation. After a need for maintenance is documented, the facility manager may contract the work out or send it to an internal department (such as engineering, utilities, public works shops, etc.) depending upon the nature of the maintenance needed.

The below Good Housekeeping Procedures should be followed:

- Prevent paving materials and wastes from entering the storm drain system by closing the storm drain inlets or by installing barriers around catch basins and storm drain inlets to prevent wet or dry material from entering the storm drain system (Note: Select the barrier type based on the pollutant with the highest probability of entering the system. For example, some barriers are best for preventing sediments from entering the system while others are better for oily materials.)
- Minimize the exposure of soils or graded areas to stormwater runoff
- Store materials (sand, gravel, etc.) away from storm drains and cover materials to prevent erosion
- Collect and properly dispose of any sand, gravel, asphalt, or other material as soon as possible
- When spreading aggregate, limit to the sealed surface and sweep up or vacuum excess aggregate once cured
- Mix road stabilization materials during periods of dry weather and seal as soon as possible
- Fill and compact the paving materials (soil, gravel and asphalt) in layers
- Fully seal road shoulders to prevent "edge break"
- Use water-based paints or thermoplastics for striping instead of solvent-based paints
- Do not use coal tar-based sealants for repairing pavement cracks
- Use portable drip trays under equipment to catch leaks and spills
- For any maintenance activities that would result in materials being sprayed away from the work site (such as blasting), prevent the dispersion of materials with the use of a skirt or other type of cover.

- For winter time operations, use barriers or other methods to capture or divert deicing materials from entering the storm drain system
- Reduce salt usage by using anti-icing agents such as beet juice and consider using acetate based deicers

Landscaping

In general, landscaping is managed by the individual facility managers at each installation. After a need for landscaping is documented, the facility manager may contract the work out or complete it internally.

The below Good Housekeeping Procedures should be followed:

- Store landscaping equipment in designated areas
- Use drip pans and/or inspect landscaping equipment for leaks daily
- Store all materials, chemicals, and fertilizers in designated areas, preferably indoors or within a covered area
- Conduct all fuel transfers only within designated areas outside drainage pathways, away from surface waters, and with appropriate containment or environmental equivalent
- Wash/clean all landscaping equipment at wash racks or approved designated areas
- Maintain and utilize appropriate spill cleanup equipment; i.e., spill kits
- Use dry cleanup methods
- Confine loading/unloading activities to a designated area outside drainage pathways and away from surface waters
- Load/unload indoors or in covered areas
- Dispose of the landscape waste (grass clippings, leaves, dead plants, etc.) in a proper manner
- Close/cover storm drains during maintenance activities
- Sweep or blow any grass clippings away from paved areas after mowing
- Employ erosion control measures when soils are exposed
- Place stockpiled materials away from storm drains
- Properly dispose of collected landscape materials (grass clippings, etc.)
- Do not use leaf blowers to direct waste into streets, storm drains, or ditches
- Employ devices to prevent irrigation after precipitation or if there is a break in the sprinkler head or water line
- Refer to the Nutrient Management Plans section of this document for additional information on fertilization recommendations to prevent excess nitrogen and phosphorus in stormwater runoff

Construction Activities

In general, construction activities (building demolition, new building construction, utility relocation, etc.) are completed by independent contractors at the installations. Training is provided to all contractors regarding the proper maintenance procedures to prevent the pollution of stormwater.

The below Good Housekeeping Procedures should be followed:

- Use common sense
- Use dry cleanup methods
- Situate maintenance, storage, and disposal areas as far away from rainfall and runoff areas as possible
- Cover materials when not in use and before rain events
- Use drip pans and/or inspect construction vehicles for leaks daily
- Utilize appropriate structures to control/minimize erosion and runoff; e.g., diversionary structures, traps, basins, conveyances, etc.
- Filter contaminated runoff using sediment control techniques such as a silt fence
- Keep equipment in good working order
- Create impervious berms around maintenance and wash areas
- Dispose of waste in the proper receptacle or area
- Ensure dumpster lids are closed and containers have watertight lids
- Store waste materials on pallets and not directly on the ground
- Dispose of waste material and wastewater properly and not into the storm drain system
- For sites that require dewatering, do not dispose of the waste water directly into the storm drain system (use filter bags and apply to grassy areas)

Storm Drain/Utility Line Maintenance

Since fine particles and debris (and associated pollutants) tend to accumulate along the curbs of roads, rain events typically wash these pollutants into the storm drain system. Although regular maintenance of the storm drain and other utility systems would be a good practice to improve water quality, prevent clogging, and prevent flooding, it is typically not economically feasible to do more than reactive maintenance in response to problems.

Typical methods for catch basin and inlet cleaning include manual cleaning, eductor cleaning, vacuum cleaning, and vacuum combination jet cleaning (e.g. Vaccon). The primary goal of the cleaning is to collect and separate out the sediment and debris from water so that the pollutants and the water can be disposed of properly (in the sanitary system, the storm drain system with pretreatment as needed, or in a grassy area to encourage infiltration into the ground).

Manual cleaning is commonly completed by either bailing out the sediment-laden water and then shoveling the sediment into a disposal truck, or by entering the catch basin and filling buckets with sediment and depositing the sediment in the disposal truck. Eductor cleaning removes the sediment-laden water from the catchment and separates the pollutants from the water with the use of a settling tank. Vacuum cleaning utilizes an air blower of a vacuum truck to collect the air-solid-liquid material from the catchment and separate them out by gravity separation and baffles. In some cases, the vacuum suction is not strong enough to extract materials from the storm inlets and a vacuum combination jet cleaning system is used. In this system, the vacuum uses hydraulic suction to collect the debris from the inlets or storm drains. Then a water jet is used to dislodge any remaining materials.

General Good Housekeeping Procedures for storm drain/utility maintenance/cleanout include:

- For storm drains and electrical manholes, decant any liquids containing sediments/debris to remove as much of the sediment as possible; the sediments should be disposed of in a landfill and the remaining water should be disposed of properly (either in the sanitary system, the storm drain system with pretreatment as needed or in a grassy area to encourage infiltration into the ground)
- For sanitary sewer lines and manholes, material may not be discharged to storm drains or grassy areas, it must be disposed of via the sanitary sewer or as a solid waste
- When testing fire protection system and fire hydrants or flushing water lines, care should be taken not to cause erosion and discharges. To accomplish this, discharges should be routed through a diffuser so that the flow can be directed away from erodible areas and storm drains. For areas that are being flushed on a routine/regular basis, a storm drain filter sock may be used as appropriate.
- Clean out the storm drains when the catch basin storage is one-third full
- Optional:
  - Track the amount of sediment and debris in different areas to allow the analysis of trends
  - Analyze the collected waste to assess the proper disposal method

Equipment Maintenance Procedures

This section provides good housekeeping procedures for vehicle maintenance and storage.

Vehicle Maintenance and Storage

Preventative maintenance and general repair services on automobiles, vans, trucks, forklifts, mobile refuelers, and emergency vehicles are performed at various maintenance facilities. Related activities may include fluid changes, mechanical repairs, parts cleaning and replacement, sanding, refinishing, painting, and vehicle and equipment storage. These facilities may also store used parts, such as batteries, belts, hoses, tires, and other materials. Additionally, used/waste liquid storage may be onsite, including petroleum/oil/lubricants (POLs), fuel, antifreeze, cleaners, and solvents.

Most vehicle maintenance activities occur indoors and therefore are usually not exposed to stormwater runoff. Spills may occur within these buildings during repair activities as a result of leaking, ruptured, and overturned containers, or leaking vehicles and associated equipment. Therefore, these facilities have spill response procedures and spill kits readily available.

The below Good Housekeeping Procedures should be followed:

- Store equipment awaiting maintenance in designated areas, preferably indoors or under the cover of an outdoor storage shed or tarp
- Store equipment indoors, where practicable
- Perform maintenance activities indoors, where practicable

- Conduct periodic inspections of stored equipment for leaks
- Utilize appropriate overflow protection; e.g., spill buckets, high-level alarms, ATGs, etc.
- Maintain and utilize appropriate spill cleanup equipment; i.e., spill kits
- Utilize dry cleanup methods
- Utilize drip pans
- Provide secondary containment for hazardous materials and POLs
- Maintain an organized inventory of materials used in the shop
- Store lubricants and hydraulic fluids indoors
- Keep flammable and hazardous materials in designated storage cabinets and lockers
- Drain all parts of fluids prior to disposal
- Prohibit wet cleanup practices that would result in the discharge of pollutants to the stormwater drainage system
- Employ emergency shut off valves as appropriate
- Treat and/or recycle the collected stormwater runoff where practicable
- Minimize the run-on/runoff of stormwater to the maintenance areas by disconnecting storm/roof drains
- Wash/clean vehicles and equipment only in designated areas/ wash racks
- Prohibit vehicle and equipment wash water from discharging to the storm sewer system
- Provide employee training on proper handling and storage of hydraulic fluids and lubricants through the use of the ECATTS online training program

Pesticide, Herbicide, and Fertilizer Procedures

This section provides good housekeeping procedures for pesticide, herbicide, and fertilizer application, storage, transport, and disposal. It also discusses turf and landscape nutrient management plans.

Application

Fertilizers, pesticides, and herbicides are applied routinely to various locations throughout the installations. Pest-control activities are performed by the appropriately licensed personnel from NAVFAC Mid-Atlantic Pest Control staff and appropriately licensed independent contractors. Typical pesticide application consists of fogging for mosquitoes using Vectorbac-G, as well as small, isolated use of other insecticides as needed. Fogging is performed several days per week throughout peak season during four to five weeks of summer. Herbicide is applied in various areas to control or eliminate unwanted plant growth. Various chemicals (e.g., Turflon®, glyphosate, Weedar 64®, etc.) are used as herbicides. Employees and contractors who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act.

The below Good Housekeeping Procedures should be followed:

- Apply in accordance with the manufacturer's instructions
- Do not spray pesticides/herbicides outdoors on windy or rainy days
- Take precautions keep the pesticide/herbicide/fertilizer away from the storm drain system and open waterways

Storage

In general, fertilizers, pesticides, and herbicides are stored indoors or under cover and are usually not exposed to stormwater runoff. Pesticides are mixed under cover at certain buildings at the installations.

The below Good Housekeeping Procedures should be followed:

- Store indoors or inside locked storage cabinets located under cover
- Station appropriately stocked spill kits nearby
- Maintain good condition of all storage containers
- Store pesticide/herbicide liquid within a berm

Transport

Accidents can happen even when transporting fertilizers, pesticides, or herbicides on a short trip. Improperly loaded containers can become damaged during transit and cause potential adverse impact to the environment as well as human health.

The below Good Housekeeping Techniques should be followed:

- Appropriately identify and label all containers
- Check the Material Safety Data Sheet (MSDS) for shipping and transport information
- Inspect all containers before loading for transport
- Handle the containers carefully, do not drop or toss them
- Remove anything in the cargo area that could damage or puncture the containers
- Secure all containers to prevent load shifts
- Keep an appropriately stocked spill kit in the vehicle at all times
- Drive safely

Disposal

If there is only a small excess of pesticide, herbicide, or fertilizer, the best way to dispose of it is to apply it to a specific site as designated by the label. If a larger amount remains, it should be disposed of through a household hazardous waste program. If the material is designated as hazardous under the Resource Conservation and Recovery Act (RCRA), then the individual transporting of the waste must be properly permitted and the waste must be properly manifested.

Nutrient Management Plans

Section II.B.6.c requires that turf and landscape nutrient management plans be developed by a certified turf and landscape nutrient management planner where nutrients are applied to a contiguous area greater than one acre. As of July 2015, NAVFAC Mid-Atlantic has developed four draft turf and landscape nutrient management plans:

1. Eagle Haven Golf Course, JEB Little Creek
2. The Hornet at Aeropines Golf Club, NAS Oceana
3. The Tomcat at Aeropines Golf Club, NAS Oceana
4. Sewell's Point Golf Course, NSA Hampton Roads

The purpose of these plans is to ensure the minimum movement of nitrogen and phosphorus from the specified area of application to surface and ground water, where they can potentially have a detrimental effect on water quality. These plans provide the guidelines for fertilization practices for the golf courses with the intent of eliminating/limiting the amount of fertilizer that is conveyed into the adjacent receiving waters.

Miscellaneous

The below addresses miscellaneous items (inspections, general spill and discharge response procedures, general dewatering procedures, training, and contractor requirements/oversight) which may apply to one or more of the activities described above.

Inspections

Inspections should be completed on a regular basis at sites with potential for stormwater pollution to ensure that the good housekeeping procedures are being followed. Refer to the Site Investigations and Inspections section of this document which was presented earlier for more detail.

General Spill and Discharge Response Procedures

In areas with high risk associated with spills such as large fuel tanks, NAVFAC Mid-Atlantic has developed detailed prevention and response procedures in SPCC Plans. The procedures listed below should apply to all other areas with less risk:

- Install barriers around catch basins and storm drain inlets to prevent wet or dry spilled material from entering the storm drain system (Note: Select the barrier type based on the pollutant with the highest probability of entering the system. For example, some barriers are best for preventing sediments from entering the system while others are better for oily materials.)

- Use rags or absorbent materials (such as kitty litter) to soak up small quantities of non-hazardous liquids then promptly and properly dispose of the rags and absorbent materials
- Use absorbents, gels, or foams to clean up larger quantities of non-hazardous materials
- Use brooms and/or shovels to clean up and properly dispose of dry materials and any equipment used to the clean up the spill as appropriate
- If water is used to assist in the cleanup of spills, it must be collected and disposed of properly; depending upon the material that is being cleaned up, the wash water should either be directed to treatment (the sanitary system or storm system with pretreatment) or to a grassy area to encourage infiltration
- For spills of hazardous material or of large quantities of non-hazardous material, contact the spill response coordinator at the respective installation; note that hazardous materials and materials used to clean up hazardous material have special disposal requirements

In addition and as previously mentioned in this document, NAVFAC Mid-Atlantic follows the "Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedures" for reporting and documenting spills.

General Dewatering

The general process of dewatering occurs with many daily operational procedures such as road and street maintenance; various construction activities; and equipment maintenance procedures. Typically, vacuum-type equipment is used to suction the water (which may contain sediments and/or other pollutants) into a storage tank or other container. Depending upon the expected pollutants in the water, it should be either directed to treatment (the sanitary or storm drain system with pretreatment) or to a grassy area to encourage infiltration.

Training

NAVFAC Mid-Atlantic uses the web-based ECATTS to train employees and independent contractors on several topics including pollution prevention and good housekeeping. ECATTS is accessible from any computer with internet access. It was developed to provide environmental compliance information and training to users who need an understanding of environmental laws, regulations, and policies to successfully complete their jobs. Also, the training modules are offered on a continuous basis and the number of people trained on each module is recorded.

Several ECATTS stormwater training modules have been developed, including:

- Principals of Erosion and Sedimentation
- Erosion and Sediment Control Practices
- Vegetative Stabilization
- Stormwater Runoff
- Stormwater BMPs

- Construction Site Pollution Prevention
- Sediment and Stormwater Plans

Good housekeeping and pollution prevention practices training emphasize procedures that are currently used to minimize stormwater pollution, and stress additional practices that may improve good housekeeping. The following items are emphasized during training:

- Non-permitted discharges into the stormwater drainage system are illegal and could potentially result in monetary penalties and criminal prosecution
- All spilled materials will be promptly cleaned up and disposed of properly
- Spill kits must be stationed near areas with high spill potentials
- A regular schedule for housekeeping activities will be developed and implemented that includes specific personnel assignments and responsibilities

Additionally, specialized training shall be provided to ensure the following:

- Employees and contractors who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act
- Employees and contractors obtain certifications required by the Virginia Erosion and Sediment Control Law and all associated regulations (to include those serving as plan reviewers, inspectors, program administrators, and construction site operators)
- Appropriate emergency response employees having spill response training, with a summary of the training and certification program included in the first annual MS4 report

To facilitate successful personnel training, problem areas will be identified and training sessions will be conducted to stimulate employee feedback. Currently, stormwater training is conducted as necessary depending upon the responsibilities of the personnel.

Contractor Requirements/Oversight

The Good Housekeeping Procedures outlined in this document should be incorporated into the legal contracts, as appropriate, to ensure that these procedures are followed. In addition, it is the responsibility of the manager of the various contractor's to ensure that the procedures are followed.

ATTACHMENT

CNRMA Stormwater Best Management Practices Poster

STORMWATER

BEST MANAGEMENT PRACTICES

CLEAN UP SPILLS WITH SORBENTS

CONDUCT INSPECTIONS

STORE CHEMICALS INDOORS & UNDER COVER

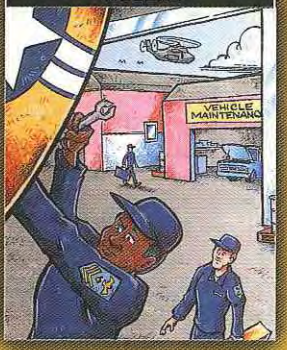
KEEP LIDS CLOSED

ASSURE PROPER VALVE OPERATION

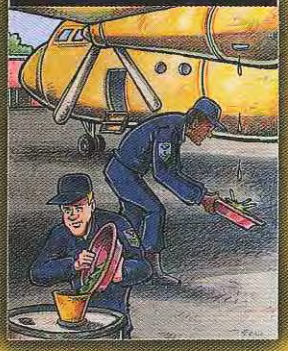
DRY SWEEP; DO NOT HOSE TO STORM DRAINS

STORE WASTES ON SPILL PALLETS

CONDUCT MAINTENANCE INDOORS



USE DRIP PANS



DO NOT OVERFILL TANKS OR DRUMS

LEADERSHIP · VISION · TEAMWORK · SERVICE

NAVY REGION · MID-ATLANTIC · COMMANDER

NLL Number: 0525LP1014132

Appendix H – Registration Statement and Supporting Attachments

DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION, MID-ATLANTIC
1510 GILBERT ST.
NORFOLK, VA 23511-2737

IN REPLY REFER TO:
5090
EV14/09/RE303
JUN 12 2013

Mr. J. Mason Harper
MS4 Stormwater Permitting
Department of Conservation and Recreation
203 Governor Street, Suite 206
Richmond, VA 23219-2094

Dear Mr. Harper:

SUBJECT: VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) MS4 PERMIT REGISTRATION STATEMENT

As requested per correspondence received June 5, 2013, enclosed is the Navy's revised registration statement for the uninterrupted continuation of regional permit coverage under the VSMP General Permit for Discharges from Small Municipal Separate Storm Sewer Systems.

If you have any questions or comments, please contact Mr. Phillip Winslow at (757) 341-0382 or phillip.winslow@navy.mil.

Sincerely,

KRISTEN C. BASS
Director, Water and
Wastewater Compliance
By direction of the Commander

Enclosure

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

VSMP GENERAL PERMIT REGISTRATION STATEMENT FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS [VAR04]

(Please Type or Print All Information)
(The applicable fee specified in Form DCR 199-145 must additionally be submitted to the address given in that form to obtain coverage)

1. **Regulated Small MS4**

Name: US Navy - Consolidated MS4s (Refer to Attachment 1 for installations)

Type: ☐ City ☐ County ☐ Incorporated Town ☐ Unincorporated Town ☐ College or University
☐ Local School Board ☒ Military Installation ☐ Transport System ☐ Federal or State Facility ☐ Other

Location (County or City): Refer to Attachment 1

2. **Regulated Small MS4 Operator**

Name: Department of the Navy, Commander, Navy Region, Mid-Atlantic

Address: 1510 Gilbert St.

City: Norfolk State: VA Zip: 23511

3. **Hydrologic Unit Code(s) as identified in the most recent version of Virginia's 6th Order National Watershed Boundary Dataset currently receiving discharges or that have potential to receive discharges from the regulated small MS4:**
Refer to Attachment 1

4. **Attach a description of the estimated drainage area, in acres, served by the regulated small MS4 discharging to any impaired receiving surface waters listed in the most recent Virginia 305(b)/303(d) Water Quality Assessment Integrated Report, and a description of the land use of each such drainage area.**

5. **Any TMDL waste loads allocated to the regulated small MS4 (this information may be found at http://www.deq.state.va.us/tmdl/develop.html):** Refer to Attachment 1

6. **The name(s) of any regulated physically interconnected MS4s to which the regulated small MS4 discharges.**
City of Virginia Beach, City of Norfolk, City of Portsmouth, Virginia Department of Transportation (VDOT)

7. **A copy of the MS4 Program Plan that includes:**

a. **A list of BMPs that the operator proposes to implement for each of the stormwater minimum control measures and their associated measurable goals pursuant to 4VAC50-60-1240, Section II B; that includes:**

i. **A list of the existing policies, ordinances, schedules, inspection forms, written procedures, and other documents necessary for BMP implementation; and**

ii. **The individual, department, division, or unit responsible for implementing the BMP;**

b. **The objective and expected results of each BMP in meeting the measurable goals of the stormwater minimum control measures;**

c. **The implementation schedule including any interim milestones for the implementation of a proposed new BMP; and**

d. The method that will be utilized to determine the effectiveness of each BMP and the program as a whole.

8. List all existing signed agreements between the operator and any applicable third parties where the operator has entered into an agreement in order to implement minimum control measures or portions of minimum control measures.

NONE

9. The name, address, telephone number and e-mail address of either the principal executive officer or ranking elected official as defined in 4VAC50-60-370.

Elizabeth Nashold, Environmental Program Manager (CNRMA related issues)
9742 Maryland Ave, Norfolk VA 23511
(757) 341-0360 elizabeth.nashold@navy.mil

10. The name, position title, address, telephone number and e-mail address of any duly authorized representative as defined in 4VAC50-60-370.

Sean Heaney, Director of Environmental Compliance, 9742 Maryland Ave, Norfolk, VA 23511
(757) 341-0370 sean.heaney@navy.mil and Kristen Bass, Director Water/Wastewater Compliance
9742 Maryland Ave, Norfolk VA 23511, (757) 341-0420 kristen.bass@navy.mil

11. Certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Print Name: Elizabeth Nashold Title: Environmental Program Manager

Signature: Elizabeth A Nashold Date: June 10th 2013

For Department of Conservation and Recreation Use Only

Accepted/Not Accepted by: _____ Date: _____

Basin _____ Stream Class _____ Section _____ Special Standards _____

Attachment 1: CNRMA Regional MS4 Facilities VSMP Data

Facility/ Activity Name *(#1 in Registration Statement)*	**Location** *(#1 in Registration Statement)*	**Name of Receiving Waters**	**Name of Impaired Receiving Waters** *(#4 in Registration Statement)*	**Hydrologic Unit Codes** *(#3 in Registration Statement)*	**TMDL WLA** *(#5 in Registration Statement)*	**Estimated Drainage Area to Impaired Waters (acres)** *(#4 in Registration Statement)*	**Impaired Waters Drainage Area Land Use Description** *(#4 in the Registration Statement)*
Naval Station Norfolk	Norfolk	Elizabeth River, Willoughby Bay, Mason's Creek, and Bousch Creek	Elizabeth River, Willoughby Bay	JL57	No	3620	Urban: 92% Forest: 3% Wetlands: 5%
Naval Support Activity, Hampton Roads (excluding NSA Northwest)	Norfolk	Elizabeth River	Elizabeth River	JL56, JL57	No	645	Urban: 99% Wetlands: 1%
Joint Expeditionary Base, Little Creek	Virginia Beach	Little Creek Cove, Desert Cove, Little Creek, Northwest Branch of Little Creek Chanel, and Little Creek Channel	Little Creek Cove, Desert Cove, Little Creek, Northwest Branch of Little Creek Chanel, Little Creek Channel	CB26	No	1078	Urban: 93% Beach and Dunes: 2% Forest: 3% Maintained Open: 1% Wetlands: 1%

Notes:

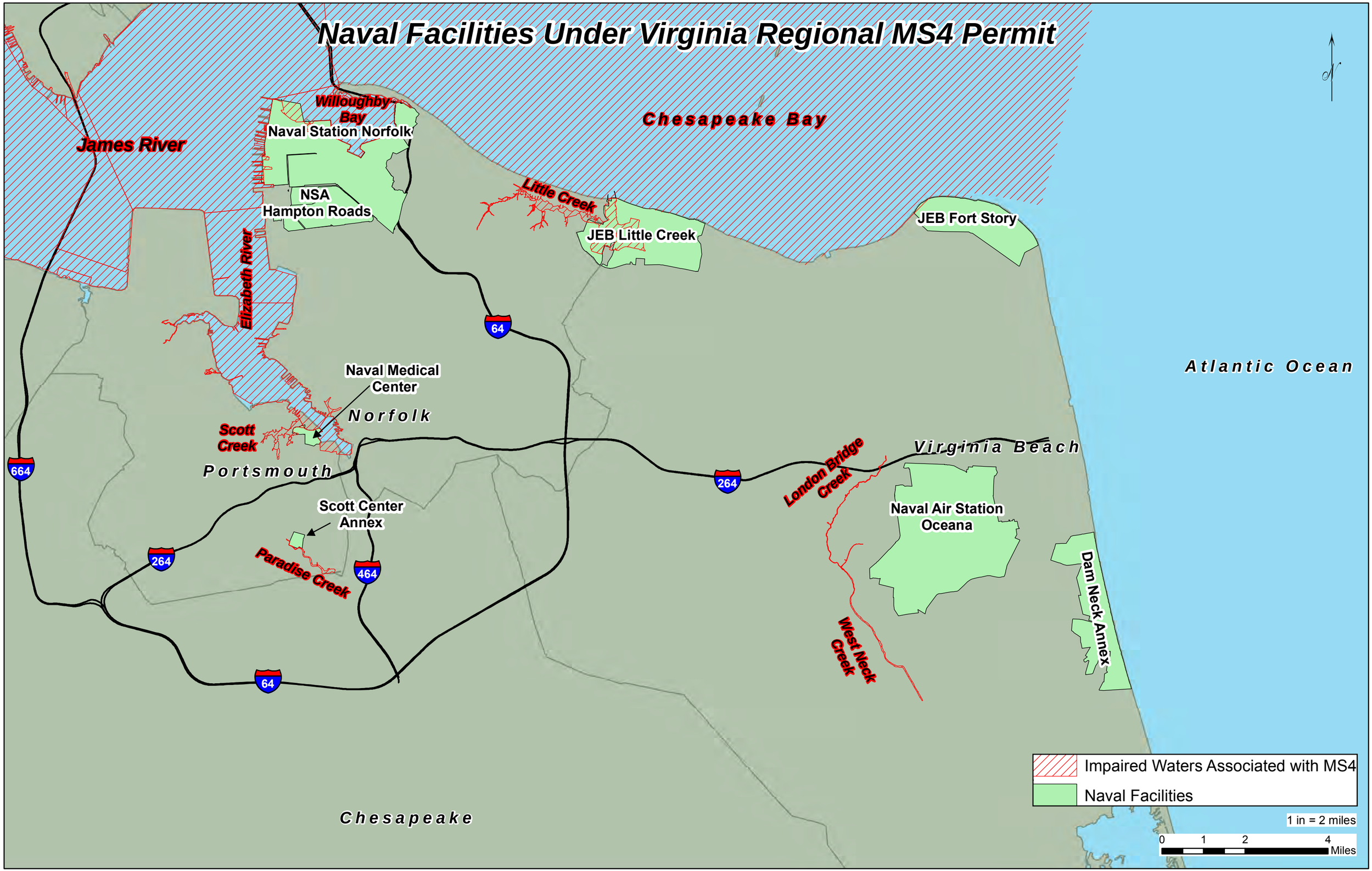
- Values were obtained from various sources including VDEQ's website, Google Maps, NAVFAC GIS, and National Land Cover Data 2006. Storm sewer shed data was used to estimate the drainage area to impaired waters.

Facility/ Activity Name *(#1 in Registration Statement)*	**Location** *(#1 in Registration Statement)*	**Name of Receiving Waters**	**Name of Impaired Receiving Waters** *(#4 in Registration Statement)*	**Hydrologic Unit Codes** *(#3 in Registration Statement)*	**TMDL WLA** *(#5 in Registration Statement)*	**Estimated Drainage Area to Impaired Waters (acres)** *(#4 in Registration Statement)*	**Impaired Waters Drainage Area Land Use Description** *(#4 in the Registration Statement)*
Joint Expeditionary Base, Fort Story	Virginia Beach	Chesapeake Bay	Chesapeake Bay	CB25, AS14, AS18, AO23	No	227	Urban: 96% Beach and Dunes: 2% Forest: 2%
Naval Air Station Oceana	Virginia Beach	West Neck Creek, London Bridge Creek, Wolfsnare Creek, Great Neck Creek, and Redwing Lake	London Bridge Creek, West Neck Creek	CB25, AS14, AS18	Yes (West Neck Creek)	3927	Urban: 68% Forest: 7% Maintained Open: 2% Agriculture: 6% Wetlands: 17%
Dam Neck Annex	Virginia Beach	Redwing Lake, Lake Tecumseh	None	AS18	No	N/A	N/A
Naval Medical Center Portsmouth	Portsmouth	Scott Creek, Elizabeth River	Elizabeth River, Scott Creek	JL56	Yes (Elizabeth River)	92	Urban: 97% Maintained Open: 2% Wetlands: 1%
Scott Center Annex	Portsmouth	Paradise Creek	Paradise Creek	JL53	Yes (Paradise Creek)	51	Urban: 95% Maintained Open: 5%

Notes:

- Values were obtained from various sources including VDEQ's website, Google Maps, NAVFAC GIS, and National Land Cover Data 2006. Storm sewer shed data was used to estimate the drainage area to impaired waters.

Naval Facilities Under Virginia Regional MS4 Permit



REGIONAL PHASE II STORMWATER PROGRAM PLAN

For

Virginia General Permit for Small Municipal Separate Storm Sewer Systems; Permit #VAR040114

Revised: August 2011

Submitted By:
Department of the Navy
Commander, Navy Region Mid-Atlantic
1510 Gilbert Street
Norfolk, Virginia 23511-2737

*** NOT INCLUDED IN THE FINAL 2013 MS4 PROGRAM PLAN TO AVOID CONFUSION. PLEASE REFER TO ARCHIVE FILES FOR A COPY OF THE AUGUST 2011 REPORT.

Appendix I – Training Plan

MS4 Training Plan

MCM #6d. Pollution Prevention/Good Housekeeping for Municipal Operations

Training Topic	Training Requirement	Applicable Employees	Measurable Goals	Metric	Responsible Party	Schedule
Illicit Discharges	Provide biennial training to applicable field personnel in the recognition and reporting of illicit discharges.	PWD Transportation, PWD Public Works, Utilities, Contractors	In PY4 identify applicable personnel and generate training materials. In PY 5 provide the training.	Retain copies of training records for 3 years (to include training date, number of employees and objective of training).	Phase II Water Program Media Manager	Semi-Annually
Road, Street and Parking Lot Maintenance	Provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed during road, street and parking lot maintenance.	PWD Transportation, PWD Public Works, PWD Utilities	In PY4 identify applicable personnel and generate training materials. In PY 5 provide the training.	Retain copies of training records for 3 years (to include training date, number of employees and objective of training).	Phase II Water Program Media Manager	Semi-Annually
Maintenance and Public Works Facilities	Provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are to be employed in and around maintenance and public works facilities.	PWD Transportation, PWD Public Works, PWD Utilities	In PY4 identify applicable personnel and generate training materials. In PY 5 provide the training.	Retain copies of training records for 3 years (to include training date, number of employees and objective of training)	Phase II Water Program Media Manager	Semi-Annually
Pesticide and Herbicide Application	Ensure employees (and contractors) who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act.	Pest Management Personnel	In PY4 identify applicable personnel and verify they have the proper training.	Obtain copies of training records.	Phase II Water Program Media Manager	Annually
Virginia Erosion and Sediment Control Law/Regs Certifications	Ensure employees (and contractors) serving as plan reviewers, inspectors, program administrators and construction site operators obtain the appropriate certifications as required under the VESCL and its attendant regulations.	Plan reviewers, inspectors (CH2MHILL), program administrators (MS4 Water Program Managers) and construction site operators.	In PY4 identify applicable personnel and verify they have the proper training.	Obtain copies of training records.	Phase II Water Program Media Manager	Annually
Virginia Erosion and Sediment Control Law/Regs Certifications	Ensure applicable employees obtain the appropriate certifications as required under the VESCL and its attendant regulations.	Capital Improvements Designers, program administrators (MS4 Water Program Managers) and construction site operators	In PY4 identify applicable personnel and verify they have the proper training.	Obtain copies of training records.	Phase II Water Program Media Manager	Annually
Recreational Facilities	Provide biennial training to applicable employees in good housekeeping and pollution prevention practices that are employed in and around recreational facilities.	MWR personnel	In PY4 identify applicable personnel and generate training materials. In PY 5 provide the training.	Retain copies of training records for 3 years (to include training date, number of employees and objective of training).	Phase II Water Program Media Manager	Semi-Annually

MS4 Training Plan

Training Topic	Training Requirement	Applicable Employees	Measurable Goals	Metric	Responsible Party	Schedule
Spill Response	The appropriate emergency response employees shall have training in spill responses. A summary of the training or certification program provided to emergency response employees shall be included in the annual report.	Emergency Response personnel	In PY4 identify applicable personnel and verify they have the proper training.	Retain a copy of the training or certification program provided to emergency response employees.	Phase II Water Program Media Manager	Annually
Stormwater training for contractors	The operator shall require that municipal contractors use appropriate control measures and procedures for stormwater discharges to the MS4 system.	Contractors	Training will be implemented in PY4-5.	Verify ECATTS training records. Record and report the number of people trained on each stormwater training module in ECATTS.	Phase II Water Program Media Manager	Annually

Appendix J – TMDL Action Plans (Chesapeake Bay, Naval Air Station Oceana, Naval Support Activity Hampton Roads Portsmouth Annex and Scott Center Annex

Revised Final January 2016

Chesapeake Bay
TMDL Action Plan

Hampton Roads Installations
Contract No: N62470-10-D-3000: WE21

Prepared for:
NAVFAC Mid-Atlantic
Water Compliance Section
Norfolk, VA 23511

NAVFAC

Prepared by:
Michael Baker Jr., Inc.
A Michael Baker International Company
3601 Eisenhower Avenue
Alexandria, VA 22304

Michael Baker
INTERNATIONAL

Chesapeake Bay TMDL Action Plan for Hampton Roads Installations

Contract No. N62470-10-D-3000: WE21

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LIST OF ACRONYMS

Baker	Michael Baker International
BMP	Best Management Practice
CBP	Chesapeake Bay Program
CNRMA	Commander, Navy Region Mid-Atlantic
CWA	Clean Water Act
DEQ	Department of Environmental Quality (Virginia)
DoD	Department of Defense
DON	Department of the Navy
EDB	Extended Detention Basin
EISA	Energy Independence and Security Act
EOS	Edge of Stream
EPA	Environmental Protection Agency (United States)
GIS	Geographic Information Systems
HUC	Hydrologic Unit Code
JEB	Joint Expeditionary Base, Fort Story
LID	Low Impact Development
MCON	Military Construction
MIDLANT	Mid-Atlantic
MS4	Municipal Separate Storm Sewer Systems
MWR	Morale, Welfare, and Recreation
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NPDES	National Pollutant Discharge Elimination System
NSA	Naval Support Activity
NSAP	Naval Support Activity Hampton Roads Portsmouth Annex
NSN	Naval Station Norfolk
OA	Opportunity Assessment
POC	Pollutants of Concern

SOP	Standard Operating Procedure
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UFC	Unified Facilities Criteria
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WIP	Watershed Implementation Plan
WLA	Waste Load Allocation

Executive Summary

This Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan presents Commander, Navy Region Mid-Atlantic's (CNRMA's) plan to meet the requirements found in Section I.C.a of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems. General Permit Number VAR040114 issued on 1 July 2013 is a consolidated or regional five-year permit that encompasses eight installations in the Hampton Roads, Virginia area. The installations include:

- Naval Station Norfolk (excluding Craney Island)
- Naval Support Activity (NSA) Hampton Roads (excluding NSA Northwest)
- Joint Expeditionary Base (JEB) Little Creek
- JEB Fort Story
- Naval Air Station (NAS) Oceana
- NAS Oceana Dam Neck Annex (Dam Neck Annex)
- NSA Hampton Roads Portsmouth Annex (Portsmouth Annex)
- Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex)

The General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) outlines a phased approach to addressing the Chesapeake Bay TMDL. Each permittee is responsible for reducing pollutant loads from their regulated MS4 areas. A reduction of five percent is due by the end of the first permit cycle (June 30, 2018); an additional 35 percent reduction by the end of the second permit cycle (June 30, 2023); and the final 60 percent reduction by the end of the third permit cycle (June 30, 2028).

The calculations show that the Best Management Practices (BMPs) installed between January 1, 2006, and June 30, 2014, provide pollutant reductions for the pollutants of concern (POCs) that go beyond the required reductions for the first permit cycle (218.8 lbs/yr for TN, 37.7 lbs/yr for TP, and 25,891 lbs/yr for TSS). Therefore, no additional BMPs are required to be installed before the end of the first permit cycle (June 30, 2018).

This plan also presents a preliminary strategy for implementation of additional BMPs to address pollutant load reductions required in the second permit cycle (July 2018 to July 2023). This strategy is based on current data and approaches and are subject to change if new and/or modified information becomes available. During the second permit cycle, the Hampton Roads installations plan to install structural BMPs at various locations. If every planned BMP is implemented in the second permit cycle, the corresponding POC reductions are expected to fall short of the second permit cycle required reductions. Therefore, planning and investigation into additional BMP installation are needed to meet the second permit cycle reductions.

This Chesapeake Bay TMDL Action Plan was developed using the Chesapeake Bay TMDL Special Condition Guidance (Guidance) issued by Virginia DEQ on May 18, 2015.

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1 Introduction

This Chesapeake Bay TMDL Action Plan presents CNRMA's plan to meet the requirements found in Section I.C.a of the VSMP General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). General Permit Number VAR040114 is a consolidated or regional five-year permit that encompasses eight installations that are located within urbanized areas as defined by the 2000 Census mapping and are therefore, deemed regulated MS4s:

- Naval Station Norfolk (excluding Craney Island)
- NSA Hampton Roads (excluding NSA Northwest)
- JEB Little Creek
- JEB Fort Story
- NAS Oceana
- Dam Neck Annex
- Portsmouth Annex
- Scott Center Annex

The current MS4 permit was issued on 1 July 2013. The permit requires development and submittal of a Chesapeake Bay TMDL Action Plan to the Virginia Department of Environmental Quality (DEQ) no later than 24 months after permit coverage is initiated. The Action Plan must be submitted with the Annual Report for the reporting period of July 1, 2014, through June 30, 2015, to DEQ by October 1, 2015.

1.1 Background

In December 1999, the National Pollutant Discharge Elimination System (NPDES) program was expanded to include provisions for discharges from small MS4s. The second phase of the regulations, Stormwater Phase II (64 FR 68722), extended the requirements for NPDES permits to stormwater discharges from:

1) "Small" MS4s serving populations of less than 100,000 people in an "urbanized" area; and
2) Construction activities disturbing between one and five acres of land.

The regulations allowed the Environmental Protection Agency (EPA) to designate the States as Stormwater Permitting Authorities, allowing each authorized State to administer and enforce stormwater requirements consistent with the NPDES program. As a result, stormwater discharges from Phase I and Phase II MS4s are authorized under individual VSMP permits. Under these permits, the MS4 owner/operator must implement a collective series of programs to reduce pollutant discharges from the given storm sewer system to the maximum extent practicable in a manner that protects the water quality of nearby streams, rivers, wetlands, and bays.

1.2 Chesapeake Bay TMDL

The EPA developed the Bay TMDL, or "pollution diet," in December 2010 as an initial step in restoring clean and healthy water in the Chesapeake Bay (Bay) and surrounding streams, lakes, and rivers. The TMDL for the 64,000 square mile watershed was the largest ever developed by EPA and includes land from six states (New York, Pennsylvania, Maryland, Delaware, Virginia, and West Virginia) and the District of Columbia. The TMDL identifies the maximum levels of nitrogen, phosphorus, and sediment that can be discharged into the Bay while still meeting water quality standards. These values represent an overall watershed reduction of 25 percent for nitrogen, 24 percent for phosphorus, and 20 percent for sediment. The TMDL is designed to ensure that the means and methods to restore the Bay are in place by the year 2025, and 60 percent of the means and measures are in place by 2017.

Watershed Implementation Plans (WIPs) outlining the schedule and methods for meeting the pollution allocations have been developed by the six States and the District of Columbia. As of the date of this report, both the Phase I and Phase II WIPs have been developed for all Bay jurisdictions. The Phase II WIPs were prepared after the EPA provided detailed expectations and coordinated extensively with the jurisdictions. See Section 5 of this report for specific information about the Virginia WIP.

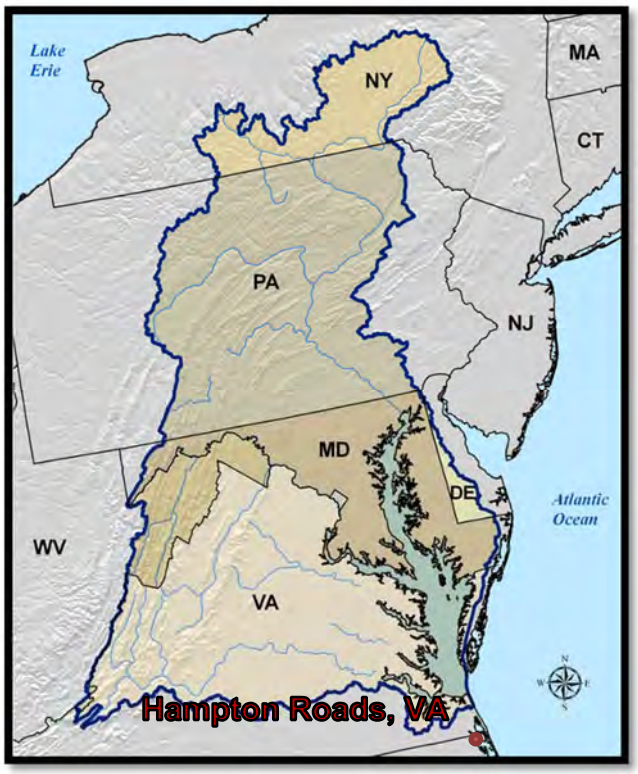

Figure 1-1 Chesapeake Bay Watershed
(Source: Chesapeake Bay Watershed Program)

This Chesapeake Bay TMDL Action Plan was developed using the Chesapeake Bay TMDL Special Condition Guidance (Guidance) issued by Virginia DEQ on May 18, 2015.

1.3 Installation Descriptions

The Navy's Regional MS4 Permit includes eight installations in the Hampton Roads region of Virginia. Brief descriptions of the eight individual installations are provided below. Refer to Figure 1-2 for a map illustrating the installation locations.

Joint Expeditionary Base Fort Story

JEB Fort Story is located in the northeast corner of the City of Virginia Beach, Virginia. JEB Fort Story occupies 1,550 acres of sandy trails, cypress swamps, grassy dunes, and soft and hard sand beaches. The receiving waters for JEB Fort Story are the Chesapeake Bay, Broad Bay, and Long Creek. JEB Fort Story is part of JEB Little Creek-Fort Story, which was established on October 1, 2009, the first Joint Base in Hampton Roads. The joint base is bounded to the north by the Chesapeake Bay, to the east by the Atlantic Ocean, and to the south and west by the City of Virginia Beach, Virginia.

The mission of JEB Fort Story is to provide exceptional installation customer service to ensure maximum combat readiness. JEB Fort Story is the prime location and training environment for Army amphibious operations and joint logistics-over-the-shore training events. Notably, the 11th Transportation Battalion is located at JEB Fort Story. The 11th Battalion houses a number of vehicle and equipment maintenance facilities.

Joint Expeditionary Base Little Creek

JEB Little Creek is located between Norfolk and the City of Virginia Beach, Virginia, and borders the Chesapeake Bay. The receiving waters for JEB Little Creek are the Little Creek Channel, Desert Cove, Little Creek Cove, and Lake Bradford. JEB Little Creek is part of JEB Little Creek-Fort Story, which occupies 2,363 acres of sandy trails, grassy dunes, and soft and hard sand beaches. JEB Little Creek-Fort Story was established on October 1, 2009, the first Joint Base in Hampton Roads. The joint base is bounded to the north by the Chesapeake Bay and to the south, east, and west by the City of Virginia Beach, Virginia.

The mission of JEB Little Creek-Fort Story is to provide exceptional installation customer service to ensure maximum combat readiness. JEB Little Creek is comprised of the former Naval Amphibious Base Little Creek and the Army Post of Fort Story. Little Creek began as a dynamic training ground for World War II amphibious forces.

Naval Air Station Oceana

NAS Oceana is located in the eastern section of the City of Virginia Beach, Virginia. The installation occupies approximately 5,412 acres near the Atlantic Ocean and is the U.S. Navy East Coast Master Jet Base. The receiving waters for NAS Oceana are West Neck Creek, Wolfsnare Creek, Great Neck Cree, and London Bridge Creek. The installation is bounded on all sides by the City of Virginia Beach, Virginia.

The primary mission of NAS Oceana is as a Shore-Based Readiness Integrator, providing the facilities, equipment, and personnel to support shore-based readiness, total force readiness, and maintain operational access of Oceana-based forces.

NAS Oceana Dam Neck Annex

Dam Neck Annex is located in the eastern section of the City of Virginia Beach, Virginia and borders the Atlantic coast, 5 miles south of downtown Virginia Beach. Dam Neck has 3.2 miles of some of the most beautiful beach front in Virginia and covers over 1,100 acres of

highlands, marshes, coastal beaches, and sand dunes. The receiving waters for Dam Neck Annex are the Atlantic Ocean, Redwing Lake, and Brinson Inlet Lake. The installation is bounded to the east by the Atlantic Ocean and to the north, south, and west by the City of Virginia Beach.

The mission of Dam Neck Annex is to support the Navy's Atlantic and Pacific Fleet Force of Strike-Fighter Aircraft and Joint/Inter-Agency Operations. Dam Neck Annex was established in 1941 as an anti-aircraft gunnery range to train fleet personnel in the operation of 20 millimeter (mm) and 40 mm anti-aircraft guns. Today, Dam Neck Annex houses 20 tenant commands primarily focused on Navy fleet training and support activities.

Naval Station Norfolk

Naval Station Norfolk is located in the northwest corner of the City of Norfolk, Virginia and is the largest naval complex in the world, encompassing 4,300 acres in the Sewells Point area. The receiving waters for stormwater discharge at Naval Station Norfolk are the Lafayette River, Elizabeth River, James River, Mason Creek, Bousch Creek and Willoughby Bay. The site is bounded on the south and east by the City of Norfolk, on the west by the Elizabeth and James Rivers, and on the north by Willoughby Bay.

The mission of Naval Station Norfolk is to provide support and readiness for the U.S. Atlantic Fleet through activities such as berthing, logistical support, and intermediate maintenance and fleet repair. Naval Station Norfolk includes 14 piers for berthing of ships and submarines; six finger piers; a ship deperming facility; two golf courses; and a marina. The Naval Air Station operates facilities that provide support to aviation activities conducted by the U.S. Navy and the Air Mobility Command of the U.S. Air Force. The Naval Air Station includes an airfield and terminal.

Naval Support Activity Hampton Roads

NSA Hampton Roads, located in the City of Norfolk, Virginia, has the largest concentration of fleet headquarters administrative and communication facilities outside of Washington, D.C. The receiving waters for NSA Hampton Roads are Mason Creek, the Elizabeth River, and Bousch Creek. NSA Hampton Roads is bounded to the north by Naval Station Norfolk, to the west by the Elizabeth River, and to the south and east by the City of Norfolk.

The mission of NSA Hampton Roads is to provide consistent, operationally ready, and secure shore installation support services that allow tenant activities to dedicate their resources to warfighting, forward operations, and combat readiness. The installation includes the following tenant commands: U.S. Fleet Forces Command, Joint Staff Hampton Roads, U.S. Marine Corps Forces Command, Naval Submarine Forces, Atlantic, and Naval Reserve Forces Command.

NSA Hampton Roads Portsmouth Annex

Portsmouth Annex is located in downtown Portsmouth, Virginia and borders the Elizabeth River to the east. The facility encompasses 116 acres and includes the oldest continuously running hospital in the Navy medical system, which began operations in 1830. The receiving

waters to NSA Hampton Roads Portsmouth Annex are the Elizabeth River and Scott Creek. The installation is bounded to the north and east by the Elizabeth River and to the south and west by Portsmouth, Virginia.

This facility contains 26 buildings and the main campus is home to 5,000 men and women. The medical center employs approximately 7,000 doctors, nurses, and support staff and is open 24 hours a day. The staff operates a variety of medical clinics, an emergency room, numerous laboratories, and several research and training facilities. Portsmouth Annex provides medical care to military personnel, retirees, and family members. In addition to two patient care buildings, the facility includes a steam plant, a child development center, several recreation centers, maintenance shops, barracks, offices, and a fire station.

Norfolk Naval Shipyard Scott Center Annex

The Scott Center Annex is located in the City of Portsmouth, Virginia in the southeastern corner of Virginia. The facility is approximately 60 acres in size bordering Paradise Creek (filtering into the Elizabeth River) to the south. The installation is bounded on all sides by the City of Portsmouth, Virginia. This facility contains an auto hobby shop; a bowling alley; a commissary; an exchange; a carwash; morale, welfare, and recreation (MWR) offices and outdoor activities rental; a swimming pool; and a closed landfill. A regional medical prescription refill center is also located on the premises.

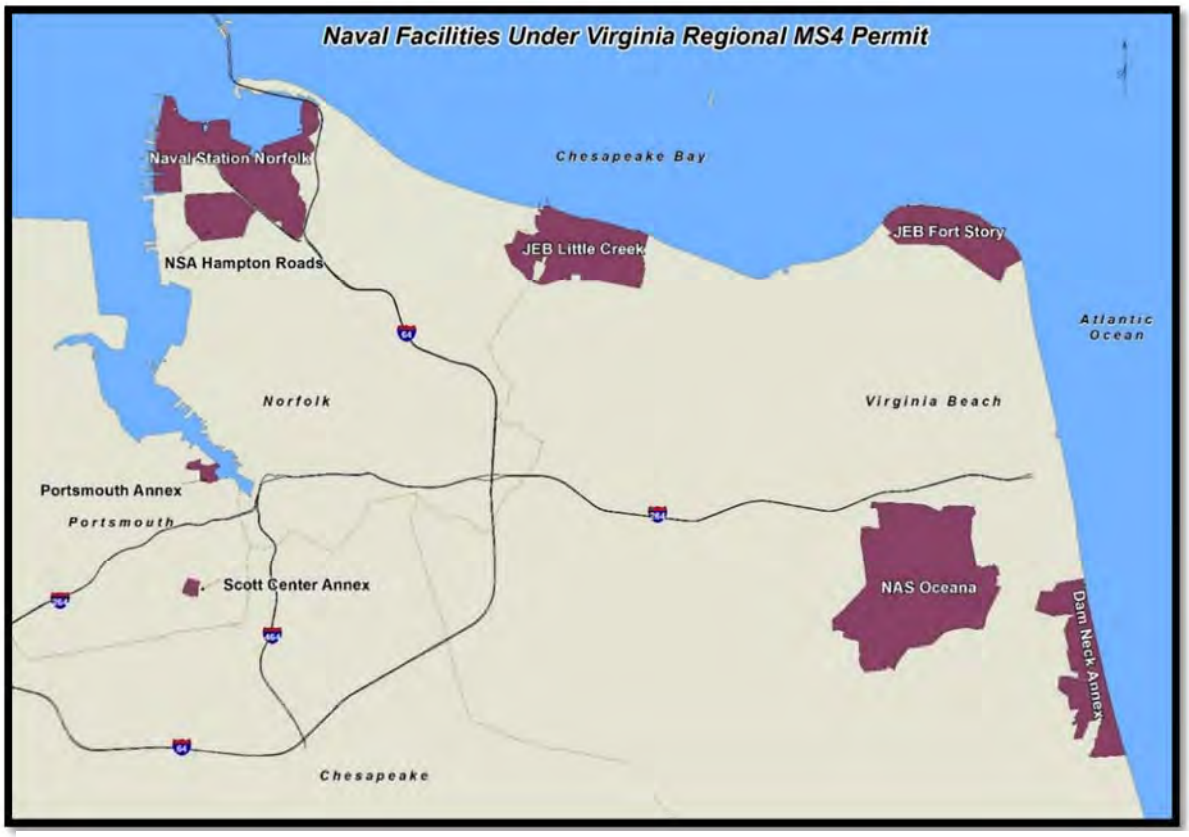

Figure 1-2 Naval Facilities Under Virginia Regional MS4 Permit

1.4 Authorization, Scope, and Purpose

The EPA is leading a major initiative to establish and oversee achievement of a strict "pollution diet" to restore the Bay and its network of local rivers, streams, and creeks. Despite significant and very costly efforts, the Bay fails to comply with the water quality standards established by the Clean Water Act (CWA). Because of this, President Obama issued Executive Order (EO) 13508, *Chesapeake Bay Protection and Restoration*, to intensify Bay cleanup efforts and improve CWA compliance. In addition, the EPA developed the Bay TMDL for three POCs as the first major step in restoring the Bay. The POCs are total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS).

Of the federally owned land within the Chesapeake Bay watershed, the Department of Defense (DoD) is the second largest land owner and is significantly affected by the EO. In response to the requirements of the EO, the Navy conducted stormwater BMP opportunity assessments of all of its installations in the Bay watershed to support the generation of a Chesapeake Bay Action Plan. Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT) retained Michael Baker Jr., Inc. (Baker) under Contract No. N62470-10-D-3000, WE21 to provide engineering services to prepare a Chesapeake Bay TMDL Action Plan for the Hampton Roads installations.

The NAVFAC MIDLANT's MS4 permit requires that the MS4 operator develop and submit to Virginia DEQ for review and acceptance an approvable Chesapeake Bay TMDL Action Plan. The TMDL Action Plan is to be developed and implemented for all regulated areas that drain to receiving waters flowing to the Bay.

The purpose of this TMDL Action Plan Report is to outline NAVFAC MIDLANT's plan to address required pollutant reductions as required by the MS4 permit. The Plan presents NAVFAC MIDLANT's tentative schedule to implement BMPs to reduce nitrogen, phosphorus, and sediment associated with existing stormwater discharges from the Hampton Roads MS4.

1.5 Report Organization

The TMDL Action Plan is organized into 11 primary sections including:

- **Section 1** – Introduction (including background information; installation descriptions; authorization, scope, and purpose; and report organization)
- **Section 2** – Current Program (overview of the MS4 Program including regulated areas)
- **Section 3** – Existing and New/Modified Legal Authority (existing and new/modified legal authority for implementing the MS4 Program and addressing the Bay TMDL)
- **Section 4** – Discharges from New Sources (means and methods to address discharges from areas that are developed or redeveloped on or after July 1, 2009)

- **Section 5** – Existing Source Loads and Required Reductions (estimation of the existing annual pollutant loads discharged as of June 30, 2009, and the required POC reductions)
- **Section 6** – Meeting the Required Reductions (means and methods to meet the required reductions, including a brief discussion regarding the next permit cycle)
- **Section 7** – New Sources and Grandfathered Projects (means and methods to offset increased loads from new sources initiating construction between July 1, 2009, and June 30, 2014, and grandfathered projects that begin construction after July 1, 2014)
- **Section 8** – Cost of Implementation (estimate of the expected cost to implement the necessary reductions)
- **Section 9** – Public Comments on Draft Action Plan
- **Section 10** – Reporting and Second Permit Cycle (discusses the annual reports and the pollutant loads for the next permit cycle)
- **Section 11** – References (providing a list of references utilized in development of this plan).

The report also includes the following Appendices:

- **Appendix A** – Existing Pollutant Source Loads and Total Pollutant of Concern Reductions Required
- **Appendix B** – Historical (Existing) BMP List
- **Appendix C** –Existing BMP Calculations, Aggregate Accounting Method Calculations, and Pollutant of Concern Offset Calculations

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2 Current Program

This section addresses Special Condition 1 as found in the permit by describing CNRMA's MS4 program and the characteristics of the Hampton Road's Regulated MS4 Areas. The legal authorities are addressed in Section 3 of this report.

(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;

CNRMA is one of the few permitted MS4s in Virginia that also has industrial stormwater permits. The industrial permit has numerous additional regulatory requirements regarding stormwater pollution prevention including the development of industrial stormwater pollution prevention plans and completion of annual site compliance evaluations. The below MS4 installations are also covered by an individual or general industrial stormwater Virginia Pollutant Discharge Elimination System (VPDES) permit:

- JEB Fort Story
- JEB Little Creek
- NAS Oceana
- Dam Neck Annex
- Naval Station Norfolk
- NSA Hampton Roads

2.1 MS4 Program Plan

As a requirement in the MS4 permit, CNRMA is required to develop and implement an MS4 Program Plan for the eight installations. The current MS4 Program Plan was updated in July 2013 and presents CNRMA's plan to meet the requirements of its MS4 permit. The plan addresses the six Minimum Control Measures and discusses the requirements regarding the Bay and other TMDLs. One of the components of the MS4 Program Plan is to develop and implement this Chesapeake Bay TMDL Action Plan.

The MS4 Program Plan also discusses other local TMDLs and their corresponding Action Plans. In addition to this Chesapeake Bay TMDL Action Plan, CNRMA is also responsible for developing Action Plans for other water quality impaired waters including West Neck Creek (Upper) and London Bridge Creek at Naval Air Station Oceana, Paradise Creek at Scott Center Annex, and the Elizabeth River main stem (Upper) at NSA Hampton Roads Portsmouth Annex.

2.2 MS4 Regulated Areas and Impervious Areas

For the purposes of this Action Plan, the MS4 regulated area refers to the lands that were used to calculate the pollutant loadings as required by the permit. As a result, the MS4 regulated areas exclude forested areas, wetlands, and open waters.

To determine the MS4 regulated area, the following geographic information systems (GIS) data were used:

- Installation boundary
- Topographic contour data
- Storm drain system including open ditches
- Aerial photography
- Drainage areas for the storm drain system
- Wetlands
- Open water

This information was obtained from NAVFAC MIDLANT's GIS Coordinator who gathered the data from the US Navy GeoReadiness Center. The following steps were completed to delineate the MS4 regulated areas based on DEQ's Guidance:

1. Imported the necessary files as identified above.
2. Identified areas where the runoff would sheet flow to adjacent waters and remove these areas from the MS4 regulated area.
3. Identified areas that are considered forested in accordance with the area (at least 30 meters (m) by 30 m) and density specifications in the Guidance. The measure tool in ArcMap was used to determine the length and width of forested areas. In addition, the tree density was estimated using aerial photographs and engineering judgement. Forested areas that met the Guidance criteria were removed from the MS4 regulated area.
4. Removed wetland areas from the MS4 regulated area. The wetlands that were delineated by the U.S. Army Corps of Engineers were used, when available, otherwise Navy delineated wetlands were used.
5. Removed open water areas from the MS4 regulated area.
6. Removed any agricultural lands from the MS4 regulated area.
7. Incorporated any lands into the MS4 regulated area that had runoff that entered the installation boundary and corresponding MS4 through sheet flow.

DEQ's Guidance also allows for permittees to remove lands regulated under any General VPDES permit that addresses stormwater or under an individual VPDES permit for industrial

stormwater discharges. Although several installations do have either general or individual permits for industrial stormwater discharges, CNRMA has chosen to leave these industrial regulated areas within the MS4 regulated boundary at this time. This decision may be revisited in the next permit cycle.

Table 2-1 provides the total acres of MS4 regulated area per installation. Figures 2-1 through 2-7 present the installation boundary as well as the MS4 regulated boundary for each permitted installation.

Impervious areas within the MS4 regulated area were estimated for each installation to correspond with conditions on July 1, 2009, and June 30, 2014. Impervious area GIS files were obtained from NAVFAC MIDLANT's GIS Coordinator for each installation at dates closest to July 1, 2009 and June 30, 2014. Through GIS processing, the impervious area GIS files were clipped by the MS4 regulated area to obtain the impervious areas within the regulated area. Table 2-1 provides the approximate acres of impervious area within the MS4 regulated area in July 1, 2009, and June 30, 2014. Figures 2-1 through 2-7 present the MS4 Regulated Areas for each installation. Note that Dam Neck Annex is not included in Table 2-1 or the figures because it does not drain to the Bay.

Table 2-1 Regulated Areas and Impervious Regulated Areas

INSTALLATION	MS4 REGULATED AREA (AC)*	JUNE 2014 IMPERVIOUS REGULATED AREA (AC)	PERCENT IMPERVIOUS
JEB Fort Story	281.1	139.3	50%
JEB Little Creek	1,177.5	568.8	48%
NAS Oceana	1,666.6	306.7	18%
Naval Station Norfolk	2,481.4	1,456.9	59%
NSA Hampton Roads	747.4	299.9	40%
Portsmouth Annex	90.2	51.4	57%
Scott Center Annex	52.8	30.6	58%
TOTALS	**6,497.1**	**2,853.6**	

*The regulated areas do not include land exclusions allowed by DEQ's Guidance (forested lands, agricultural lands, wetlands, open waters, etc.).

2.3 MS4 System, Outfalls, and Receiving Waters

Discussions of the outfalls and the receiving waters of the eight regulated installations covered under the regional MS4 permit are provided below.

JEB Fort Story

JEB Fort Story has several small drainage systems throughout the facility. The storm sewer systems service most of the developed areas and storm runoff is collected by curb and drop inlets and is conveyed to the outfalls though piped and open channel systems. The majority of the stormwater drains to the north and discharges directly to the Bay through five outfalls. The remaining systems either drain off the south side of the facility into an area of woody wetlands or infiltrates into the sandy soils and do not discharge to surface waters. The wetlands drain to Broad Bay, which flows out to Long Creek and into the Bay.

JEB Little Creek

The storm sewer system at JEB Little Creek is defined by several large systems that drain to various water bodies surrounding the facility. The runoff from the western part of the facility is collected by curb and drop inlets and is conveyed by underground pipes then discharged to Little Creek Channel, which discharges to the Bay. The runoff from the central area of the facility is collected by curb and drop inlets and is conveyed by a mix of underground pipes and open channels that discharge to Desert and Little Creek Cove, both of which flow into Little Creek Channel. The eastern part of the facility contains mostly residential houses and the storm runoff is collected by curb and drop inlets and discharged to either Lake Bradford or a large drainage ditch. Lake Bradford drains into the large drainage ditch which flows to the west and eventually discharges to Little Creek Cove.

NAS Oceana

According to the 2010 urbanized area delineated by the US Census Bureau, the majority of the MS4 area that drains to the Bay is not considered urbanized (see Figure 2-3). Due to the large amount of contributing impervious area that the runway and flight line provide, all of what is considered non-urbanized area but still drains to the Bay was included in this TMDL Action Plan. Approximately half of the installation drains to the Bay because the developed area south of the flight line drains to West Neck Creek, which does not drain to the Bay. The storm sewer that drains to the Bay services the runway area. The runoff is collected through drop inlets and is then conveyed through underground pipes that eventually daylight and discharges to the north and west. The north runway runoff then discharges to Wolfsnare Creek and runoff that discharges to the west enters London Bridge Creek. Both Wolfsnare and London Bridge Creek flow into the Lynnhaven River, which discharges into the Bay. A small area in the northeastern corner of the facility drains to Great Neck Creek through open channels. Great Neck Creek flows into Linkhorn Bay, which flows into Broad Bay, which then discharges to Long Creek and finally the Bay.

Dam Neck Annex

All outfalls at Dam Neck Annex drain directly to the Atlantic Ocean and not the Bay. Therefore, the receiving waters will not be discussed in detail because Dam Neck Annex is not subject to the requirements under the Chesapeake Bay TMDL Special Condition.

Naval Station Norfolk

Naval Station Norfolk has a large storm sewer system made of curb and drop inlets and the runoff is conveyed by both underground pipes and open channels. The runoff discharges to several water bodies surrounding the facility. The eastern section of the facility is mostly pier and pier support buildings whose runoff is conveyed by underground pipes to the east and discharged to the Elizabeth River. The north central area includes administrative buildings, helipad areas, and the north section of the runway. The runoff from these areas drains to the north and discharges into Willoughby Bay. The southeast corner of the facility includes the southern half of the runway and wooded area and its runoff is discharged to Mason Creek, which flows back through the storm sewer system to the north and discharges into Willoughby Bay. Willoughby Bay and the Elizabeth River both flow into the Hampton Roads channel and into the Bay.

NSA Hampton Roads

NSA Hampton Roads consists of three facilities: the main NSA Hampton Roads area east of Hampton Boulevard; the South Depot Annex (SDA) area west of Hampton Boulevard, and the Fire Fighting School which is west of the SDA area. The SDA and the Fire Fighting School areas both drain to the west and into the Elizabeth River. Most of the main NSA Hampton Roads area drains north and discharges to Bousch Creek and wetlands that flow into the Naval Station Norfolk system and into Willoughby Bay. The golf course area in the southeast corner drains east into the Naval Station Norfolk system that discharges into Mason Creek and then Willoughby Bay.

NSA Hampton Roads Portsmouth Annex

Portsmouth Annex consists of a large hospital in the central part of the facility, some support buildings to the west and a large park to the east. The drainage system is mainly curb and drop inlets with underground conveyance. There are several outfalls along the perimeter of the facility that discharge to Scott Creek and the Elizabeth River. The helipad and surrounding open space drain to the west into Scott Creek. The remainder of the facility discharges to the Elizabeth River. Scott Creek flows into the Elizabeth River, which flows north and into the Bay.

Scott Center Annex

The storm sewer system for Scott Center Annex has a centralized network of curb and drop inlets and the runoff is conveyed generally south by underground pipes. The storm sewer system on the western third of the facility drains to the south and discharges into a wetland that joins with Paradise Creek. A small portion of the facility north of the old commissary drains to the north and into a concrete channel that flows to the east and out of the installation. The remaining approximately eastern two-thirds of the facility drains to the south and into Paradise Creek. Paradise Creek flows into the Elizabeth River that eventually discharges to the Bay.

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Figure 2-1
JEB Fort Story
Regulated MS4 Boundary
Virginia Beach, Virginia

N

Legend

- Storm Sewer
- MS4 Regulated Areas
- Installation Boundary

Michael Baker INTERNATIONAL

1,500 750 0 1,500 Feet

1 inch = 1,500 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21

Figure 2-2
JEB Little Creek
Regulated MS4 Boundary
Virginia Beach, Virginia

N

Legend

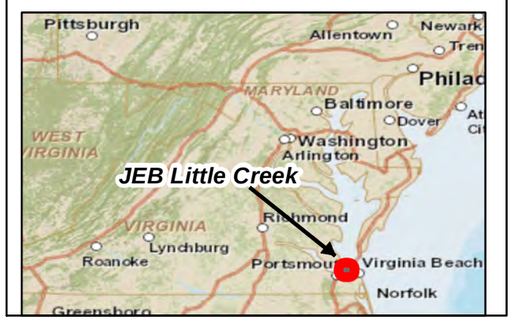
- Storm Sewer
- MS4 Regulated Areas
- Installation Boundary

Michael Baker INTERNATIONAL

1,500 750 0 1,500 Feet

1 inch = 1,500 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21



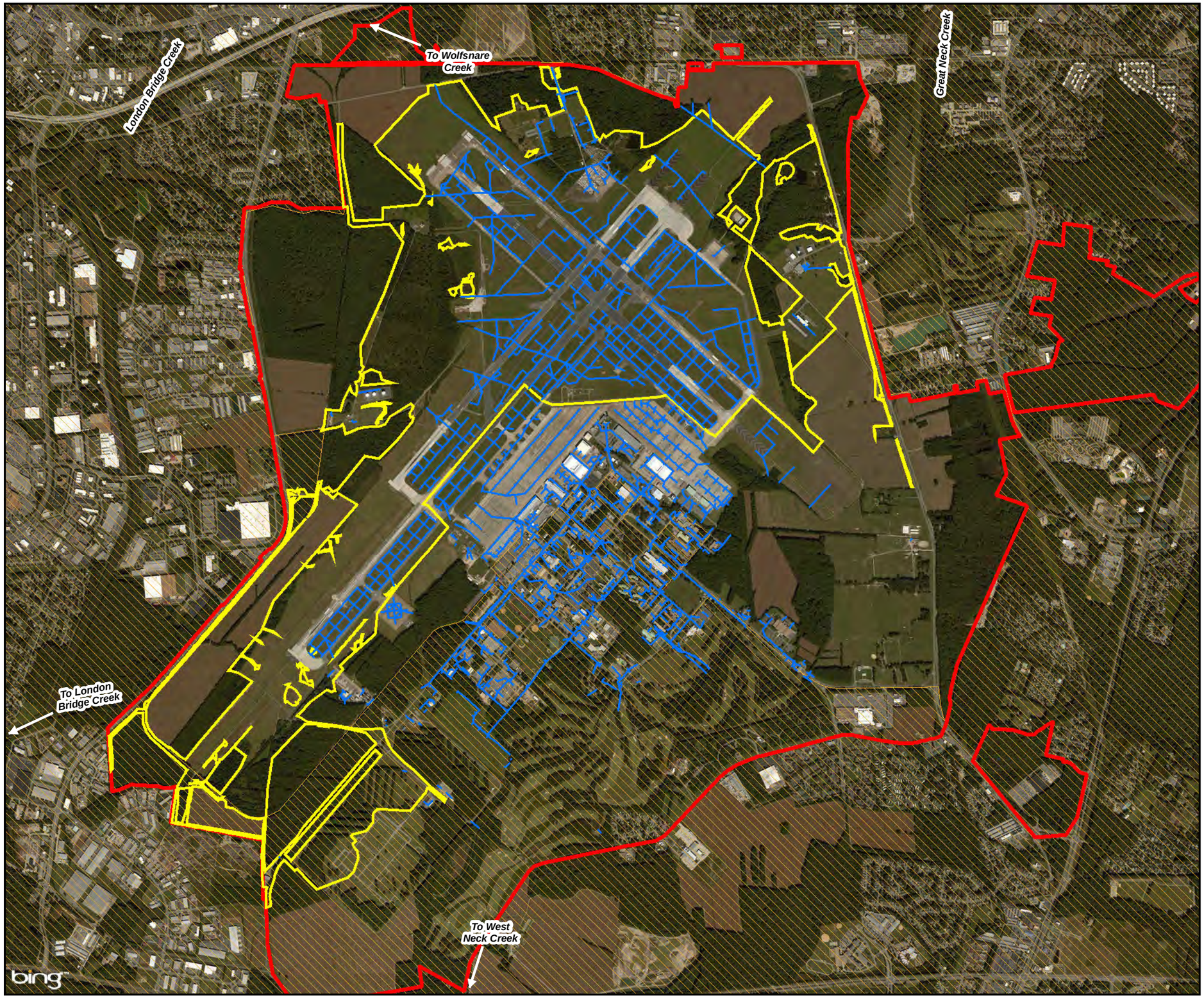


Figure 2-3
NAS Oceana
Regulated MS4 Boundary

Virginia Beach, Virginia

Legend

- Storm Sewer
- MS4 Regulated Areas (within Chesapeake Bay)
- Installation Boundary
- 2010 Census Urbanized Area

Michael Baker INTERNATIONAL

2,000 1,000 0 2,000 Feet

1 inch = 2,000 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21

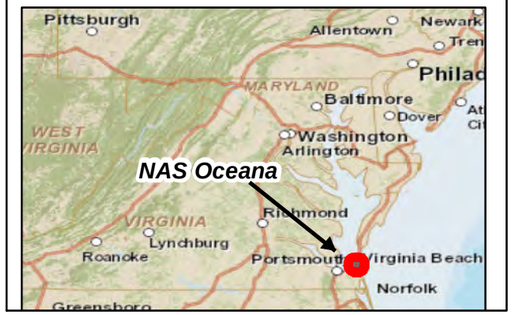


Figure 2-4
Naval Station Norfolk
Regulated MS4 Boundary
Norfolk, Virginia

N

Legend

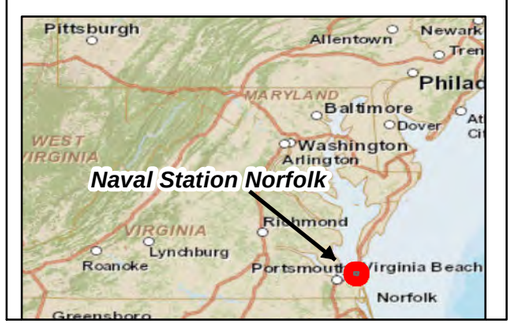
- Storm Sewer
- MS4 Regulated Areas
- Installation Boundary

Michael Baker INTERNATIONAL

1,650 825 0 1,650 Feet

1 inch = 1,650 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21



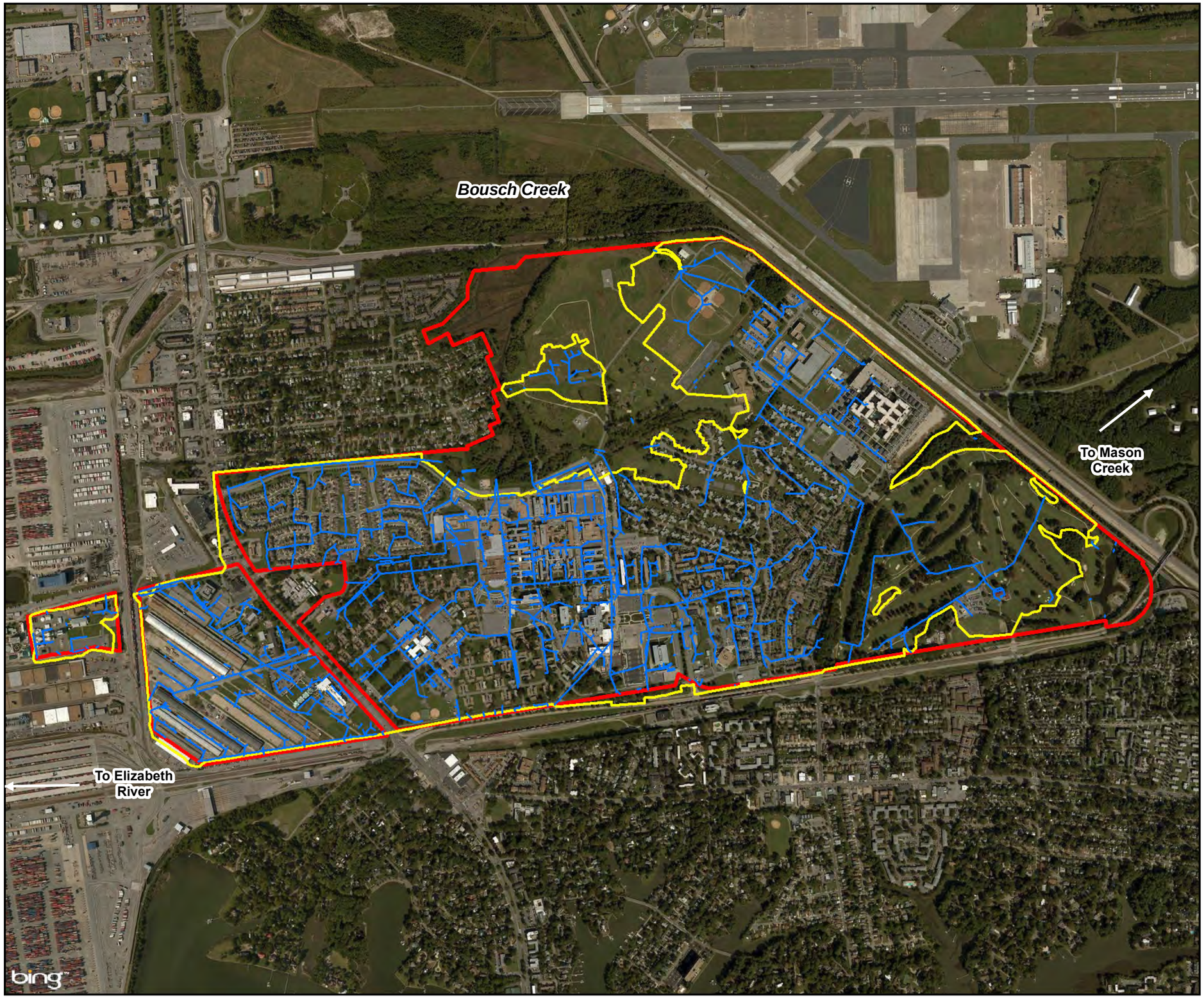


Figure 2-5
NSA Hampton Roads
Regulated MS4 Boundary
Norfolk, Virginia

Legend

- Storm Sewer
- MS4 Regulated Areas
- Installation Boundary

Michael Baker INTERNATIONAL

1,000 500 0 1,000 Feet

1 inch = 1,100 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21

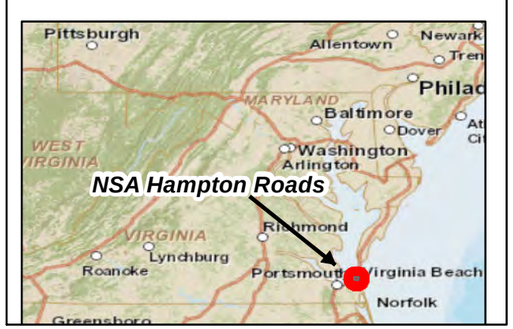


Figure 2-6
Portsmouth Annex
Regulated MS4 Boundary
Portsmouth, Virginia

N

Legend

- Storm Sewer
- MS4 Regulated Areas
- Installation Boundary

Michael Baker INTERNATIONAL

350 175 0 350 Feet

1 inch = 350 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21

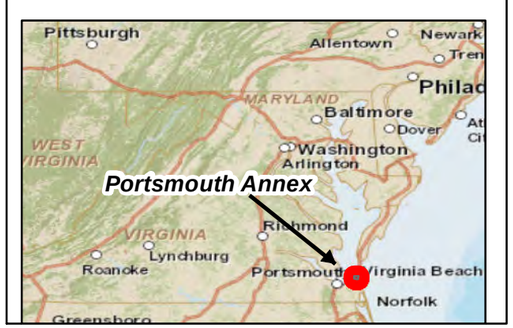


Figure 2-7
Scott Center Annex
Regulated MS4 Boundary
Portsmouth, Virginia

N

Legend

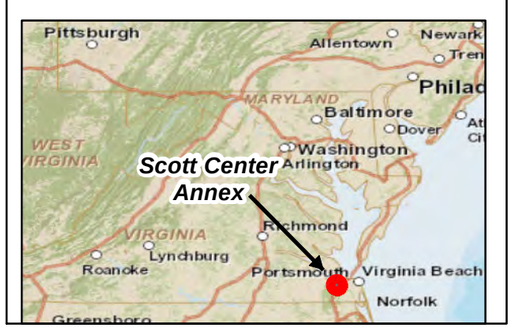
- Storm Sewer
- MS4 Regulated Areas
- Installation Boundary

Michael Baker INTERNATIONAL

250 125 0 250 Feet

1 inch = 250 feet

Chesapeake Bay TMDL Action Plan
Baker Project No: 143392
Contract No: N62470-10-D-3000
Delivery Order No: WE21



3 Existing and New/Modified Legal Authority

This section addresses Special Condition 2 as found in the permit by describing existing and new or modified legal authority.

> *(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;*

Because CNRMA is not a municipality, it does not have the authority to issue ordinances; however, CNRMA does have authority over their tenants through their host tenant agreements. In addition, all development and redevelopment inside the installation and annex boundaries must meet local, state, and federal requirements for erosion and sediment control and stormwater management. This includes the Virginia Erosion and Sediment Control Program Regulations, Virginia Pollutant Discharge Elimination System Permit, the Navy Low Impact Development (LID) policy, and Energy Independence and Security Act (EISA) Section 438. The federal policies are described below.

In November 2007, the Department of the Navy (DON) issued an LID policy with the stated objective of "no net increase in stormwater runoff volume and sediment or nutrient loading from major renovation and construction projects." In the policy, major renovation projects are defined as projects having a stormwater components and which exceed $5 million annually when initially approved by the Deputy Assistant Secretary of the Navy. Major construction projects are defined as those exceeding $750K. Approximately one month later, in December 2007, Section 438 of the EISA was issued, which requires that Federal facility projects over 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow."

In October 2009, EO 13514 was issued and required all Federal agencies to comply with the requirements of EISA Section 438 and other sustainability measures, such as water and energy conservation. In January 2010, the DoD Policy of Implementing Section 438 of the EISA was issued and included a flowchart with implementation steps. As a result of these policies, the DoD updated the Unified Facilities Criteria (UFC) Low Impact Development Manual in November 2010 to address both EISA and LID.

At this time, no new or modifications to existing policies are expected. Note that the Navy LID policy, EISA, and EO 13514 are not enforceable under the MS4 permit nor this plan. The background on these policies has been provided for informational purposes only.

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4 Discharges from New Sources

This section addresses Special Condition 3 as found in the permit by discussing how discharges from new sources will be addressed.

> *(3) The means and methods that will be utilized to address discharges into the MS4 from new sources;*

Discharges generated from development and redevelopment projects occurring at installations and annexes under the purview of Commander, Navy Region, Mid-Atlantic (CNRMA) and located in Virginia are subject to the Virginia Erosion and Sediment Control Law & Regulations (VESCLR) and the Virginia Stormwater Management Law and Regulations (VSMLR). The Virginia Department of Environmental Quality (VDEQ) is the State agency responsible for the administration and enforcement of these programs and acts as the E&S and Stormwater Program authority for Federal agency projects, including the Navy. In accordance with the requirements set forth by the VESCLR and VSWMLR, CNRMA develops erosion & sediment control and stormwater management plans to address discharges from development and re-development projects and submits such plans to the State for review and approval.

In addition, any new construction at the permitted Hampton Roads installations is required to follow EISA Sect 438 and the Department of Navy (DON) Low Impact Development (LID) policy which sets forth a standard of no net increase in stormwater runoff volume and sediment or nutrient loading from development and redevelopment projects. The DON has incorporated these policy requirements into all applicable construction project design documents. Note that EISA and the DON LID policy is included in this plan for informational purposes only and is not enforceable under the MS4 permit or this plan.

Adherence by CNRMA with these regulations and policies should be sufficient in addressing the stormwater discharges associated with new sources resulting from development and redevelopment projects

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5 Existing Source Loads and Required Reductions

This section addresses Special Conditions 4 and 5 as found in the permit by estimating the existing source loads and the required pollutant load reductions. In addition, a brief description of the Virginia WIP and previous studies is provided.

(4) 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:

(5) 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 first 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.

5.1 Virginia Watershed Implementation Plan

The Commonwealth of Virginia's Phase II WIP was submitted to the EPA in March 2012. The WIP was developed as part of the Chesapeake Bay TMDL effort. The purpose of the Phase II WIP was to:

- Divide the Bay TMDL allocations into local area targets.
- Work with local partners to help them to better understand their expected contribution to and responsibility for meeting the TMDL allocations.
- Describe how partners will help to reduce loads delivered to the Bay.
- Identify those resources, authorities, and other forms of assistance needed to implement actions that achieve TMDL allocations.
- Provide additional demonstration of reasonable assurance.
- Identify local, State and Federal partners who will assist with achieving nutrient and sediment reductions.
- Describe how the State is working with its key partners.
- Identify State strategies to help facilitate implementation of local strategies.

- Develop clear quantifiable goals.
- Define systems for tracking, verifying, and reporting progress.
- Involve Federal agencies.

The WIP discusses the utilization of the MS4 permit to ensure BMP implementation of existing land development to achieve the necessary reductions equivalent to Level 2 (L2) scoping run reductions. The L2 implementation equates to an average reduction of 9 percent of nitrogen loads, 16 percent of phosphorus loads, and 20 percent of sediment loads from impervious regulated acres, and 6 percent of nitrogen loads, 7.25 percent of phosphorus loads, and 8.75 percent of sediment loads beyond 2009 progress loads and beyond urban nutrient management reductions for pervious regulated acreage.

In addition, the WIP states that MS4 operators will develop a phased Chesapeake Bay Watershed Action Plan in the first permit cycle. The plan will include a review of the baseline program and include an outline of the means and methods that will be used to meet the L2 level necessary for the permit. The phased approach is documented with the reduction of 5 percent of the pollutant loads due by the end of the first permit cycle (June 30, 2018), an additional 35 percent due by the end of the second permit cycle (June 30, 2023), and the final 60 percent due by the end of the third permit cycle (June 30, 2028).

5.2 Opportunity Assessment Studies

Opportunity Assessments (OAs) were conducted at all seven permitted installations that drain to the Bay. The purpose of these OAs was to identify opportunities to strengthen stormwater management. The scope of the study included identifying, analyzing, and evaluating stormwater management opportunities to comply with EO 13508. The following number of opportunities were identified:

- Naval Station Norfolk and NSA Hampton Roads: 217 opportunities
- NAS Oceana: 77 opportunities (3 that drain to the Bay)
- Scott Center Annex: 42 opportunities
- JEB Fort Story: 91 opportunities
- Portsmouth Annex: 47 opportunities
- JEB Little Creek: 163 opportunities

Focus was placed on green infrastructure and LID practices instead of the conventional stormwater management facilities because of DON's focus on using environmentally sustainable solutions to stormwater management and its LID policy. Furthermore, non-LID practices tend to have reduced pollutant reduction efficiency and are therefore a less cost-effective option for implementation activities.

In total, 563 opportunities were identified at locations that would treat runoff to the Bay. These opportunities were ranked based on various criteria including environmental impacts, benefits,

constraints, and costs. NAVFAC MIDLANT reviewed these opportunities and selected several for conceptual designs and more detailed cost estimates.

5.3 Existing Pollutant Source Loads

All of the permitted Hampton Roads installations that drain into the Bay are categorized within the James River Basin, although many of them drain directly to the Bay. The *Draft Fact Sheet for the General Permit for Discharges of Stormwater from MS4s* dated March 12, 2013, was consulted to determine the appropriate basin and corresponding pollutant load calculation table to use from the permit. Table 2 in the *Fact Sheet* presents the 6th order Hydrologic Unit Codes (HUCs) that correspond with the pollutant load reduction table for the four different river basins. The table lists the MS4 permitted installation HUCs as corresponding to the James River Basin.

In the Permit, *Table 2a: Calculation Sheet for Estimating Existing Source Loads for the James River Basin* provides the 2009 Edge of Stream (EOS) loading rate for each pollutant of concern for lands within the James River Basin. Once the total existing acres served by the MS4 (urban impervious and pervious) is known, the estimated pollutant loads based on the 2009 progress run can be computed. Table 5-1 is the completed Table 2a found in the Permit. The values in this table are the combined acreage and pollutant loads for all seven installations that drain to the Bay. For each installation's specific information, please see Appendix A of this document. For a description of the delineation of the urban impervious and pervious regulated areas, see Section 2.2.

Table 5-1 Existing Source Loads for the James River Basin (Permit Table 2a)

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	2,790	9.39	26,194
Regulated Urban Pervious		3,708	6.99	25,915
Regulated Urban Impervious	Phosphorus	2,790	1.76	4,910
Regulated Urban Pervious		3,708	0.5	1,854
Regulated Urban Impervious	Total Suspended Solids	2,790	676.94	1,888,402
Regulated Urban Pervious		3,708	101.08	374,754

5.4 Required Pollutant Load Reductions

In the Permit, *Table 3a: Calculation Sheet for Determining Total POC Reductions Required During the Permit Cycle for the James River Basin* provides the first permit cycle required reduction loading rate for each POC for lands within the James River Basin. This value represents 5 percent of the total pollutant reduction to be met at the end of the third permit cycle, or by 2028. Once the total existing acres served by the MS4 (urban impervious and pervious) is known, the total reduction required in the first permit cycle can be computed. Table 5-2 is the completed Table 3a found in the Permit. The values in this table are the combined acreage and pollutant loads for all seven installations that drain to the Bay. Table 5-3 presents the sum of the required reductions for the regulated urban impervious and impervious lands per pollutant of concern. For each installation's specific information, please see Appendix A of this document. For a description of the delineation of the urban impervious and pervious regulated areas, see Section 2.2.

Table 5-2 Total POC Reduction Required During the Permit Cycle for the James River Basin (Permit Table 3a)

Subsource	Pollutant	Total Existing Acres Served by MS4 (06/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/acre/yr)	Total Reduction Required First Permit Cycle (lbs/yr)
Regulated Urban Impervious	Nitrogen	2,790	0.042255	117.86
Regulated Urban Pervious		3,708	0.02097	77.75
Regulated Urban Impervious	Phosphorus	2,790	0.01408	39.28
Regulated Urban Pervious		3,708	0.0018125	6.72
Regulated Urban Impervious	Total Suspended Solids	2,790	6.7694	18,884.02
Regulated Urban Pervious		3,708	0.44225	1,639.64

Table 5-3 Total POC Reductions Required During the Permit Cycle (James River Basin)

	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
First Permit Cycle Required Reductions (2009)	195.62	46.00	20,523.57

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6 Meeting the Required Reductions

This section addresses Special Condition 6 as found in the permit by describing the structural BMPs currently installed or likely to be installed to meet the required reductions.

> *(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;*

6.1 Best Management Practices

The seven permitted installations that drain to the Bay have implemented hundreds of BMPs on their grounds to treat stormwater runoff. The current inventory of BMPs documents 205 water quality treatment devices at regulated MS4 installations that drain to the Bay. This list can be found in Appendix B of this document. Descriptions of the structural BMPs that exist or are likely to be installed at the permitted installations are below. These practices include bioretention, rooftop disconnection, filtering practices, infiltration practices, porous pavement, retention ponds/basins, constructed wetlands, detention ponds, extended detention basins, underground detention, grass channels, dry swales, proprietary devices, green roofs, and reforestation.

<u>Bioretention</u>

Bioretention areas can serve highly impervious drainage areas less than 2 acres in size. Bioretention creates a good environment for runoff reduction, filtration, biological uptake, and microbial activity providing high pollutant removal. Surface runoff is directed into a shallow landscaped depression that incorporates many of the pollutant removal mechanisms that operate in forested ecosystems. The primary component of a bioretention practice is the filter bed, which has filtering media composed of sand, soil, and organic material, with a surface mulch layer. During storms, runoff temporarily ponds 6 to 12 inches above the mulch layer and then rapidly filters through the bed. Normally, the filtered runoff is collected in an underdrain and returned to the storm drain system. The underdrain consists of a perforated pipe in a gravel layer installed along the bottom of the filter bed. A bioretention facility with an underdrain system is commonly referred to as a Bioretention Filter.

<u>Disconnection of Rooftop Runoff</u>

Rooftop disconnection involves managing runoff close to its source by intercepting, infiltrating, filtering, treating, or reusing it as it moves from the impervious surface to the drainage system. Two kinds of disconnection are allowed: (1) simple disconnection, whereby rooftops and/or impervious surfaces are directed to pervious areas, and (2) disconnection leading to an alternate runoff reduction practice(s) adjacent to the roof or impervious area. With proper

design and maintenance, the simple rooftop (impervious area) disconnection options can provide relatively high runoff reduction rates. The runoff reduction achieved by rooftop disconnections can help reduce the overall channel protection and flood control volume for the site.

Filtering Practices (e.g., Organic Media Filter)

Stormwater filters are a useful practice to treat stormwater runoff from small, highly impervious sites. Stormwater filters capture, temporarily store, and treat stormwater runoff by passing it through an engineered filter media, collecting the filtered water in an underdrain, and then returning it to the storm drainage system. The filter consists of two chambers. The first is devoted to settling, and the second serves as a filter bed consisting of sand or another filter media. Stormwater filters provide moderate pollutant removal performance and provide no runoff volume reduction credit. Stormwater filters are a versatile option because they consume very little surface land and have few site restrictions.

Infiltration Practices (e.g., Infiltration Basin, Infiltration Trench)

Infiltration practices use temporary surface or underground storage to allow incoming stormwater runoff to exfiltrate into underlying soils. Runoff first passes through multiple pretreatment mechanisms to trap sediment and organic matter before it reaches the practice. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants. Infiltration practices have the greatest runoff reduction capability of any stormwater practice and are suitable for use in residential and other urban areas where measured soil permeability rates exceed 1/2 inch per hour. To prevent possible groundwater contamination, infiltration should not be utilized at sites designated as stormwater hotspots. When used appropriately, infiltration has a very high runoff volume reduction capability.

Porous Pavement

Porous pavements are alternative paving surfaces that allow stormwater runoff to filter through voids in the pavement surface and into an underlying stone reservoir where it is temporarily stored and/or infiltrated. A variety of permeable pavement surfaces are available including pervious concrete, porous asphalt, and permeable grid pavers and interlocking concrete pavers. While the specific design may vary, all permeable pavements consist of a permeable surface pavement layer, an underlying stone aggregate reservoir layer, and a filter layer or fabric installed on the bottom. The thickness of the reservoir layer is determined by both a structural and hydrologic design analysis. The reservoir layer serves to retain stormwater and also supports the design traffic loads for the pavement. In low-infiltration soils, some or all of the filtered runoff is collected in an underdrain and returned to the storm drain system. If infiltration rates in the native soils permit, porous pavement can be designed without an underdrain to enable full infiltration of runoff.

Porous pavement is typically designed to treat stormwater that falls on the pavement surface area, but it may also be used to accept run-on from small adjacent impervious areas, such as impermeable driving lanes or rooftops. However, careful sediment control is needed for any run-on areas to avoid clogging of the down-gradient porous pavement. Porous pavement has

been used at commercial, institutional, and residential sites in spaces that are traditionally impervious. Porous pavement promotes a high degree of runoff volume reduction and nutrient removal, and it can also reduce the effective impervious cover of a development site.

Retention Ponds/Basins

Retention Ponds/Basins, also known as wet ponds, consist of a permanent pool of water that promotes a better environment for gravitational settling, biological uptake, and microbial activity. Runoff from each new storm enters the pond and partially displaces pool water from previous storms. The pool also acts as a barrier to re-suspension of sediments and other pollutants deposited during prior storms. When sized properly, wet ponds have a residence time that ranges from many days to several weeks depending on the volume of the permanent pool, which allows numerous pollutant removal mechanisms to operate. Wet ponds can also help meet channel protection requirements by utilizing detention storage above the permanent pool and extended detention storage volumes to reduce peak flows from the 1-year design storm using the energy balance method described in the VSMP regulations (4VAC50-60-66).

A wet pond is typically the final element in the roof-to-stream pollutant removal sequence and provides no volume reduction credit. Therefore, it is usually only considered if there is remaining pollutant removal or channel protection volume to manage after all other upland runoff reduction options have been considered.

Constructed Wetlands

Constructed wetlands are shallow basins that receive stormwater runoff for water quality treatment. The constructed wetland permanent pool is typically 6 to 18 inches deep (although it may have greater depths in the forebay and micropool) and possesses variable microtopography to promote dense and diverse wetland cover. Runoff from each new storm displaces runoff from previous storms and the long residence time allows multiple pollutant removal processes to operate. The wetland environment is ideal for gravitational settling, biological uptake, and microbial activity. Constructed wetlands also help meet channel protection requirements by utilizing detention storage above the permanent pool to reduce peak flows from the 1-year design storm using the energy balance method described in the VSMP regulations (4VAC50-60-66).

Constructed wetland is typically the final element in the roof-to-stream pollutant removal sequence and provides no volume reduction credit. Therefore, it is usually only considered if there is remaining pollutant removal or channel protection volume to manage after all other upland runoff reduction options have been considered.

Detention/Dry Ponds

A detention or dry pond consists of a temporary pool of water that is conveyed to the receiving waters over an extended period of time. An undersized outlet structure restricts stormwater flow so that it backs up and is stored within the basin. Most of these ponds have outlets consisting of a riser structure with multiple outlet openings to control different storm events. This practice aims to control peak flow rates, but can also provide water quality benefits.

Sediment and other particulate pollutants settle out in the temporary pool of water. Dry ponds typically include an offline sediment forebay to trap sediment and preserve the capacity of the main treatment cell.

Extended Detention Basins

An Extended Detention Basin (EDB) relies on 24 to 36-hour detention of stormwater runoff after each rain event. An under-sized outlet structure restricts stormwater discharge so it backs up and is stored within the basin. The temporary ponding enables particulate pollutants to settle out and reduces the maximum peak discharge to the downstream channel, thereby reducing the effective shear stress on banks of the receiving stream. EDBs rely on gravitational settling as their primary pollutant removal mechanism. Consequently, they generally provide fair-to-good removal for particulate pollutants, but low or negligible removal for soluble pollutants, such as nitrate and soluble phosphorus. The use of EDB alone generally results in the lowest overall pollutant removal rate of any single stormwater treatment option. Alternatively, an EDB component is combined with wet ponds and constructed wetlands to help maximize pollutant removal rates of those practices.

An EDB is typically the final element in the roof-to-stream pollutant removal sequence and provides limited volume reduction credit (L2 only). Therefore, it is usually only considered if there is remaining treatment volume or channel protection volume to manage after all other upland runoff reduction practices have been considered.

Underground Detention

Similar to EDPs, this practice temporarily detains runoff in an underground storage chamber and releases it at a defined rate through an outlet. The storage chambers rest on stone beds, which serve the dual purpose as a structural component while allowing conveyance and storage of water. Infiltration through the bottom of the storage chambers may also occur as part of this practice, and the system can be modified to limit infiltration. The storage chambers can be concrete vaults or proprietary systems, such as StormTech chambers.

Grass Channels

Grass channels can provide a modest amount of runoff filtering and volume attenuation within the stormwater conveyance system, resulting in the delivery of less runoff and pollutants than a traditional system of curb and gutter, storm drain inlets, and pipes. The performance of grass channels will vary depending on the underlying soil permeability. Grass channels, however, are not capable of providing the same stormwater functions as dry swales because they lack the storage volume and filtering capabilities associated with the engineered soil media. Their runoff reduction performance can be boosted when compost amendments are added to the bottom of the swale. Grass channels are a preferable stormwater conveyance alternative to both curb and gutter and storm drains where development density, topography, and soils permit. Grass channels can also be used to treat runoff from the managed turf areas of turf-intensive land uses, such as sports fields and golf courses, and drainage areas with combined impervious and turf cover (e.g., roads and yards).

Dry Swales

Dry swales are essentially bioretention cells that are shallower, configured as linear channels, and covered with turf or other surface material (other than mulch and ornamental plants). The primary pollutant removal mechanisms operating in swales are settling, filtering infiltration, and plant uptake.

The dry swale is a soil filter system that temporarily stores and then filters the stormwater runoff. Dry swales rely on a pre-mixed soil media filter below the channel that is the same as that used for bioretention. If soils are extremely permeable, runoff infiltrates into underlying soils. In most cases, however, the runoff treated by the soil media flows into an underdrain, which conveys treated runoff back to the conveyance system further downstream. The underdrain system consists of a perforated pipe within a gravel layer on the bottom of the swale, beneath the filter media. Dry swales may appear as simple grass channels with the same shape and turf cover, while others may have more elaborate landscaping. Swales can be planted with turf grass, tall meadow grasses, decorative herbaceous cover, or trees.

Proprietary Devices

Proprietary devices are devices that were designed and developed by a private manufacturer. Typical proprietary devices include Filterra® Tree Box Filters, hydrodynamic catch basin inserts, and Modular Wetlands®. Tree box filters are miniature bioretention areas installed beneath trees. They are an example of an urban micro-practice (<1,000 square feet contributing drainage area) that can be used adjacent to roads, buildings, and sidewalks to provide some level of biofiltration treatment. Hydrodynamic catch basin inserts include a large variety of structures that remove nonpoint source pollutants from runoff. Typically, each structure can provide water quality benefits to small drainage areas (less than 1 acre) and are most useful in combination with other BMPs. Modular wetlands are linear mini bioretention or wetland-type systems that are installed along parking lots, roads, and sidewalks to provide treatment through biofiltration and biological uptake.

Green Roof

Green or vegetated roofs are an alternative roof surface typically consisting of an engineered soil media with vegetation, waterproofing, and drainage materials. Runoff is stored and treated in the soil media before continuing through an underdrain. Plant uptake and evapotranspiration reduce the amount of runoff that enters the underdrain. There are two levels of green roofs: intensive and extensive. Extensive green roofs have growing media depths that range from 2 to 6 inches, while intensive systems have media depths of over 6 inches. This practice, especially the intensive system, will require additional load-bearing capacity for the roof. Low-maintenance plants that do not need supplemental irrigation or fertilization after they are established are generally selected for installation.

It may be possible to install extensive green roofs on buildings with flat roofs without any structural modifications to the existing roof. However, the cost to install these practices is high in comparison with other treatment practices.

Reforestation or Tree Planting

This control measure involves planting trees within the MS4 drainage area. After the trees are planted, it is important to establish a tree maintenance program and provide frequent care of the trees for the first 3 years.

During the OAs (previously described in Section 5.2), several locations for urban tree planting opportunities were developed where landscaping trees could replace pavement. This practice will be considered as a complementary practice with the installation of the planned BMPs as well as during each annual assessment.

Larger areas where reforestation is feasible and a complete land use change is possible were also identified during a previous study. Locations identified are currently not serving a specific purpose and are unutilized. Reforestation will be considered and evaluated during each annual assessment.

Oyster Reef

This project involves the placement of oysters along a shoreline to create or restore an oyster reef. These reefs buffer coastal areas from waves and improve water quality by filtering impurities from the water. NAVFAC has identified one existing oyster reef project at JEB Little Creek cove that consisted of the placement of 6,000 oyster spat over a 3,010 square foot area. Research reports from the Virginia Institute of Marine Science were used to estimate the pollutant removals from this project. Until oyster reefs are credited by the Chesapeake Bay TMDL, projects like these will be tracked but will not contribute to overall POC reduction.

6.2 Pollutant Removals from Existing BMPs

As outlined in DEQ's Guidance, the pollutant removals from the existing BMPs have been categorized into three different groups:

1. BMPs brought online between January 1, 2006, and prior to July 1, 2009
2. BMPs brought online between July 1, 2009, and prior to July 1, 2014
3. BMPs brought online on or after July 1, 2014

According to DEQ's Guidance, if historical data are provided to DEQ by September 1, 2015, using the spreadsheet provided on their MS4 website, the permittee will received full credit for the pollutant load reduction associated with BMPs that were:

1. Initially installed on or after January 1, 2006, and prior to July 1, 2009, and;
2. Constructed to address water quality within the permittee's regulated service area.

The completed spreadsheet from DEQ's MS4 website with the BMPs that meet the above criteria can be found in Appendix B of this document. This list is a complete list, to the maximum extent practicable, of historical BMPs and will be submitted to DEQ prior to

September 1, 2015. This information is submitted as part of the "Historical Data Clean-Up" effort.

Pollutant load reductions were calculated for the individual existing BMPs to determine the total pollutant reduction. The pollutant removal efficiencies used to compute the corresponding load reductions were from the *Chesapeake Bay Program BMPs, Established Efficiencies Table* (Table V.C.1 in DEQ's Guidance). Other pollutant load removal efficiencies like the values in the *Virginia BMP Clearinghouse* and the *Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects* were also investigated. However, the curve/equations found in the *Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects* required a known runoff depth captured per impervious acre. Because this information was not readily available for the existing BMPs, it was not feasible to use the curves/equations found in the report. A comparison was made between the POC reductions from the efficiencies in the *Virginia BMP Clearinghouse* and the *Chesapeake Bay Program BMPs, Established Efficiencies Table.* In most instances, the pollutant removals were lower when using the *Chesapeake Bay Program BMPs, Established Efficiencies Table.* Therefore, the *Chesapeake Bay Program BMPs, Established Efficiencies Table* was considered to be conservative and was used to compute the corresponding pollutant reductions for the existing BMPs.

NAVFAC provided a BMP database for Baker to use in the development of this Action Plan. Initially, numerous existing BMPs were missing contributing draining areas and/or the appropriate categorization of the impervious and pervious portions of the draining area. Baker populated this missing data through the use of plan sets provided by CNRMA and by delineating approximate boundaries using GIS information (contours, aerial photographs, storm drain network, impervious areas, etc.). A complete list of all of CNRMA's BMPs that were brought online prior to July 1, 2014, can be found in Appendix B.

In addition, DEQ's Guidance states that permittees may receive credit for BMPs implemented on unregulated land provided the necessary baseline pollutant reduction is met first. NAVFAC identified a porous pavement BMP installed in 2011 at St. Juliens Creek Annex (an unregulated installation). This was the only BMP documented that was on unregulated lands within the James River Basin. According to the Guidance, any pollutant reduction greater that the 0.45 lbs TP/acre/year baseline amount can be credited toward the Chesapeake Bay TMDL pollutant reduction. The porous pavement BMP has a pollutant reduction of 0.21 lbs TP/acre/year; therefore, there are no additional credits to be applied to the pollutant reduction required by the Chesapeake Bay TMDL from this unregulated land BMP.

The total pollutant load reduction for the January 1, 2006 to June 30, 2009 BMPs was computed to be 138.98 lbs/yr for TN, 34.12 lbs/yr for TP, and 16,595.25 lbs/yr for TSS, as presented in Table 6-1. The total pollutant load reduction for the July 1, 2009, to June 30, 2014, BMPs was computed to be 394.36 lbs/yr for TN, 75.12 lbs/yr for TP, and 35,305.50 lbs/yr for TSS, as presented in Table 6-1. The existing BMP pollutant reductions calculations for each installation can be found in Appendix C.

Table 6-1 Pollutant Reduction Associated with Existing BMPs and Remaining Reduction

	TN (LBS/YR)	TP (LBS/YR)	TSS (LBS/YR)
First Permit Cycle Required Reductions (2009)	195.62	46.00	20,523.57
Reductions from Jan. 2006 to June 2009 BMPs	138.98	34.12	16,595.25
Reductions from July 2009 to June 2014 BMPs	394.36	75.12	35,305.50
Remaining Reductions for First Permit Cycle	**-337.72**	**-63.24**	**-31,377.18**

Table 6-1 illustrates that the required POC reductions for the first permit cycle are met with the existing BMPs brought online from January 1, 2006, to June 30, 2014. A net surplus of 337.72 lbs/yr for TN, 63.24 lbs/yr for TP, and 31,377.18 lbs/yr for TSS was computed. These existing BMPs are sufficient to meet the required reductions of the POC loads from existing sources.

7 New Sources and Grandfathered Projects

This section addresses Special Conditions 7 through 10 as found in the Permit.

(7) The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009, and June 30, 2014, that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle.

(8) The means and methods to offset the increased loads from projects as grandfathered in accordance with 9VAC25-870-48, that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids.

(9) The operator shall address any modification to the TMDL or watershed implementation plan that occurs during the term of this state permit as part of its permit reapplication and not during the term of this state permit.

(10) A list of future projects and associated acreage that qualify as grandfathered in accordance with 9VAC25-870-48;

7.1 New Sources Initiating Construction between July 1, 2009, and June 30, 2014

The Hampton Roads Installations experience a significant amount of construction every year. Because many of the installations are fully developed, most construction is related to redevelopment projects. In page 4 of the Guidance, DEQ acknowledged the significant burden to determine pollutant reductions on a site by site basis. An accounting method, referred to as the "aggregate accounting approach," was documented as an acceptable alternative to the site by site computations. Aggregate accounting tracks the land-use change on all regulated land between July 1, 2009, and June 30, 2014, to determine the increased loads that were not treated and must be addressed under Special Condition 7. It is understood that using an aggregate approach may capture lands beyond those that fall under this requirement (i.e. lands less than an acre, lands that have an average impervious land use cover less than 16 percent).

To complete the aggregate account approach, a comparison was made between the impervious areas from July 1, 2009, and June 30, 2014, to determine the net increase in impervious area from development and re-development projects. The net increase in

impervious area is 64.0 acres. Table 7-1 presents a comparison of the impervious acres at the permitted installations that drain to the Bay. Appendix C presents the detailed calculations regarding the aggregate accounting method.

Table 7-1 Impervious Area Comparison for Aggregate Accounting

Installation	June 2009 Impervious Regulated Area (ac)	June 2014 Impervious Regulated Area (ac)	Impervious Regulated Area Increase (ac)
JEB Fort Story	133.1	139.3	6.2
JEB Little Creek	545.7	568.8	23.1
NAS Oceana	306.7	306.7	0.0
Naval Station Norfolk	1,434.1	1,456.9	22.8
NSA Hampton Roads	291.4	299.9	8.5
Portsmouth Annex	51.0	51.4	0.4
Scott Center Annex	27.6	30.6	3.0
TOTALS	**2,789.6**	**2,853.6**	**64.0**

As shown in Example II.2 in DEQ's Guidance, the estimated pollutant loads for pre- and post-development conditions were computed using the "2009 EOS Loading Rate" from Table 2a in the permit. These values were compared in order to obtain the "Total Load Change." Table 7-2 represents the total POC loading from the increase in impervious areas or "new sources." The permit requires that CNRMA offsets 5 percent of these "new sources" pollutant loads by the end of the first permit cycle.

Table 7-2 Increase in Impervious Area and Corresponding POC Loads

Impervious Regulated Area Increase (ac)	Additional TN (lbs/yr)	Additional TP (lbs/yr)	Additional TSS (lbs/yr)
64.0	153.6	80.6	36,845

As shown in Table 7-3, these loads are offset through the implementation of BMPs installed between January 1, 2009, and June 30, 2014. For detailed calculations demonstrating the

pollutant offsets through existing BMPs, see Appendix C of this report. After meeting the required POC reduction for this permit cycle, the computation results in a net surplus of 330.04 lbs/yr for TN, 59.21 lbs/yr for TP, and 29,534.94 lbs/yr for TSS.

Table 7-3 New Source Load Reductions

	ADDITIONAL TN (LBS/YR)	ADDITIONAL TP (LBS/YR)	ADDITIONAL TSS (LBS/YR)
5% of New Source Loads	7.68	4.03	1,842.24
Remaining Reductions after Meeting 5% of 2009 Loads	-337.72	-63.24	-31,377.18
Remaining Reductions after Meeting 5% of New Source Loads	**-330.04**	**-59.21**	**-29,534.94**

7.2 Grandfathered Projects

The Permit requires that any project that falls under Special Condition 8 (grandfathered projects in accordance with 9VAC25-870-48) should offset any increased pollutant loads prior to the completion of the grandfathered projects. There is one future project identified at Naval Station Norfolk that qualifies as grandfathered which is described below. In general, as soon as funding is secured for a project at the installations, the project is initiated. Delays, like the projects that fall under Special Condition 8, are uncommon at the permitted installations.

The I-564 Intermodal Connector project in Norfolk, Virginia is proposed to connect Naval Station Norfolk at 2nd Street and Norfolk International Terminal to the existing I-564 near Terminal Boulevard. Components on the project include 2.82 miles of new four-lane limited access highway, construction of the I-564 interchange, bridges and local connectors, stormwater management areas, relocation rail lines, possible noise walls, connectivity to Naval Station Norfolk Gate 6, and other general infrastructure improvements.

The construction will affect two areas within the Naval Station Norfolk MS4 regulated lands: the Commercial Vehicle Inspection Station (CVIS) and Gate 6. These two areas currently exist, but will be redeveloped/improved during the construction of the I-564 Intermodal Connector. In addition, some lands affected by the projects, which are currently owned by the Navy, will be transferred over to the Virginia Department of Transportation (VDOT) after the project is complete. These lands will primarily be right-of-way access areas along the edge of the roadway.

Below is an excerpt from the Stormwater Master Plan that details the support for grandfathered status under Part IIC of the Virginia Stormwater Management Program.

"Funds were obligated over time as the original permitting and design effort culminated in agency approvals, such as the DEQ Virginia Water Protection (VWP) Individual Permit coverage (effective November 4, 2002), and subsequent design iterations by the Parsons Brinckerhoff/Baker team (2011/2012), prior to July 1st, 2012 (or the RFP Design). As such, the project is subject to Technical Criteria Part IIC for one additional Construction General Permit (CGP) cycle, or through June 30th, 2019. It is the intent of Cherry Hill Construction that construction activities commence prior to this date."

Although this project does meet the requirements for grandfathering, NAVFAC has met with VDOT and requested that current VSMP regulations for the implementation of post-development stormwater management facilities be adhered to in the design of both the CVIS and Gate 6 improvements. As a result, no pollutant loads will need to be offset from this grandfathered project.

Any other projects that have been previously designed but have sat "on the shelf" will be reviewed and redesigned as needed to meet the new VSMP requirements. These projects will be redesigned since all regulated activities conducted by the Navy must have their stormwater management plans reviewed and approved by DEQ.

8 Cost of Implementation

This section addresses Special Condition 11 as found in the permit.

> *(11) An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle;*

Because the required reductions have been met with existing (pre-July 2014) BMPs, there is no cost associated with this permit cycle. For the next two permit cycles, it is anticipated that numerous BMPs will have to be installed to meet the required reductions. Cost estimates have been developed for the 46 conceptual designs of BMPs that were developed during the OAs. These estimates will be incorporated into the updated Chesapeake Bay TMDL Action Plan for the next permit cycle as part of the cost of implementation.

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9 Public Comments on Draft Action Plan

This section addresses Special Condition 12 as found in the permit.

> *(12) An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan.*

The Draft Chesapeake Bay TMDL Action Plan was made available on the internet on 20 August 2015 for comment by individuals who live and work on the installations who are served by the regulated MS4. Personnel assigned to installations served by the regulated MS4 were notified of the availability of the Draft Chesapeake Bay Action Plan in the Installation Plan of the Week for four consecutive weeks. The comment period was for four weeks and no comments were received regarding the plan.

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10 Reporting and Second Permit Cycle

This section describes the Chesapeake Bay TMDL reporting that will be included in the MS4 annual report and discusses the second permit cycle.

10.1 Annual Reports

Updates on the status of the implementation of the Action Plan will be provided with the annual report. These reports will include a list of BMPs implemented, the associated pollutant reductions, and other pertinent information as required by DEQ. In addition, a narrative describing the progress in implementing the Chesapeake Bay TMDL Action Plan will be submitted.

10.2 Second Permit Cycle

The next permit cycle is the second cycle in meeting the Chesapeake Bay POC load reductions. The cycle requires POC reductions that are equal to 35 percent of the total required reduction. Table 10-1 presents the required reductions for the second permit cycle.

Table 10-1 Pollutant Reduction to Meet 35% Goal

TN Reductions to Meet 35% (lbs/yr)	TP Reductions to Meet 35% (lbs/yr)	TSS Reductions to Meet 35% (lbs/yr)
1,423.10	350.20	156,560.69

The net surplus of 330.04 lbs/yr for TN, 59.21 lbs/yr for TP, and 29,534.94 lbs/yr for TSS remains after the required POC reductions were met for the first permit cycle. This surplus, or excess pollutant removal progress, will be applied to the second permit cycle. In addition, CNRMA has conceptual designs for 46 BMPs within the Bay and regulated MS4s that were identified during the OA (Section 5.2). Based on current preliminary calculations, the surplus from this permit cycle and the construction of the 46 BMPs with conceptual designs will not meet the 35 percent reduction. As a result, additional investigation into possible solutions to meet the required POC reductions will be completed.

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APPENDIX A

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)
JEB Fort Story

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	133.08	9.39	1,249.6
Regulated Urban Pervious		148.07	6.99	1,035.0
Regulated Urban Impervious	Phosphorus	133.08	1.76	234.2
Regulated Urban Pervious		148.07	0.5	74.0
Regulated Urban Impervious	Total Suspended Solids	133.08	676.94	90,087
Regulated Urban Pervious		148.07	101.08	14,967

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)
JEB Little Creek

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	545.72	9.39	5,124.3
Regulated Urban Pervious		631.81	6.99	4,416.4
Regulated Urban Impervious	Phosphorus	545.72	1.76	960.5
Regulated Urban Pervious		631.81	0.5	315.9
Regulated Urban Impervious	Total Suspended Solids	545.72	676.94	369,419
Regulated Urban Pervious		631.81	101.08	63,863

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)
Naval Air Station Oceana

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	306.68	9.39	2,879.7
Regulated Urban Pervious		1359.93	6.99	9,505.9
Regulated Urban Impervious	Phosphorus	306.68	1.76	539.8
Regulated Urban Pervious		1359.93	0.5	680.0
Regulated Urban Impervious	Total Suspended Solids	306.68	676.94	207,603
Regulated Urban Pervious		1359.93	101.08	137,462

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)
Naval Station Norfolk

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	1434.10	9.39	13,466.2
Regulated Urban Pervious		1047.30	6.99	7,320.6
Regulated Urban Impervious	Phosphorus	1434.10	1.76	2,524.0
Regulated Urban Pervious		1047.30	0.5	523.6
Regulated Urban Impervious	Total Suspended Solids	1434.10	676.94	970,798
Regulated Urban Pervious		1047.30	101.08	105,861

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)
Naval Support Activity Hampton Roads

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	291.47	9.39	2,736.9
Regulated Urban Pervious		455.97	6.99	3,187.3
Regulated Urban Impervious	Phosphorus	291.47	1.76	513.0
Regulated Urban Pervious		455.97	0.5	228.0
Regulated Urban Impervious	Total Suspended Solids	291.47	676.94	197,308
Regulated Urban Pervious		455.97	101.08	46,090

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)
Portsmouth Annex

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	51.00	9.39	478.9
Regulated Urban Pervious		39.15	6.99	273.7
Regulated Urban Impervious	Phosphorus	51.00	1.76	89.8
Regulated Urban Pervious		39.15	0.5	19.6
Regulated Urban Impervious	Total Suspended Solids	51.00	676.94	34,525
Regulated Urban Pervious		39.15	101.08	3,957

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)

Scott Center Annex

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	27.57	9.39	258.9
Regulated Urban Pervious		25.27	6.99	176.6
Regulated Urban Impervious	Phosphorus	27.57	1.76	48.5
Regulated Urban Pervious		25.27	0.5	12.6
Regulated Urban Impervious	Total Suspended Solids	27.57	676.94	18,663
Regulated Urban Pervious		25.27	101.08	2,554

Table 2a: Calculation Sheet for Estimating Existing Source Loads (James River Basin)

SUMMARY - ALL INSTALLATIONS

Subsource	Pollutant	Area Served by MS4 (ac)	2009 EOS Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	2789.62	9.39	26,194.5
Regulated Urban Pervious		3707.50	6.99	25,915.4
Regulated Urban Impervious	Phosphorus	2789.62	1.76	4,909.7
Regulated Urban Pervious		3707.50	0.5	1,853.8
Regulated Urban Impervious	Total Suspended Solids	2789.62	676.94	1,888,402
Regulated Urban Pervious		3707.50	101.08	374,754

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
JEB Fort Story

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	133.08	0.042255	5.6
Regulated Urban Pervious		148.07	0.02097	3.1
Regulated Urban Impervious	Phosphorus	133.08	0.01408	1.9
Regulated Urban Pervious		148.07	0.0018125	0.3
Regulated Urban Impervious	Total Suspended Solids	133.08	6.7694	901
Regulated Urban Pervious		148.07	0.442225	65

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
JEB Little Creek

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	545.72	0.042255	23.1
Regulated Urban Pervious		631.81	0.02097	13.2
Regulated Urban Impervious	Phosphorus	545.72	0.01408	7.7
Regulated Urban Pervious		631.81	0.0018125	1.1
Regulated Urban Impervious	Total Suspended Solids	545.72	6.7694	3,694
Regulated Urban Pervious		631.81	0.442225	279

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
Naval Air Station Oceana

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	306.68	0.042255	13.0
Regulated Urban Pervious		1359.93	0.02097	28.5
Regulated Urban Impervious	Phosphorus	306.68	0.01408	4.3
Regulated Urban Pervious		1359.93	0.0018125	2.5
Regulated Urban Impervious	Total Suspended Solids	306.68	6.7694	2,076
Regulated Urban Pervious		1359.93	0.442225	601

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
Naval Station Norfolk

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	1434.10	0.042255	60.6
Regulated Urban Pervious		1047.30	0.02097	22.0
Regulated Urban Impervious	Phosphorus	1434.10	0.01408	20.2
Regulated Urban Pervious		1047.30	0.0018125	1.9
Regulated Urban Impervious	Total Suspended Solids	1434.10	6.7694	9,708
Regulated Urban Pervious		1047.30	0.442225	463

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
Naval Support Activity Hampton Roads

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	291.47	0.042255	12.3
Regulated Urban Pervious		455.97	0.02097	9.6
Regulated Urban Impervious	Phosphorus	291.47	0.01408	4.1
Regulated Urban Pervious		455.97	0.0018125	0.8
Regulated Urban Impervious	Total Suspended Solids	291.47	6.7694	1,973
Regulated Urban Pervious		455.97	0.442225	202

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
Portsmouth Annex

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	51.00	0.042255	2.2
Regulated Urban Pervious		39.15	0.02097	0.8
Regulated Urban Impervious	Phosphorus	51.00	0.01408	0.7
Regulated Urban Pervious		39.15	0.0018125	0.1
Regulated Urban Impervious	Total Suspended Solids	51.00	6.7694	345
Regulated Urban Pervious		39.15	0.442225	17

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
Permit Cycle 1 (James River Basin)
Scott Center Annex

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	27.57	0.042255	1.2
Regulated Urban Pervious		25.27	0.02097	0.5
Regulated Urban Impervious	Phosphorus	27.57	0.01408	0.4
Regulated Urban Pervious		25.27	0.0018125	0.0
Regulated Urban Impervious	Total Suspended Solids	27.57	6.7694	187
Regulated Urban Pervious		25.27	0.442225	11

Table 3a: Calculation Sheet for Determining Total POC Reductions Required
SUMMARY - ALL INSTALLATIONS

Subsource	Pollutant	Area Served by MS4 (ac)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total POC Load Based on 2009 Progress Run (lbs)
Regulated Urban Impervious	Nitrogen	2789.62	0.042255	117.9
Regulated Urban Pervious		3707.50	0.02097	77.7
Regulated Urban Impervious	Phosphorus	2789.62	0.01408	39.3
Regulated Urban Pervious		3707.50	0.0018125	6.7
Regulated Urban Impervious	Total Suspended Solids	2789.62	6.7694	18,884
Regulated Urban Pervious		3707.50	0.442225	1,640

APPENDIX B

Date Installed	BMP Name	Practice Description	Impervious Acres Treated	Total Acres Treated	Runoff Captured*	Measurement Unit	Amount Applied	Latitude	Longitude	HUC12	State FIPS	Lifespan	Inspect Date	Maint Date	Contact Name	Contact Phone	Contact Email
<2003	SCA-1583-DP-01	Dry Pond	1.20	2.30	NA	System	1 of 1	36.810838	-76.3148	020802080203	51	20 to 50 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
<2003	SCA-1579-RP-01	Retention Pond (Wet)	2.40	7.70	NA	System	1 of 1	36.808924	-76.3135	020802080203	51	20 to 50 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2013	SCA-1717-RP-01	Retention Pond (Wet)	7.47	9.52	NA	System	1 of 1	36.808248	-76.3113	020802080203	51	20 to 50 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
pre-2006	NSAN-MCA600-EDB-01	Extended Detention Basin	6.15	20.00	NA	System	1 of 1	36.931254	-76.2965	020802080302	51	25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	NSAN-MCA614-BR-01	Bioretention Area	1.24	2.47	NA	System	1 of 1	36.928861	-76.2952	020802080302	51	10 to 25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	NSAN-NH32-IB-01	Infiltration Basin	2.03	2.88	NA	System	1 of 2	36.920367	-76.2998	020802080302	51	25 years	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	NSAN-NH32-IB-02	Infiltration Basin	0.46	0.78	NA	System	2 of 2	36.920292	-76.3007	020802080302	51	25 years	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2006	NSAN-NH33-DP-01	Dry Pond	1.68	2.50	NA	System	1 of 1	36.921639	-76.3036	020802080302	51	20 to 50 years	9-Jan-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2012	NSAN-NH46-IB-01	Infiltration Basin	0.90	1.51	NA	System	1 of 1	36.921353	-76.3059	020802080302	51	25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSAN-NH95-BR-01	Bioretention Area	0.10	0.10	NA	System	1 of 4	36.923306	-76.3076	020802080302	51	10 to 25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSAN-NH95-BR-02	Bioretention Area	0.09	0.09	NA	System	2 of 4	36.923305	-76.3076	020802080302	51	10 to 25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSAN-NH95-BR-03	Bioretention Area	0.11	0.11	NA	System	3 of 4	36.923899	-76.3077	020802080302	51	10 to 25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSAN-NH95-BR-04	Bioretention Area	0.13	0.13	NA	System	4 of 4	36.923872	-76.3081	020802080302	51	10 to 25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
1995	NSAN-SDA336-RB-01	Retention Basin	2.42	4.55	NA	System	1 of 1	36.921558	-76.3175	020802080206	51	20 to 50 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	NSN-A50-GR-01	Green Roof	0.25	0.25	NA	System	1 of 1	36.949171	-76.319	020802080302	51	25 years	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-01	Bioretention Area	0.51	0.51	NA	System	1 of 13	36.943668	-76.3079	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-02	Bioretention Area	0.51	0.51	NA	System	2 of 13	36.943172	-76.3074	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-03	Bioretention Area	0.51	0.51	NA	System	3 of 13	36.943125	-76.3078	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-04	Bioretention Area	0.51	0.51	NA	System	4 of 13	36.942766	-76.3072	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-05	Bioretention Area	0.51	0.51	NA	System	5 of 13	36.942439	-76.307	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-06	Bioretention Area	0.51	0.51	NA	System	6 of 13	36.942081	-76.3069	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-07	Bioretention Area	0.51	0.51	NA	System	7 of 13	36.942012	-76.3076	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-08	Bioretention Area	0.51	0.51	NA	System	8 of 13	36.941984	-76.3082	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-09	Bioretention Area	0.51	0.51	NA	System	9 of 13	36.941957	-76.3086	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-10	Bioretention Area	0.51	0.51	NA	System	10 of 13	36.941929	-76.3092	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-11	Bioretention Area	0.51	0.51	NA	System	11 of 13	36.941794	-76.3091	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-12	Bioretention Area	0.51	0.51	NA	System	12 of 13	36.941812	-76.3087	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-BR-13	Bioretention Area	0.51	0.51	NA	System	13 of 13	36.94186	-76.3076	020802080302	51	10 to 25 years	21-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2011	NSN-CD13-DP-01	Dry Pond	0.51	0.51	NA	System	1 of 1	36.942044	-76.3065	020802080302	51	20 to 50 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2011	NSN-CEP178-BR-01	Bioretention Area	0.49	0.49	NA	System	I of 2	36.94311	-76.324	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2011	NSN-CEP178-BR-02	Bioretention Area	0.89	0.89	NA	System	2 of 2	36.943394	-76.3236	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2009	NSN-LF**-HDS-01	Hydrodynamic Structures	7.57	7.57	NA	System	1 of 1	36.9533	-76.3032	020802080302	51	Indefinite	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2009	NSN-LF**-UDD-01	Underground Dry Detention Facility	7.57	7.57	NA	System	1 of 1	36.9527	-76.3034	020802080302	51	10 to 30 years	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2012	NSN-LP21-BR-01	Bioretention Area	0.10	0.10	NA	System	1 of 1	Unknown	Unknown	20802080302	51	10 to 25 years	Recently Located		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2012	NSN-LP33-BR-01	Bioretention Area	0.14	0.14	NA	System	1 of 2	Unknown	Unknown	20802080302	51	10 to 25 years	Recently Located		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2012	NSN-LP33-BR-02	Bioretention Area	0.01	0.01	NA	System	2 of 2	Unknown	Unknown	20802080302	51	10 to 25 years	Recently Located		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	NSN-LP34-BR-01	Bioretention Area	1.67	1.67	NA	System	1 of 1	36.943813	-76.291	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2012	NSN-LP34-BR-02	Bioretention Area	0.06	0.06	NA	System	1 of 2	36.94251	-76.2901	20802080302	51	10 to 25 years	Recently Located		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2012	NSN-LP34-BR-03	Bioretention Area	0.03	0.03	NA	System	2 of 2	36.942481	-76.2961	20802080302	51	10 to 25 years	Recently Located		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	NSN-LP49-BR-01	Bioretention Area	1.00	1.00	NA	System	1 of 2	36.943665	-76.2931	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	NSN-LP49-BR-02	Bioretention Area	0.66	0.66	NA	System	2 of 2	36.944311	-76.2934	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-01	Bioretention Area	0.30	0.30	NA	System	1 of 7	36.945402	-76.3076	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-02	Bioretention Area	0.30	0.30	NA	System	2 of 7	36.945353	-76.3076	020802080302	51	10 to 25 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-03	Bioretention Area	0.30	0.30	NA	System	3 of 7	36.94507	-76.3076	020802080302	51	10 to 25 years	17-Jul-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-04	Bioretention Area	0.30	0.30	NA	System	4 of 7	36.945021	-76.3076	020802080302	51	10 to 25 years	17-Jul-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-05	Bioretention Area	0.31	0.31	NA	System	5 of 7	36.94473	-76.3076	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-06	Bioretention Area	0.22	0.22	NA	System	6 of 7	36.944747	-76.307	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-BR-07	Bioretention Area	0.27	0.27	NA	System	7 of 7	36.945875	-76.3061	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2009	NSN-O27-EDB-01	Extended Detention Basin	3.36	5.17	NA	System	1 of 1	36.945821	-76.3074	020802080302	51	25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	NSN-P1-BR-01	Bioretention Area	0.26	0.26	NA	System	1 of 1	36.945245	-76.3117	020802080302	51	10 to 25 years	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-P86-BR-01	Bioretention Area	0.22	0.22	NA	System	1 of 2	36.945073	-76.3087	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-P86-BR-02	Bioretention Area	0.26	0.26	NA	System	2 of 2	36.945023	-76.3086	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-P86-EDB-01	Extended Detention Basin	0.48	0.77	NA	System	1 of 1	36.944984	-76.3086	020802080302	51	25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-01	Bioretention Area	1.64	1.97	NA	System	1 of 13	36.943813	-76.291	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-02	Bioretention Area	1.74	1.96	NA	System	2 of 13	36.943665	-76.2931	020802080302	51	10 to 25 years	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-03	Bioretention Area	1.64	1.95	NA	System	3 of 13	36.944311	-76.2934	020802080302	51	10 to 25 years	19-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-04	Bioretention Area	0.64	0.75	NA	System	4 of 13	36.945402	-76.3076	020802080302	51	10 to 25 years	19-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-05	Bioretention Area	0.80	0.94	NA	System	5 of 13	36.945353	-76.3076	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-06	Bioretention Area	0.38	0.44	NA	System	6 of 13	36.94507	-76.3076	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-07	Bioretention Area	0.67	0.80	NA	System	7 of 13	36.945021	-76.3076	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-08	Bioretention Area	0.37	0.42	NA	System	8 of 13	36.94473	-76.3076	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-09	Bioretention Area	0.21	0.25	NA	System	9 of 13	36.944747	-76.307	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-10	Bioretention Area	0.46	0.54	NA	System	10 of 13	36.945875	-76.3061	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-11	Bioretention Area	0.32	0.43	NA	System	11 of 13	36.945821	-76.3074	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-12	Bioretention Area	0.46	0.58	NA	System	12 of 13	36.945245	-76.3117	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Q47-BR-13	Bioretention Area	1.44	1.52	NA	System	13 of 13	36.945073	-76.3087	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2009	NSN-V70-FLT-01	Organic Media Filter	4.91	4.96	NA	System	1 of 2	36.948017	-76.2939	020802080302	51	20 to 50 years	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2009	NSN-V70-FLT-02	Organic Media Filter	4.91	4.96	NA	System	2 of 2	36.947978	-76.2938	020802080302	51	20 to 50 years	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2009	NSN-V71-FLT-01	Hydrodynamic Structures	9.51	9.51	NA	System	1 of 1	36.949108	-76.2966	020802080302	51	Indefinite	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil

Date Installed	BMP Name	Practice Description	Impervious Acres Treated	Total Acres Treated	Runoff Captured*	Measurement Unit	Amount Applied	Latitude	Longitude	HUC12	State FIPS	Lifespan	Inspect Date	Maint Date	Contact Name	Contact Phone	Contact Email
2008	NSN-SP28-BR-01	Bioretention Area	0.47	0.52	NA	System	1 of 1	36.946057	-76.2731	020802080302	51	10 to 25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	NSN-SP48-BR-01	Bioretention Area	1.01	1.58	NA	System	1 of 2	36.962573	-76.3222	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	NSN-SP48-BR-02	Bioretention Area	0.71	0.74	NA	System	2 of 2	36.960578	-76.3228	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	NSN-SP48-EDB-01	Extended Detention Basin	0.78	0.97	NA	System	1 of 1	36.960901	-76.3216	020802080302	51	25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	NSN-V47-IB-01	Infiltration Basin	0.33	0.33	NA	System	1 of 1	36.946476	-76.2927	020802080302	51	25 years	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	NSN-SP233-EDB-01	Extended Detention Basin	5.50	6.80	NA	System	1 of 1	36.951322	-76.2727	020802080302	51	25 years	19-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2008	NSN-V88-FLT-01	Organic Media Filter	0.75	0.75	NA	System	12	36.961715	-76.3224	020802080302	51	20 to 50 years	27-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2011	NSN-WB200-IB-01	Infiltration Basin	2.45	8.41	NA	System	1 of 1	36.956663	-76.2692	020802080302	51	25 years	25-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Y109-BR-01	Bioretention Area	0.94	1.50	NA	System	1 of 2	36.945557	-76.3271	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2009	NSN-Y109-BR-02	Bioretention Area	1.08	1.50	NA	System	2 of 2	36.94567	-76.3253	020802080302	51	10 to 25 years	20-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	NSN-Z312-BR-01	Bioretention Area	0.19	0.19	NA	System	1 of 1	36.944389	-76.3251	020802080302	51	10 to 25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	NSN-Z312-DRR-01	Disconnection of Rooftop Runoff	0.25	0.25	NA	System	1 of 1	36.943681	-76.3248	020802080302	51	Indefinite	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2012	NSN-W5-SW-01	Dry Swale	0.17	0.33	NA	System	1 of 4	36.952841	-76.3271	020802080302	51	25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2012	NSN-W5-SW-02	Dry Swale	0.17	0.33	NA	System	2 of 4	36.952541	-76.3272	020802080302	51	25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2012	NSN-W5-SW-03	Dry Swale	0.17	0.33	NA	System	3 of 4	36.952888	-76.3266	020802080302	51	25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2012	NSN-W5-SW-04	Dry Swale	0.17	0.33	NA	System	4 of 4	36.952502	-76.3267	020802080302	51	25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2013	NSN-CEP76-IB-01	Infiltration Basin	0.42	0.56	NA	System	1 of 2	36.937047	-76.3227	020802080302	51	25 years	24-Nov-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2013	NSN-CEP76-IB-02	Infiltration Basin	0.78	1.99	NA	System	2 of 2	36.936256	-76.3225	020802080302	51	25 years	17-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	NSAP-247-BR-01	Bioretention Area	0.20	0.37	NA	System	1 of 2	36.843353	-76.3084	020802080206	51	10 to 25 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	NSAP-247-BR-02	Bioretention Area	0.12	0.42	NA	System	2 of 2	36.84305	-76.308	020802080206	51	10 to 25 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	NSAP-288-IT-01	Infiltration Trench	0.20	0.30	NA	System	1 of 2	36.848153	-76.3102	020802080206	51	10 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	NSAP-288-IT-02	Infiltration Trench	0.20	0.30	NA	System	2 of 2	36.848153	-76.3105	020802080206	51	10 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
<2003	NSAP-288-FLT-01	Organic Media Filter	1.00	1.40	NA	System	1 of 1	36.848566	-76.3109	020802080206	51	20 to 50 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
<2003	NSAP-1-PP-01	Porous Pavement	0.70	4.70	NA	System	1 of 3	36.848171	-76.3029	020802080206	51	20 to 40 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
<2003	NSAP-1-PP-02	Porous Pavement	0.30	0.60	NA	System	2 of 3	36.847359	-76.3064	020802080206	51	20 to 40 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
<2003	NSAP-2-PP-03	Porous Pavement	0.50	1.40	NA	System	3 of 3	36.844843	-76.3058	020802080206	51	20 to 40 years	7-Jan-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	FS-1090-IB-01	Infiltration Basin	0.60	1.09	NA	System	1 of 1	36.924671	-76.0216	020801080202	51	25 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	FS-1090-IT-01	Infiltration Trench	0.41	0.85	NA	System	1 of 1	36.924671	-76.0216	020801080202	51	10 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	FS-118-EDB-01	Extended Detention Basin	1.10	3.80	NA	System	1 of 1	36.919162	-75.9969	020403040501	51	25 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	FS-310-BR-01	Bioretention Area	0.07	0.08	NA	System	1 of 2	36.92422	-76.002	020403040501	51	10 to 25 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	FS-310-BR-02	Bioretention Area	0.07	0.08	NA	System	2 of 2	36.924059	-76.0018	020403040501	51	10 to 25 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	FS-310-IB-01	Infiltration Basin	0.43	0.79	NA	System	1 of 1	36.924411	-76.002	020403040501	51	25 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	FS-310-PP-01	Porous Pavement	0.14	0.16	NA	System	1 of 2	36.924604	-76.0023	020403040501	51	20 to 40 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	FS-310-PP-02	Porous Pavement	0.22	0.35	NA	System	2 of 2	36.923913	-76.0017	020403040501	51	20 to 40 years	13-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2006	LC-1126-DP-01	Dry Pond	0.53	0.86	NA	System	1 of 1	36.914703	-76.1885	020801080202	51	20 to 50 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2006	LC-1126-SW-01	Dry Swale	0.19	0.30	NA	System	1 of 1	36.914505	-76.1883	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2010	LC-124-EEDB-01	Enhanced Extended Detention Basin	4.03	10.89	NA	System	1 of 1	36.910012	-76.1764	020801080202	51	25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	LC-1259-IB-01	Infiltration Basin	0.48	1.03	NA	System	1 of 3	36.917145	-76.1849	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	LC-1259-IB-02	Infiltration Basin	0.14	0.34	NA	System	2 of 3	36.917171	-76.1856	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	LC-1259-IB-03	Infiltration Basin	0.02	0.02	NA	System	3 of 3	36.917319	-76.1853	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2006	LC-126-SW-01	Infiltration Swale	4.25	4.99	NA	System	1 of 1	36.915403	-76.1899	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	LC-1559-IT-01	Infiltration Trench	0.00	1.70	NA	System	1 of 1	36.918232	-76.1858	020801080202	51	10 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2004	LC-1602-BR-01	Bioretention Area	0.18	0.26	NA	System	1 of 6	36.915295	-76.1896	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2004	LC-1602-BR-02	Bioretention Area	0.05	0.10	NA	System	2 of 6	36.915295	-76.1896	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2004	LC-1602-BR-03	Bioretention Area	0.27	0.39	NA	System	3 of 6	36.915295	-76.1896	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2004	LC-1602-BR-04	Bioretention Area	0.10	0.17	NA	System	4 of 6	36.915295	-76.1896	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2004	LC-1602-BR-05	Bioretention Area	0.15	0.20	NA	System	5 of 6	36.915295	-76.1896	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2004	LC-1602-BR-06	Bioretention Area	0.15	0.18	NA	System	6 of 6	36.915295	-76.1896	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2005	LC-1609-BR-01	Bioretention Area	0.25	0.50	NA	System	1 of 4	36.916295	-76.1881	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2005	LC-1609-BR-02	Bioretention Area	0.19	0.50	NA	System	2 of 4	36.915203	-76.1881	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2005	LC-1609-BR-03	Bioretention Area	0.48	0.50	NA	System	3 of 4	36.915364	-76.1878	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2005	LC-1609-BR-04	Bioretention Area	0.47	0.50	NA	System	4 of 4	36.915632	-76.1877	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	LC-1622-IT-01	Infiltration Trench	0.65	1.00	NA	System	2 of 2	36.91986	-76.1885	020801080202	51	10 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	LC-1625-EDB-01	Extended Detention Basin	1.95	3.15	NA	System	1 of 1	36.920745	-76.1871	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	LC-2002-BR-01	Bioretention Area	0.15	0.24	NA	System	1 of 6	36.910102	-76.1811	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	LC-2002-BR-02	Bioretention Area	0.19	0.39	NA	System	2 of 6	36.909294	-76.1813	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	LC-2002-BR-03	Bioretention Area	0.42	0.42	NA	System	3 of 6	36.909047	-76.1817	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	LC-2002-BR-04	Bioretention Area	0.37	0.40	NA	System	4 of 6	36.909331	-76.1819	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	LC-2002-BR-05	Bioretention Area	0.39	0.44	NA	System	5 of 6	36.909573	-76.182	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	LC-2002-BR-06	Bioretention Area	0.16	0.23	NA	System	6 of 6	36.909144	-76.182	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	LC-3093-BR-01	Bioretention Area	0.35	0.49	NA	System	1 of 1	36.911001	-76.1481	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	LC-3093-PP-01	Porous Pavement	0.02	0.02	NA	System	1 of 4	36.910855	-76.1491	020801080202	51	20 to 40 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	LC-3093-PP-02	Porous Pavement	0.03	0.03	NA	System	2 of 4	36.910905	-76.1487	020801080202	51	20 to 40 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	LC-3093-PP-03	Porous Pavement	0.05	0.05	NA	System	3 of 4	36.910815	-76.1487	020801080202	51	20 to 40 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	LC-3093-PP-04	Porous Pavement	0.02	0.02	NA	System	4 of 4	36.910905	-76.1487	020801080202	51	20 to 40 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	LC-3093-UDD-01	Underground Dry Detention Facility	1.29	1.33	NA	System	1 of 1	36.91075	-76.149	020801080202	51	10 to 30 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	LC-3147-BR-01	Bioretention Area	0.72	0.93	NA	System	1 of 4	36.912134	-76.1521	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	LC-3147-BR-02	Bioretention Area	0.72	0.93	NA	System	2 of 4	36.912095	-76.1525	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	LC-3147-BR-03	Bioretention Area	0.72	0.93	NA	System	3 of 4	36.911819	-76.1517	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil

Date Installed	BMP Name	Practice Description	Impervious Acres Treated	Total Acres Treated	Runoff Captured*	Measurement Unit	Amount Applied	Latitude	Longitude	HUC12	State FIPS	Lifespan	Inspect Date	Maint Date	Contact Name	Contact Phone	Contact Email
2008	LC-3147-BR-04	Bioretention Area	0.72	0.93	NA	System	4 of 4	36.91157	-76.1522	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-01	Bioretention Area	0.06	0.12	NA	System	1 of 7	36.911199	-76.1414	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-02	Bioretention Area	0.17	0.33	NA	System	2 of 7	36.911	-76.1414	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-03	Bioretention Area	0.08	0.16	NA	System	3 of 7	36.911071	-76.1414	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-04	Bioretention Area	0.09	0.52	NA	System	4 of 7	36.910898	-76.1421	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-05	Bioretention Area	0.13	0.40	NA	System	5 of 7	36.911065	-76.1425	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-06	Bioretention Area	0.34	0.66	NA	System	6 of 7	36.911231	-76.1429	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2014	LC-3335-BR-07	Bioretention Area	0.14	0.22	NA	System	7 of 7	36.911203	-76.1433	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3430-BR-01	Bioretention Area	0.77	1.12	NA	System	1 of 1	36.907446	-76.1411	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2012	LC-3432-IT-01	Infiltration Trench	0.82	1.92	NA	System	1 of 3	36.908558	-76.1424	020801080202	51	10 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2012	LC-3432-IT-02	Infiltration Trench	1.12	2.71	NA	System	2 of 3	36.907364	-76.1418	020801080202	51	10 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2012	LC-3432-IT-03	Infiltration Trench	0.43	0.61	NA	System	3 of 3	36.907505	-76.1425	020801080202	51	10 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2012	LC-3432-SW-01	Dry Swale	0.19	0.26	NA	System	1 of 1	36.907849	-76.1417	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2004	LC-3447-SW-01	Swale (Grass Channel)	0.23	0.37	NA	System	1 of 2	36.90859	-76.147	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2012	LC-3509-IB-01	Infiltration Basin	0.60	1.97	NA	System	1 of 2	36.915319	-76.1568	020801080202	51	25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2012	LC-3509-IB-02	Infiltration Basin	0.33	1.07	NA	System	2 of 2	36.915559	-76.1578	020801080202	51	25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2012	LC-3509-PP-01	Porous Pavement	1.07	1.09	NA	System	1 of 1	36.915827	-76.1574	020801080202	51	20 to 40 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-EDB-01	Extended Detention Basin	0.54	1.25	NA	System	1 of 1	36.911964	-76.1552	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-IB-01	Infiltration Basin	0.18	0.29	NA	System	1 of 5	36.912024	-76.1549	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-IB-02	Infiltration Basin	0.11	0.18	NA	System	2 of 5	36.91235	-76.1549	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-IB-03	Infiltration Basin	0.17	0.23	NA	System	3 of 5	36.912586	-76.1548	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-IB-04	Infiltration Basin	0.23	0.34	NA	System	4 of 5	36.912434	-76.1539	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-IB-05	Infiltration Basin	0.24	0.42	NA	System	5 of 5	36.911874	-76.1541	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2007	LC-3537-SW-01	Swale (Grass Channel)	0.21	0.36	NA	System	1 of 1	36.912899	-76.1542	020801080202	51	25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-01	Bioretention Area	0.14	0.31	NA	System	1 of 7	36.918223	-76.166	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-02	Bioretention Area	0.20	0.46	NA	System	2 of 7	36.917637	-76.1664	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-03	Bioretention Area	0.34	0.36	NA	System	3 of 7	36.917783	-76.1677	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-04	Bioretention Area	0.30	0.32	NA	System	4 of 7	36.917622	-76.1678	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-05	Bioretention Area	0.16	0.26	NA	System	5 of 7	36.917457	-76.1681	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-06	Bioretention Area	0.15	0.22	NA	System	6 of 7	36.91755	-76.1686	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3808-BR-07	Bioretention Area	0.05	0.15	NA	System	7 of 7	36.917486	-76.1686	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2004	LC-3808-HDS-01	Hydrodynamic Structures	1.96	2.33	NA	System	1 of 2	36.918047	-76.1659	020801080202	51	Indefinite	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2004	LC-3808-HDS-02	Hydrodynamic Structures	1.63	2.83	NA	System	2 of 2	36.917254	-76.1668	020801080202	51	Indefinite	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	LC-3811-IB-01	Infiltration Basin	0.23	0.49	NA	System	1 o f 1	36.91806	-76.1584	020801080202	51	25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3841-BR-01	Bioretention Area	0.17	0.35	NA	System	1 of 2	36.916815	-76.1644	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3841-BR-02	Bioretention Area	0.17	0.28	NA	System	2 of 2	36.916752	-76.1635	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3842-BR-01	Bioretention Area	0.13	0.22	NA	System	1 of 2	36.917067	-76.1655	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-3842-BR-02	Bioretention Area	0.18	0.33	NA	System	2 of 2	36.916978	-76.165	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	LC-3849-BR-01	Bioretention Area	0.19	0.30	NA	System	1 of 5	36.916317	-76.1625	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	LC-3849-BR-02	Bioretention Area	0.27	0.30	NA	System	2 of 5	36.916168	-76.1627	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	LC-3849-BR-03	Bioretention Area	0.28	0.30	NA	System	3 of 5	36.916131	-76.1625	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	LC-3849-BR-04	Bioretention Area	0.18	0.30	NA	System	4 of 5	36.915696	-76.1634	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2006	LC-3849-BR-05	Bioretention Area	0.14	0.30	NA	System	5 of 5	36.915562	-76.1624	020801080202	51	10 to 25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-01	Bioretention Area	0.30	0.30	NA	System	1 of 7	36.918178	-76.1604	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-02	Bioretention Area	0.30	0.30	NA	System	2 of 7	36.918123	-76.1597	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-03	Bioretention Area	0.30	0.30	NA	System	3 of 7	36.917686	-76.1596	020801080202	51	10 to 25 years	12-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-04	Bioretention Area	0.30	0.30	NA	System	4 of 7	36.917222	-76.1597	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-05	Bioretention Area	0.30	0.30	NA	System	5 of 7	36.917193	-76.1601	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-06	Bioretention Area	0.30	0.30	NA	System	6 of 7	36.917446	-76.1607	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	LC-3857-BR-07	Bioretention Area	0.30	0.30	NA	System	7 of 7	36.917907	-76.1606	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	LC-3889-BR-01	Bioretention Area	0.07	0.12	NA	System	1 of 4	36.921718	-76.1653	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	LC-3889-BR-02	Bioretention Area	0.11	0.12	NA	System	2 of 4	36.921469	-76.1653	020801080202	51	10 to 25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	LC-3889-BR-03	Bioretention Area	0.09	0.12	NA	System	3 of 4	36.921257	-76.1653	020801080202	51	10 to 25 years	22-Jul-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	LC-3889-IB-01	Infiltration Basin	3.79	4.99	NA	System	1 of 1	36.920991	-76.1654	020801080202	51	25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	LC-3889-PP-01	Porous Pavement	0.20	0.20	NA	System	1 of 2	36.921632	-76.1637	020801080202	51	20 to 40 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	LC-3889-PP-02	Porous Pavement	0.21	0.21	NA	System	2of 2	36.921523	-76.1633	020801080202	51	20 to 40 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	LC-3897-IB-01	Infiltration Basin	0.92	1.27	NA	System	1 of 1	36.918666	-76.1605	020801080202	51	25 years	24-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2006	LC-7-DP-01	Dry Pond	0.16	0.28	NA	System	1 of 1	36.913614	-76.1877	020801080202	51	20 to 50 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2006	LC-7-SW-01	Infiltration Swale	0.20	0.34	NA	System	1 of 1	36.913202	-76.1877	020801080202	51	25 years	10-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	LC-CB125-BR-01	Bioretention Area	0.02	0.11	NA	System	1 of 4	36.918442	-76.1694	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2008	LC-CB125-BR-02	Bioretention Area	0.04	0.10	NA	System	2 of 4	36.918502	-76.1691	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-CB125-BR-03	Bioretention Area	0.19	0.49	NA	System	3 of 4	36.91767	-76.1695	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2011	LC-CB125-BR-04	Bioretention Area	0.06	0.28	NA	System	4 of 4	36.917551	-76.1694	020801080202	51	10 to 25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2004	LC-Gate3-EDB-01	Extended Detention Basin	1.27	2.00	NA	System	1 of 1	36.908158	-76.1619	020801080202	51	25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2004	LC-Gate3-RB-01	Retention Basin	0.43	2.00	NA	System	1 o f 1	36.908986	-76.1621	020801080202	51	20 to 50 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
07/2004	LC-Gate3-SW-01	Swale (Grass Channel)	0.42	1.00	NA	System	1 of 1	36.908372	-76.1626	020801080202	51	25 years	11-Dec-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2014	LC-Cove-OYS-01	Oyster Reef	NA	NA	NA	System	1 of 1	36.912500	-76.1644	020801080202	51	Indefinite	Recently Installed		Angela Gent	(757) 341-0423	angela.gent@navy.mil

*The pollutant load removal calculations for the existing BMPs were completed using the Chesapeake Bay Program Established Efficiencies. Therefore, the runoff captured was not a necessary parameter for the computations.

Date Installed	BMP Name	Practice Description	Impervious Acres Treated	Total Acres Treated	Runoff Captured*	Measurement Unit	Amount Applied	Latitude	Longitude	HUC12	State FIPS	Lifespan	Inspect Date	Maint Date	Contact Name	Contact Phone	Contact Email
2010	CAX-CAD506-BR-01	Bioretention Area	Will be computed by 1/2016	1.15	NA	System	1 of 1	37.2804	-76.6119	020801070203	51	10 to 25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	CAX-CAD506-SW-01	Swale	Will be computed by 1/2016	0.57	NA	System	1 of 2	37.280526	-76.6121	020801070203	51	25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	CAX-CAD506-SW-02	Swale	Will be computed by 1/2016	0.57	NA	System	2 of 2	37.280198	-76.6119	020801070203	51	25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2011	CAX-CAD618-EDB-01	Extended Detention Basin	Will be computed by 1/2016	1.10	NA	System	1 of 3	37.281252	-76.6022	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2011	CAX-CAD618-EDB-02	Extended Detention Basin	Will be computed by 1/2016	1.10	NA	System	2 of 3	37.281448	-76.6025	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2011	CAX-CAD618-EDB-03	Extended Detention Basin	0.83	1.23	NA	System	3 of 3	37.280862	-76.6032	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2011	CAX-CAD618-HDS-01	Hydrodynamic Structures	0.41	0.71	NA	System	1 of 1	37.281399	-76.6021	020801070203	51	Indefinite	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2011	CAX-CAD618-IB-01	Infiltration Basin	1.23	1.72	NA	System	1 of 2	37.280865	-76.6019	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2011	CAX-CAD618-IB-02	Infiltration Basin	Will be computed by 1/2016	0.71	NA	System	2 of 2	37.281015	-76.603	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2013	CAX-CAD622-BR-01	Bioretention Area	Will be computed by 1/2016	0.00	NA	System	1 of 2	37.281837	-76.6008	020801070203	51	10 to 25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2013	CAX-CAD622-BR-02	Bioretention Area	Will be computed by 1/2016	0.00	NA	System	2 of 2	37.281926	-76.6006	020801070203	51	10 to 25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2013	CAX-CAD623-BR-01	Bioretention Area	Will be computed by 1/2016	0.00	NA	System	1 of 1	37.283145	-76.6013	020801070203	51	10 to 25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2013	CAX-CAD626-BR-01	Bioretention Area	Will be computed by 1/2016	0.00	NA	System	1 of 1	37.278779	-76.612	020801070203	51	10 to 25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2013	CAX-CAD628-BR-01	Bioretention Area	Will be computed by 1/2016	0.00	NA	System	1 of 1	37.278427	-76.6116	020801070203	51	10 to 25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-DW-01	Dry Wells	0.61	0.61	NA	System	80 total	36.908372	-76.1626	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-IT-01	Infiltration Trench	0.63	3.93	NA	System	1 of 2	37.290805	-76.6154	020801070203	51	10 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-IT-02	Infiltration Trench	0.51	3.00	NA	System	2 of 2	37.293643	-76.6171	020801070203	51	10 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-SW-01	Swale	0.49	1.03	NA	System	1 of 4	37.293601	-76.6161	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-SW-02	Swale	0.25	0.52	NA	System	2 of 4	37.293601	-76.6161	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-SW-03	Swale	0.64	1.19	NA	System	3 of 4	37.293601	-76.6161	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2011	CAX-RV-SW-04	Swale	0.14	0.23	NA	System	4 of 4	37.293601	-76.6161	020801070203	51	25 years	4-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2011	SJCA-167-PP-01	Porous Pavement	0.63	0.92	NA	System	1 of 1	36.787979	-76.317	020802080203	51	20 to 40 years	27-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2012	SJCA-271-EEDB-01	Enhanced Extended Detention Basin	19.89	54.60	NA	System	1 of 1	36.785144	-76.3168	020802080203	51	25 years	27-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2011	YT-2072-BR-01	Bioretention Area	0.60	0.00	NA	System	1 of 2	37.214113	-76.5815	020801070203	51	10 to 25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2011	YT-2072-BR-02	Bioretention Area	0.75	0.00	NA	System	2 of 2	37.214117	-76.5817	020801070203	51	10 to 25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2006	YT-2090-EDB-01	Extended Detention Basin	Will be computed by 1/2016	0.00	NA	System	1 of 1	37.24034	-76.5455	020801070203	51	25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-BR-01	Bioretention Area	0.51	0.51	NA	System	1 of 3	37.214864	-76.5729	020801070203	51	10 to 25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-BR-02	Bioretention Area	Will be computed by 1/2016	0.51	NA	System	2 of 3	37.214583	-76.5732	020801070203	51	10 to 25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-BR-03	Bioretention Area	Will be computed by 1/2016	0.16	NA	System	3 of 3	37.215333	-76.5737	020801070203	51	10 to 25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-EDB-01	Extended Detention Basin	0.51	1.20	NA	System	1 of 2	37.21428	-76.5734	020801070203	51	25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-EDB-02	Extended Detention Basin	0.58	6.02	NA	System	2 of 2	37.215277	-76.574	020801070203	51	25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-SW-01	Swale	Will be computed by 1/2016	0.05	NA	System	1 of 2	37.215301	-76.5732	020801070203	51	25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2009	YT-2094-SW-02	Swale	Will be computed by 1/2016	0.67	NA	System	2 of 2	37.214805	-76.5739	020801070203	51	25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2010	YT-2095-IB-01	Infiltration Basin	Will be computed by 1/2016	0.96	NA	System	1 of 1	37.237858	-76.5482	020801070203	51	25 years	12-Mar-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2010	YT-2097-PP-01	Porous Pavement	Will be computed by 1/2016	0.19	NA	System	1 of 1	37.269084	-76.5762	020801070203	51	20 to 40 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2010	YT-2097-WEDP-01	Wet Extended Detention Pond	4.40	10.79	NA	System	1 of 2	37.26969	-76.5761	020801070203	51	25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2010	YT-2097-WEDP-02	Wet Extended Detention Pond	0.62	1.27	NA	System	2 of 2	37.268973	-76.5763	020801070203	51	25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2013	YT-2101-BR-01	Bioretention Area	0.10	0.15	NA	System	1 of 4	37.21599	-76.5724	020801070203	51	10 to 25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2013	YT-2101-BR-02	Bioretention Area	0.07	0.12	NA	System	2 of 4	37.215796	-76.5725	020801070203	51	10 to 25 years	21-Feb-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2013	YT-2101-BR-03	Bioretention Area	0.24	1.41	NA	System	3 of 4	37.216044	-76.5731	020801070203	51	10 to 25 years	N/A		Angela Gent	(757) 341-0423	angela.gent@navy.mil
04/2013	YT-2101-BR-04	Bioretention Area	0.00	0.18	NA	System	4 of 4	37.215606	-76.573	020801070203	51	10 to 25 years	N/A		Angela Gent	(757) 341-0423	angela.gent@navy.mil

*Pollutant loads were not computed for these BMPs since they are not within the regulated MS4 area.

Date Installed	BMP Name	Practice Description	Impervious Acres Treated	Total Acres Treated	Runoff Captured*	Measurement Unit	Amount Applied	Latitude	Longitude	HUC12	State FIPS	Lifespan	Inspect Date	Maint Date	Contact Name	Contact Phone	Contact Email
12/2010	DN-250-EDB-01	Extended Detention Basin	0.56	0.95	NA	System	1 of 3	36.790127	-75.9658	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-EDB-02	Extended Detention Basin	0.23	0.64	NA	System	2 of 3	36.788673	-75.9663	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-EDB-03	Extended Detention Basin	0.57	1.61	NA	System	3 of 3	36.788965	-75.9654	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-RB-01	Retention Basin	5.08	6.65	NA	System	1 of 5	36.791188	-75.9673	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-RB-02	Retention Basin	0.68	1.17	NA	System	2 of 5	36.790709	-75.9656	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-RB-03	Retention Basin	4.84	6.07	NA	System	3 of 5	36.788208	-75.9664	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-RB-04	Retention Basin	2.03	2.42	NA	System	4 of 5	36.788581	-75.9653	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-250-RB-05	Retention Basin	0.66	0.88	NA	System	5 of 5	36.788805	-75.9646	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	DN-308-BR-01	Bioretention Area	0.46	0.46	NA	System	1 of 2	36.793207	-75.9646	030102051301	51	10 to 25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	DN-308-BR-02	Bioretention Area	0.41	0.41	NA	System	2 of 2	36.793204	-75.9645	030102051301	51	10 to 25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	DN-308-DP-01	Dry Pond	0.91	1.09	NA	System	1 of 1	36.79322	-75.9644	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	DN-308-PPND-01	Pocket Pond	0.43	0.67	NA	System	1 of 1	36.793551	-75.9661	030102051301	51	20 to 50 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	DN-308-SW-01	Swale	Will be computed by 1/2016	0.18	NA	System	1 of 2	36.793319	-75.9652	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2013	DN-308-SW-02	Swale	Will be computed by 1/2016	0.25	NA	System	2 of 2	36.793154	-75.965	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2010	DN-330-BR-01	Bioretention Area	0.21	0.21	NA	System	1 of 3	36.795096	-75.9642	030102051301	51	10 to 25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2010	DN-330-BR-02	Bioretention Area	0.24	0.24	NA	System	2 of 3	36.795194	-75.9642	030102051301	51	10 to 25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
01/2010	DN-330-BR-03	Bioretention Area	0.60	0.72	NA	System	3 of 3	36.795091	-75.9635	030102051301	51	10 to 25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-625-SW-01	Swale	0.12	0.31	NA	System	1 of 3	Unknown	Unknown	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-625-SW-02	Swale	0.55	1.03	NA	System	2 of 3	Unknown	Unknown	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
12/2010	DN-625-SW-03	Swale	0.86	1.41	NA	System	3 of 3	Unknown	Unknown	030102051301	51	25 years	26-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-BR-01	Bioretention Area	1.09	1.62	NA	System	1 of 3	36.574015	-76.2595	030102051103	51	10 to 25 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-BR-02	Bioretention Area	0.14	0.25	NA	System	2 of 3	36.574171	-76.2585	030102051103	51	10 to 25 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-BR-03	Bioretention Area	0.58	1.05	NA	System	3 of 3	36.574649	-76.2595	030102051103	51	10 to 25 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-EEDB-01	Enhanced Extended Detention Basin	2.40	7.59	NA	System	1 of 1	36.575239	-76.261	030102051103	51	25 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-GR-01	Green Roof	1.03	1.03	NA	System	1 of 1	36.575375	-76.2586	030102051103	51	25 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-01	Infiltration Trench	0.00	0.18	NA	System	1 of 9	36.574149	-76.2586	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-02	Infiltration Trench	0.06	0.35	NA	System	2 of 9	36.575861	-76.2613	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-03	Infiltration Trench	0.75	0.88	NA	System	3 of 9	36.57411	-76.2595	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-04	Infiltration Trench	0.50	0.50	NA	System	4 of 9	36.573837	-76.2592	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-05	Infiltration Trench	0.11	0.11	NA	System	5 of 9	36.573632	-76.259	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-06	Infiltration Trench	0.20	1.92	NA	System	6 of 9	36.577219	-76.2604	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-07	Infiltration Trench	0.03	0.04	NA	System	7 of 9	36.573595	-76.2586	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-08	Infiltration Trench	0.16	0.17	NA	System	8 of 9	36.573296	-76.2588	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-IT-09	Infiltration Trench	0.04	0.04	NA	System	9 of 9	36.573813	-76.2582	030102051103	51	10 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2011	NW-500-RB-01	Retention Basin	1.37	8.45	NA	System	1 of 1	36.629154	-76.2658	030102051103	51	20 to 50 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
08/2012	NW-510-BR-01	Bioretention Area	0.07	0.22	NA	System	1 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	18-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
09/2012	NW-510-BR-02	Bioretention Area	0.07	0.22	NA	System	2 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	19-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
10/2012	NW-510-BR-03	Bioretention Area	0.07	0.22	NA	System	3 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	20-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-04	Bioretention Area	0.07	0.22	NA	System	4 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	21-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-05	Bioretention Area	0.07	0.22	NA	System	5 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	22-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-06	Bioretention Area	0.07	0.22	NA	System	6 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	23-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-07	Bioretention Area	0.07	0.22	NA	System	7 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	24-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-08	Bioretention Area	0.07	0.22	NA	System	8 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	25-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-09	Bioretention Area	0.07	0.22	NA	System	9 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	26-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-10	Bioretention Area	0.07	0.22	NA	System	10 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	27-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-11	Bioretention Area	0.07	0.22	NA	System	11 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	28-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-12	Bioretention Area	0.07	0.22	NA	System	12 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	29-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
11/2012	NW-510-BR-13	Bioretention Area	0.07	0.22	NA	System	13 of 13	36.570885	-76.2577	030102051103	51	10 to 25 years	30-Jun-14		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	OC-446-WEDP-01	Wet Extended Detention Pond	1.50	3.40	NA	System	1 of 2	36.8089	-76.026	030102051203	51	25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
Unknown	OC-446-WEDP-02	Wet Extended Detention Pond	1.68	3.65	NA	System	2 of 2	36.8083	-76.0249	030102051203	51	25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	OC-450-BR-01	Bioretention Area	Will be computed by 1/2016	2.18	NA	System	1 of 2	36.8059	-76.0243	030102051203	51	10 to 25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	OC-450-BR-02	Bioretention Area	Will be computed by 1/2016	1.77	NA	System	2 of 2	36.805488	-76.0248	030102051203	51	10 to 25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2010	OC-450-PP-01	Porous Pavement	Will be computed by 1/2016	0.17	NA	System	1 of 1	36.805496	-76.0243	030102051203	51	20 to 40 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2015	OC-526-BR-01	Bioretention Area	0.33	0.48	NA	System	1 of 3	36.809979	-76.0329	030102051203	51	10 to 25 years	N/A		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2015	OC-526-BR-02	Bioretention Area	0.23	0.50	NA	System	2 of 3	36.809933	-76.0326	030102051203	51	10 to 25 years	N/A		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2015	OC-526-BR-03	Bioretention Area	0.24	0.47	NA	System	3 of 3	36.809717	-76.032	030102051203	51	10 to 25 years	N/A		Angela Gent	(757) 341-0423	angela.gent@navy.mil
06/2015	OC-526-EDB-01	Extended Detention Basin	0.86	1.45	NA	System	1 of 1	36.808973	-76.0314	030102051203	51	25 years	N/A		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2012	OC-56-BR-01	Bioretention Area	Will be computed by 1/2016	0.35	NA	System	1 of 3	36.816619	-76.0285	020801080201	51	10 to 25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2012	OC-56-BR-02	Bioretention Area	Will be computed by 1/2016	0.21	NA	System	2 of 3	36.81646	-76.0287	020801080201	51	10 to 25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2012	OC-56-BR-03	Bioretention Area	Will be computed by 1/2016	0.47	NA	System	3 of 3	36.816183	-76.029	020801080201	51	10 to 25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
05/2012	OC-56-HDS-01	Hydrodynamic Structures	Will be computed by 1/2016	1.28	NA	System	1 of 1	36.816231	-76.0291	020801080201	51	Indefinite	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
03/2015	OC-797-EDB-01	Extended Detention Basin	1.21	2.21	NA	System	1 of 1	36.7991	-76.023	030102051203	51	25 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil
2003	OC-GOLF-CW-01	Constructed Wetland	Will be computed by 1/2016	10.00	NA	System	1 of 1	36.793186	-76.039	030102051203	51	20 years	12-Mar-15		Angela Gent	(757) 341-0423	angela.gent@navy.mil

*Pollutant loads were not computed for these BMPs since they are not within the Chesapeake Bay.

APPENDIX C

Chesapeake Bay BMP Class	Chesapeake Bay BMP Category	Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Chesapeake Bay Program BMPs, Established Efficiencies		
				TN	TP	TSS
Wet Pond	Category A: Wet Ponds and Wetlands	Wet Ponds and Wetlands	Wet Pond	20%	45%	60%
Wet Extended Detention Pond	Category A: Wet Ponds and Wetlands	Wet Ponds and Wetlands	Wet Pond	20%	45%	60%
Pocket Pond	Category A: Wet Ponds and Wetlands	Wet Ponds and Wetlands	Wet Pond	20%	45%	60%
Constructed Wetland	Category A: Wet Ponds and Wetlands	Wet Ponds and Wetlands	Constructed Wetland	20%	45%	60%
Retention Pond (Wet)	Category A: Wet Ponds and Wetlands	Wet Ponds and Wetlands	Wet Pond	20%	45%	60%
Retention Basin	Category A: Wet Ponds and Wetlands	Wet Ponds and Wetlands	Wet Pond	20%	45%	60%
Dry Pond	Category B: Dry Detention, Hydrodynamic Structure	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%
Underground Dry Detention Facility	Category B: Dry Detention, Hydrodynamic Structure	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%
Dry Extended Detention Pond	Category C: Dry Extended Detention	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%
Extended Detention Basin	Category C: Dry Extended Detention	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%
Enhanced Extended Detention Basin	Category C: Dry Extended Detention	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%
Infiltration Trench	Category D: Infiltration	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%
Infiltration Basin	Category D: Infiltration	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%
Porous Pavement	Category D: Infiltration	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%
Filtering and Open Channel Practices	Category E: Filtering Practices	Filtering Practices	Filtering Practice	40%	60%	80%
Organic media filter	Category E: Filtering Practices	Filtering Practices	Filtering Practice	40%	60%	80%
Bioretention areas	Category E: Filtering Practices	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%
Swale (Grass Channel)	Category E: Filtering Practices	Vegetated Open Channels C/D soils, no underdrain	Wet Swale	10%	10%	50%
Dry Swale, w/ Underdrain	Category E: Filtering Practices	Bioretention A/B soils, underdrain	Dry Swale	70%	75%	80%
Dry Swale, no Underdrain	Category E: Filtering Practices	Bioretention A/B soils, no underdrain	Dry Swale	80%	85%	90%
Infiltration Swale	Category E: Filtering Practices	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%
Wet Swale	Category E: Filtering Practices	Wet Ponds and Wetlands	Wet Swale	20%	45%	60%
Disconnection of Rooftop Runoff	Category G: Impervious Surface Reduction		Rooftop	0%	0%	0%
Green Roofs	Category G: Impervious Surface Reduction		Vegetated Roof	0%	0%	0%
Hydrodynamic Structures	Category H; Street Sweeping, Catch Basin Inserts	Dry Detention Ponds and Hydrodynamic Structures	Filtering Practice	5%	10%	10%

JEB Fort Story BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
FS-1090-IB-01	Category D: Infiltration	Infiltration Basin	1.09	0.60	0.49	2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	7.25	1.11	432.91
FS-1090-IT-01	Category D: Infiltration	Infiltration Trench	0.85	0.41	0.44	2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	5.54	0.80	305.92
FS-310-BR-01	Category E: Filtering Practices	Bioretention Areas	0.08	0.07	0.01	201306	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.18	0.06	27.25
FS-310-BR-02	Category E: Filtering Practices	Bioretention Areas	0.08	0.07	0.01	201306	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.18	0.06	27.57
FS-310-IB-01	Category D: Infiltration	Infiltration Basin	0.79	0.43	0.36	201306	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	5.24	0.80	311.10
FS-310-PP-01	Category D: Infiltration	Porous Pavement	0.16	0.14	0.02	201306	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.15	0.05	53.24
FS-310-PP-02	Category D: Infiltration	Porous Pavement	0.35	0.22	0.13	201306	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.30	0.09	89.14
									Total POC Reduction (lbs/yr)			18.84	2.96	1247.12

JEB Little Creek BMPs (January 1, 2006 to June 30, 2009)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
LC-1126-DP-01	Category B: Dry Detention, Hydrodynamic Structure	Dry Pond	0.86	0.53	0.33	07/2006	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%	0.36	0.11	39.21
LC-1126-SW-01	Category E: Filtering Practices	Dry Swale, no Underdrain	0.30	0.19	0.11	07/2006	Bioretention A/B soils, no underdrain	Dry Swale	80%	85%	90%	2.04	0.33	125.76
LC-126-SW-01	Category D: Infiltration	Infiltration Swale	4.99	4.25	0.74	07/2006	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	36.06	6.67	2804.20
LC-2002-BR-01	Category E: Filtering Practices	Bioretention Areas	0.24	0.15	0.09	06/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.51	0.14	60.85
LC-2002-BR-02	Category E: Filtering Practices	Bioretention Areas	0.39	0.19	0.20	06/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.80	0.20	81.86
LC-2002-BR-03	Category E: Filtering Practices	Bioretention Areas	0.42	0.42	0.00	06/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.99	0.33	156.37
LC-2002-BR-04	Category E: Filtering Practices	Bioretention Areas	0.40	0.37	0.03	06/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.92	0.30	139.43
LC-2002-BR-05	Category E: Filtering Practices	Bioretention Areas	0.44	0.39	0.05	06/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.00	0.32	147.98
LC-2002-BR-06	Category E: Filtering Practices	Bioretention Areas	0.23	0.16	0.07	06/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.50	0.14	63.46
LC-3147-BR-01	Category E: Filtering Practices	Bioretention Areas	0.93	0.72	0.21	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.06	0.62	279.74
LC-3147-BR-02	Category E: Filtering Practices	Bioretention Areas	0.93	0.72	0.21	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.06	0.62	279.74
LC-3147-BR-03	Category E: Filtering Practices	Bioretention Areas	0.93	0.72	0.21	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.06	0.62	279.74
LC-3147-BR-04	Category E: Filtering Practices	Bioretention Areas	0.93	0.72	0.21	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.06	0.62	279.74
LC-3537-EDB-01	Category C: Dry Extended Detention	Extended Detention Basin	1.25	0.54	0.71	07/2007	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	2.01	0.26	262.39
LC-3537-IB-01	Category D: Infiltration	Infiltration Basin	0.29	0.18	0.11	07/2007	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	1.96	0.31	124.13
LC-3537-IB-02	Category D: Infiltration	Infiltration Basin	0.18	0.11	0.08	07/2007	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	1.21	0.19	74.73
LC-3537-IB-03	Category D: Infiltration	Infiltration Basin	0.23	0.17	0.07	07/2007	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	1.60	0.27	112.35
LC-3537-IB-04	Category D: Infiltration	Infiltration Basin	0.34	0.23	0.11	07/2007	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	2.35	0.40	160.66
LC-3537-IB-05	Category D: Infiltration	Infiltration Basin	0.42	0.24	0.18	07/2007	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	2.81	0.43	170.53
LC-3537-SW-01	Category E: Filtering Practices	Swale (Grass Channel)	0.36	0.21	0.15	07/2007	Vegetated Open Channels C/D soils, no underdrain	Wet Swale	10%	10%	50%	0.30	0.04	78.66
LC-3849-BR-01	Category E: Filtering Practices	Bioretention Areas	0.30	0.19	0.11	00/2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.64	0.17	76.57
LC-3849-BR-02	Category E: Filtering Practices	Bioretention Areas	0.30	0.27	0.03	00/2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.68	0.22	101.06
LC-3849-BR-03	Category E: Filtering Practices	Bioretention Areas	0.30	0.28	0.02	00/2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.69	0.23	105.21
LC-3849-BR-04	Category E: Filtering Practices	Bioretention Areas	0.30	0.18	0.12	00/2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.63	0.17	74.31
LC-3849-BR-05	Category E: Filtering Practices	Bioretention Areas	0.30	0.14	0.16	00/2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.61	0.15	62.45
LC-7-DP-01	Category B: Dry Detention, Hydrodynamic Structure	Dry Pond	0.28	0.16	0.12	07/2006	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%	0.12	0.03	12.04
LC-7-SW-01	Category D: Infiltration	Infiltration Swale	0.34	0.20	0.14	07/2006	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	2.29	0.36	142.06
LC-CB125-BR-01	Category E: Filtering Practices	Bioretention Areas	0.11	0.02	0.09	00/2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.20	0.04	12.45
LC-CB125-BR-02	Category E: Filtering Practices	Bioretention Areas	0.10	0.04	0.06	00/2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.20	0.05	18.23
									Total POC Reduction (lbs/yr)			69.71	14.34	6325.94

JEB Little Creek BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
LC-124-EEDB-01	Category C: Dry Extended Detention	Enhanced Extended Detention Basin	10.89	4.03	6.86	07/2010	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	17.16	2.10	2052.89
LC-1259-IB-01	Category D: Infiltration	Infiltration Basin	1.03	0.48	0.55	11/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	6.68	0.95	361.50
LC-1259-IB-02	Category D: Infiltration	Infiltration Basin	0.34	0.14	0.20	11/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	2.17	0.29	109.24
LC-1259-IB-03	Category D: Infiltration	Infiltration Basin	0.02	0.02	0.00	11/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	0.15	0.03	12.86
LC-1559-IT-01	Category D: Infiltration	Infiltration Trench	1.70	0.00	1.70	00/2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	9.51	0.72	163.24
LC-1622-IT-01	Category D: Infiltration	Infiltration Trench	1.00	0.65	0.35	00/2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	6.84	1.12	451.62
LC-1625-EDB-01	Category C: Dry Extended Detention	Extended Detention Basin	3.15	1.95	1.20	00/2010	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	5.34	0.81	864.80
LC-3093-BR-01	Category E: Filtering Practices	Bioretention Areas	0.49	0.35	0.14	08/2012	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.07	0.31	138.09
LC-3093-PP-01	Category D: Infiltration	Porous Pavement	0.02	0.02	0.00	08/2012	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.02	0.01	7.45
LC-3093-PP-02	Category D: Infiltration	Porous Pavement	0.03	0.03	0.00	08/2012	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.03	0.01	11.17
LC-3093-PP-03	Category D: Infiltration	Porous Pavement	0.05	0.05	0.00	08/2012	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.05	0.02	18.62
LC-3093-PP-04	Category D: Infiltration	Porous Pavement	0.02	0.02	0.00	08/2012	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.02	0.01	7.45
LC-3093-UDD-01	Category B: Dry Detention, Hydrodynamic Structure	Underground Dry Detention Facility	1.33	1.29	0.04	08/2012	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%	0.62	0.23	87.73
LC-3335-BR-01	Category E: Filtering Practices	Bioretention Areas	0.12	0.06	0.06	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.25	0.06	25.67
LC-3335-BR-02	Category E: Filtering Practices	Bioretention Areas	0.34	0.17	0.17	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.70	0.17	72.74
LC-3335-BR-03	Category E: Filtering Practices	Bioretention Areas	0.16	0.08	0.08	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.33	0.08	34.23
LC-3335-BR-04	Category E: Filtering Practices	Bioretention Areas	0.52	0.09	0.43	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.96	0.17	57.41
LC-3335-BR-05	Category E: Filtering Practices	Bioretention Areas	0.40	0.13	0.27	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.78	0.16	63.41
LC-3335-BR-06	Category E: Filtering Practices	Bioretention Areas	0.66	0.34	0.32	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.36	0.34	144.38
LC-3335-BR-07	Category E: Filtering Practices	Bioretention Areas	0.23	0.14	0.09	2014	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.49	0.13	57.13
LC-3432-IT-01	Category D: Infiltration	Infiltration Trench	1.92	0.82	1.10	07/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	12.31	1.69	632.96
LC-3432-IT-02	Category D: Infiltration	Infiltration Trench	2.71	1.12	1.59	07/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	17.30	2.35	872.95
LC-3432-IT-03	Category D: Infiltration	Infiltration Trench	0.61	0.43	0.18	07/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	4.24	0.72	293.81
LC-3432-SW-01	Category E: Filtering Practices	Dry Swale, w/ Underdrain	0.26	0.19	0.07	06/2012	Bioretention A/B soils, underdrain	Dry Swale	70%	75%	80%	1.59	0.28	108.56
LC-3509-IB-01	Category D: Infiltration	Infiltration Basin	1.97	0.60	1.37	04/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	12.16	1.48	514.94
LC-3509-IB-02	Category D: Infiltration	Infiltration Basin	1.07	0.33	0.74	04/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	6.62	0.81	284.98
LC-3509-PP-01	Category D: Infiltration	Porous Pavement	1.09	1.07	0.02	04/2012	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	1.02	0.38	401.06
LC-3808-BR-01	Category E: Filtering Practices	Bioretention Areas	0.31	0.14	0.17	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.63	0.15	61.58
LC-3808-BR-02	Category E: Filtering Practices	Bioretention Areas	0.46	0.20	0.26	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.92	0.22	88.28
LC-3808-BR-03	Category E: Filtering Practices	Bioretention Areas	0.36	0.34	0.02	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.83	0.27	127.70
LC-3808-BR-04	Category E: Filtering Practices	Bioretention Areas	0.32	0.30	0.02	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.74	0.24	112.81

JEB Little Creek BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
LC-3808-BR-05	Category E: Filtering Practices	Bioretention Areas	0.26	0.16	0.10	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.55	0.15	65.13
LC-3808-BR-06	Category E: Filtering Practices	Bioretention Areas	0.22	0.15	0.07	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.47	0.13	59.74
LC-3808-BR-07	Category E: Filtering Practices	Bioretention Areas	0.15	0.05	0.10	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.29	0.06	24.18
LC-3811-IB-01	Category D: Infiltration	Infiltration Basin	0.49	0.23	0.26	10/2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	3.18	0.45	172.88
LC-3841-BR-01	Category E: Filtering Practices	Bioretention Areas	0.35	0.17	0.18	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.71	0.18	73.30
LC-3841-BR-02	Category E: Filtering Practices	Bioretention Areas	0.28	0.17	0.11	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.59	0.16	69.41
LC-3842-BR-01	Category E: Filtering Practices	Bioretention Areas	0.22	0.13	0.09	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.46	0.12	53.40
LC-3842-BR-02	Category E: Filtering Practices	Bioretention Areas	0.33	0.18	0.15	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.68	0.18	75.36
LC-3889-BR-01	Category E: Filtering Practices	Bioretention Areas	0.12	0.07	0.05	06/2013	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.25	0.07	28.84
LC-3889-BR-02	Category E: Filtering Practices	Bioretention Areas	0.12	0.11	0.01	06/2013	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.28	0.09	41.51
LC-3889-BR-03	Category E: Filtering Practices	Bioretention Areas	0.12	0.09	0.04	06/2013	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.26	0.08	33.59
LC-3889-IB-01	Category D: Infiltration	Infiltration Basin	4.99	3.79	1.20	06/2013	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	35.18	6.18	2552.55
LC-3889-PP-01	Category D: Infiltration	Porous Pavement	0.20	0.20	0.00	06/2013	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.19	0.07	74.46
LC-3889-PP-02	Category D: Infiltration	Porous Pavement	0.21	0.21	0.00	06/2013	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	10%	20%	55%	0.20	0.07	78.19
LC-CB125-BR-03	Category E: Filtering Practices	Bioretention Areas	0.49	0.19	0.30	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.97	0.22	87.42
LC-CB125-BR-04	Category E: Filtering Practices	Bioretention Areas	0.28	0.06	0.22	01/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.53	0.10	35.84
									Total POC Reduction (lbs/yr)			157.67	24.63	11767.06

Naval Station Norfolk BMPs (January 1, 2006 to June 30, 2009)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
NSN-LP34-BR-01	Category E: Filtering Practices	Bioretention Areas	1.67	1.67	0.00	2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	3.92	1.32	621.77
NSN-O27-BR-01	Category E: Filtering Practices	Bioretention Areas	0.30	0.30	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.70	0.24	111.70
NSN-O27-BR-02	Category E: Filtering Practices	Bioretention Areas	0.30	0.30	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.70	0.24	111.70
NSN-O27-BR-03	Category E: Filtering Practices	Bioretention Areas	0.30	0.30	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.70	0.24	111.70
NSN-O27-BR-04	Category E: Filtering Practices	Bioretention Areas	0.30	0.30	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.70	0.24	111.70
NSN-O27-BR-05	Category E: Filtering Practices	Bioretention Areas	0.31	0.31	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.73	0.25	115.42
NSN-O27-BR-06	Category E: Filtering Practices	Bioretention Areas	0.22	0.22	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.52	0.17	81.91
NSN-O27-BR-07	Category E: Filtering Practices	Bioretention Areas	0.27	0.27	0.00	01/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.63	0.21	100.53
NSN-O27-EDB-01	Category C: Dry Extended Detention	Extended Detention Basin	5.17	3.36	1.81	01/2009	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	8.84	1.36	1475.17
NSN-P1-BR-01	Category E: Filtering Practices	Bioretention Areas	0.26	0.26	0.00	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.62	0.21	98.29
NSN-P86-BR-01	Category E: Filtering Practices	Bioretention Areas	0.22	0.22	0.00	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.52	0.17	81.91
NSN-P86-BR-02	Category E: Filtering Practices	Bioretention Areas	0.26	0.26	0.00	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.61	0.21	96.80
NSN-P86-EDB-01	Category C: Dry Extended Detention	Extended Detention Basin	0.77	0.48	0.29	2009	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	1.31	0.20	212.55
NSN-Q47-BR-01	Category E: Filtering Practices	Bioretention Areas	1.97	1.64	0.33	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	4.42	1.37	627.39
NSN-Q47-BR-02	Category E: Filtering Practices	Bioretention Areas	1.96	1.74	0.22	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	4.47	1.43	661.46
NSN-Q47-BR-03	Category E: Filtering Practices	Bioretention Areas	1.95	1.64	0.31	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	4.39	1.37	627.20
NSN-Q47-BR-04	Category E: Filtering Practices	Bioretention Areas	0.75	0.64	0.11	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.69	0.53	243.61
NSN-Q47-BR-05	Category E: Filtering Practices	Bioretention Areas	0.94	0.80	0.14	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.12	0.66	305.32
NSN-Q47-BR-06	Category E: Filtering Practices	Bioretention Areas	0.44	0.38	0.06	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.00	0.32	145.70
NSN-Q47-BR-07	Category E: Filtering Practices	Bioretention Areas	0.80	0.67	0.13	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.80	0.56	257.31
NSN-Q47-BR-08	Category E: Filtering Practices	Bioretention Areas	0.42	0.37	0.05	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.95	0.30	139.08
NSN-Q47-BR-09	Category E: Filtering Practices	Bioretention Areas	0.25	0.21	0.04	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.56	0.18	81.20
NSN-Q47-BR-10	Category E: Filtering Practices	Bioretention Areas	0.54	0.46	0.08	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.22	0.38	175.40
NSN-Q47-BR-11	Category E: Filtering Practices	Bioretention Areas	0.43	0.32	0.11	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.94	0.28	126.05
NSN-Q47-BR-12	Category E: Filtering Practices	Bioretention Areas	0.58	0.46	0.12	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.29	0.39	177.37
NSN-Q47-BR-13	Category E: Filtering Practices	Bioretention Areas	1.52	1.44	0.08	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	3.52	1.16	541.85
NSN-SP28-BR-01	Category E: Filtering Practices	Bioretention Areas	0.52	0.47	0.05	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.18	0.38	176.28
NSN-SP48-BR-01	Category E: Filtering Practices	Bioretention Areas	1.58	1.01	0.58	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	3.36	0.93	406.15
NSN-SP48-BR-02	Category E: Filtering Practices	Bioretention Areas	0.74	0.71	0.03	2008	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.72	0.57	265.12
NSN-SP48-EDB-01	Category C: Dry Extended Detention	Extended Detention Basin	0.97	0.78	0.20	2008	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	1.73	0.29	327.19
NSN-V88-FLT-01	Category E: Filtering Practices	Organic Media Filter	0.75	0.75	0.00	4/1/2008	Filtering Practices	Filtering Practice	40%	60%	80%	2.81	0.79	405.08
NSN-Y109-BR-01	Category E: Filtering Practices	Bioretention Areas	1.50	0.94	0.57	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	3.18	0.87	379.53
NSN-Y109-BR-02	Category E: Filtering Practices	Bioretention Areas	1.50	1.08	0.42	2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	3.27	0.95	425.45
NSN-Z312-BR-01	Category E: Filtering Practices	Bioretention Areas	0.19	0.19	0.00	2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.44	0.15	69.25
NSN-Z312-DRR-01	Category E: Filtering Practices	Bioretention areas	0.25	0.25	0.00	2006	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.59	0.20	93.08
									Total POC Reduction (lbs/yr)			67.19	19.11	9987.19

Naval Station Norfolk BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
*NSN-A50-GR-01	Category G: Impervious Surface Reduction	Green Roofs	0.25	0.25	0.00	2010	N/A	Vegetated Roof	N/A	N/A	N/A	1.73	0.39	122.55
NSN-CD13-BR-01	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-02	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-03	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-04	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-05	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-06	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-07	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-08	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-09	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-10	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-11	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-12	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-BR-13	Category E: Filtering Practices	Bioretention Areas	0.51	0.51	0.00	06/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.20	0.40	189.88
NSN-CD13-DP-01	Category B: Dry Detention, Hydrodynamic Structure	Dry Pond	0.51	0.51	0.00	06/2011	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%	0.24	0.09	34.52
NSN-CEP178-BR-01	Category E: Filtering Practices	Bioretention Areas	0.49	0.49	0.00	08/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.15	0.39	182.44
NSN-CEP178-BR-02	Category E: Filtering Practices	Bioretention Areas	0.89	0.89	0.00	08/2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.09	0.70	331.36
NSN-LF**-HDS-01	Category H; Street Sweeping, Catch Basin Inserts	Hydrodynamic Structures	7.57	7.57	0	09/2009	Dry Detention Ponds and Hydrodynamic Structures	Filtering Practice	5%	10%	10%	3.38	1.20	461.20
NSN-LF**-UDD-01	Category B: Dry Detention, Hydrodynamic Structure	Underground Dry Detention Facility	7.57	7.57	0	09/2009	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%	3.55	1.33	512.44
NSN-LP21-BR-01	Category E: Filtering Practices	Bioretention Areas	0.1	0.1	0	12/2012	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.23	0.08	37.23
NSN-LP33-BR-01	Category E: Filtering Practices	Bioretention Areas	0.14	0.14	0	12/2012	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.33	0.11	52.12
NSN-LP33-BR-02	Category E: Filtering Practices	Bioretention Areas	0.01	0.01	0	12/2012	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.02	0.01	3.72
NSN-LP34-BR-02	Category E: Filtering Practices	Bioretention Areas	0.06	0.06	0	12/2012	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.14	0.05	22.34
NSN-LP34-BR-03	Category E: Filtering Practices	Bioretention Areas	0.03	0.03	0	12/2012	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.07	0.02	11.17
NSN-LP49-BR-01	Category E: Filtering Practices	Bioretention Areas	1.00	1.00	0.00	2010	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	2.35	0.79	372.32
NSN-LP49-BR-02	Category E: Filtering Practices	Bioretention Areas	0.66	0.66	0.00	2011	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	1.55	0.52	245.73
NSN-V47-IB-01	Category D: Infiltration	Infiltration Basin	0.33	0.33	0.00	2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	2.48	0.49	212.22
NSN-SP233-EDB-01	Category C: Dry Extended Detention	Extended Detention Basin	6.80	5.50	1.30	2010	Dry Extended Detention Ponds	Extended Detention Pond	20%	20%	60%	12.15	2.07	2312.74
NSN-WB200-IB-01	Category D: Infiltration	Infiltration Basin	8.41	2.45	5.96	9/30/2011	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	51.73	6.20	2147.89
NSN-W5-SW-01	Category E: Filtering Practices	Dry Swale, w/ Underdrain	0.33	0.17	0.15	2012	Bioretention A/B soils, underdrain	Dry Swale	70%	75%	80%	1.88	0.28	105.29
NSN-W5-SW-02	Category E: Filtering Practices	Dry Swale, w/ Underdrain	0.33	0.17	0.15	2012	Bioretention A/B soils, underdrain	Dry Swale	70%	75%	80%	1.88	0.28	105.29
NSN-W5-SW-03	Category E: Filtering Practices	Dry Swale, w/ Underdrain	0.33	0.17	0.15	2012	Bioretention A/B soils, underdrain	Dry Swale	70%	75%	80%	1.88	0.28	105.29
NSN-W5-SW-04	Category E: Filtering Practices	Dry Swale, w/ Underdrain	0.33	0.17	0.15	2012	Bioretention A/B soils, underdrain	Dry Swale	70%	75%	80%	1.88	0.28	105.29
NSN-CEP76-IB-01	Category D: Infiltration	Infiltration Basin	0.56	0.42	0.14	04/2013	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	3.94	0.69	283.54
NSN-CEP76-IB-02	Category D: Infiltration	Infiltration Basin	1.99	0.78	1.21	04/2013	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	12.63	1.68	617.80
NSN-V70-FLT-01	Category E: Filtering Practices	Organic Media Filter	4.96	4.71	0.25	09/2009	Filtering Practices	Filtering Practice	40%	60%	80%	18.39	5.05	2570.93
NSN-V70-FLT-02	Category E: Filtering Practices	Organic Media Filter	4.96	4.71	0.25	09/2009	Filtering Practices	Filtering Practice	40%	60%	80%	18.39	5.05	2570.93

Naval Station Norfolk BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
NSN-V71-FLT-01	Category H; Street Sweeping, Catch Basin Inserts	Hydrodynamic Structures	9.51	9.51	0.00	09/2009	Dry Detention Ponds and Hydrodynamic Structures	Filtering Practice	5%	10%	10%	4.46	1.67	643.77
									Total POC Reduction (lbs/yr)			164.08	34.97	16638.59

* Category G BMPs are to be treated as land use change. Table V.F.1 from the TMDL Action Plan Guidance was used to determine the redutions.

NSA Hampton Roads BMPs (January 1, 2006 to June 30, 2009)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
NSA-NH33-DP-01	Category B: Dry Detention, Hydrodynamic Structure	Dry Pond	2.5	1.68	0.82	05/2006	Dry Detention Ponds and Hydrodynamic Structures	Extended Detention Pond	5%	10%	10%	1.08	0.34	122.01
NSA-NH95-BR-01	Category E: Filtering Practices	Bioretention Areas	0.1	0.1	0	04/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.23	0.08	37.23
NSA-NH95-BR-02	Category E: Filtering Practices	Bioretention Areas	0.09	0.09	0	04/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.21	0.07	33.51
NSA-NH95-BR-03	Category E: Filtering Practices	Bioretention Areas	0.11	0.11	0	04/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.26	0.09	40.95
NSA-NH95-BR-04	Category E: Filtering Practices	Bioretention Areas	0.13	0.13	0	04/2009	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.31	0.10	48.40
									Total POC Reduction (lbs/yr)			2.08	0.68	282.11

NSA Hampton Roads BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
NSA-NH32-IB-01	Category D: Infiltration	Infiltration Basin	2.88	2.03	0.84	08/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	19.95	3.39	1386.14
NSA-NH32-IB-02	Category D: Infiltration	Infiltration Basin	0.78	0.46	0.31	08/2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	5.19	0.82	325.59
NSA-NH46-IB-01	Category D: Infiltration	Infiltration Basin	1.51	0.90	0.61	2012	Infiltration Practices w/o Sand, Veg.	Infiltration	80%	85%	95%	10.17	1.61	637.36
									Total POC Reduction (lbs/yr)			35.31	5.82	2349.09

Portsmouth Annex BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
NMC-247-BR-01	Category E: Filtering Practices	Bioretention areas	0.37	0.20	0.17	2010	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.77	0.20	83.9
NMC-247-BR-02	Category E: Filtering Practices	Bioretention areas	0.42	0.12	0.30	2010	Bioretention C/D soils, underdrain	Bioretention	25%	45%	55%	0.81	0.16	61.4
									Total POC Reduction (lbs/yr)			1.57	0.36	145.27

Scott Center Annex BMPs (July 1, 2009 to June 30, 2014)

NAVFAC BMP Inventory							Chesapeake Bay Established Efficiency/BMP Type	VA Clearinghouse BMP Type	Ches Bay Program Efficiency			Ches Bay Program Efficiency POC Reduction (lbs/yr)		
BMP	BMP Category	BMP Class	Treatment (ac)	Impervious (ac)	Pervious (ac)	Install Year			TN	TP	TSS	TN	TP	TSS
SC-1717-RP-01	Category A: Wet Ponds and Wetlands	Retention Pond (Wet)	9.52	7.47	2.05	2013	Wet Ponds and Wetlands	Wet Pond	20%	45%	60%	16.89	6.38	3158.37
									Total POC Reduction (lbs/yr)			16.89	6.38	3158.37

POC Loads as of June 30, 2009
JEB Fort Story

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	133.08	9.39	1,250
Regulated Urban Pervious		148.07	6.99	1,035
Regulated Urban Impervious	Phosphorus	133.08	1.76	234
Regulated Urban Pervious		148.07	0.5	74
Regulated Urban Impervious	Total Suspended Solids	133.08	676.94	90,087
Regulated Urban Pervious		148.07	101.08	14,967

POC Loads as of July 1, 2014
JEB Fort Story

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	139.26	9.39	1,308
Regulated Urban Pervious		141.89	6.99	992
Regulated Urban Impervious	Phosphorus	139.26	1.76	245
Regulated Urban Pervious		141.89	0.5	71
Regulated Urban Impervious	Total Suspended Solids	139.26	676.94	94,270
Regulated Urban Pervious		141.89	101.08	14,342

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
JEB Fort Story

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	1307.64	1,250	58.03	14.8	0.74
Regulated Urban Pervious		991.79	1,035	-43.20		
Regulated Urban Impervious	Phosphorus	245.10	234	10.88	7.8	0.39
Regulated Urban Pervious		70.94	74	-3.09		
Regulated Urban Impervious	Total Suspended Solids	94270.15	90,087	4183.58	3,559	177.94
Regulated Urban Pervious		14341.98	14,967	-624.69		

POC Loads as of June 30, 2009
JEB Little Creek

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	545.72	9.39	5,124
Regulated Urban Pervious		631.81	6.99	4,416
Regulated Urban Impervious	Phosphorus	545.72	1.76	960
Regulated Urban Pervious		631.81	0.5	316
Regulated Urban Impervious	Total Suspended Solids	545.72	676.94	369,419
Regulated Urban Pervious		631.81	101.08	63,863

POC Loads as of July 1, 2014
JEB Little Creek

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	568.83	9.39	5,341
Regulated Urban Pervious		608.70	6.99	4,255
Regulated Urban Impervious	Phosphorus	568.83	1.76	1,001
Regulated Urban Pervious		608.70	0.5	304
Regulated Urban Impervious	Total Suspended Solids	568.83	676.94	385,064
Regulated Urban Pervious		608.70	101.08	61,527

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
JEB Little Creek

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	5341.31	5,124	217.01	55.5	2.77
Regulated Urban Pervious		4254.81	4,416	-161.54		
Regulated Urban Impervious	Phosphorus	1001.14	960	40.67	29.1	1.46
Regulated Urban Pervious		304.35	316	-11.56		
Regulated Urban Impervious	Total Suspended Solids	385063.78	369,419	15644.60	13,309	665.43
Regulated Urban Pervious		61527.40	63,863	-2336.04		

POC Loads as of June 30, 2009
Naval Air Station Oceana

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	306.68	9.39	2,880
Regulated Urban Pervious		1359.93	6.99	9,506
Regulated Urban Impervious	Phosphorus	306.68	1.76	540
Regulated Urban Pervious		1359.93	0.5	680
Regulated Urban Impervious	Total Suspended Solids	306.68	676.94	207,603
Regulated Urban Pervious		1359.93	101.08	137,462

POC Loads as of July 1, 2014
Naval Air Station Oceana

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	306.68	9.39	2,880
Regulated Urban Pervious		1359.93	6.99	9,506
Regulated Urban Impervious	Phosphorus	306.68	1.76	540
Regulated Urban Pervious		1359.93	0.5	680
Regulated Urban Impervious	Total Suspended Solids	306.68	676.94	207,603
Regulated Urban Pervious		1359.93	101.08	137,462

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
Naval Air Station Oceana

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	2879.71	2,880	0.00	0.0	0.00
Regulated Urban Pervious		9505.92	9,506	0.00		
Regulated Urban Impervious	Phosphorus	539.75	540	0.00	0.0	0.00
Regulated Urban Pervious		679.97	680	0.00		
Regulated Urban Impervious	Total Suspended Solids	207602.56	207,603	0.00	0	0.00
Regulated Urban Pervious		137461.88	137,462	0.00		

POC Loads as of June 30, 2009
Naval Station Norfolk

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	1434.10	9.39	13,466
Regulated Urban Pervious		1047.30	6.99	7,321
Regulated Urban Impervious	Phosphorus	1434.10	1.76	2,524
Regulated Urban Pervious		1047.30	0.5	524
Regulated Urban Impervious	Total Suspended Solids	1434.10	676.94	970,798
Regulated Urban Pervious		1047.30	101.08	105,861

POC Loads as of July 1, 2014
Naval Station Norfolk

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	1456.89	9.39	13,680
Regulated Urban Pervious		1024.50	6.99	7,161
Regulated Urban Impervious	Phosphorus	1456.89	1.76	2,564
Regulated Urban Pervious		1024.50	0.5	512
Regulated Urban Impervious	Total Suspended Solids	1456.89	676.94	986,229
Regulated Urban Pervious		1024.50	101.08	103,557

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
Naval Station Norfolk

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	13680.22	13,466	214.04	54.7	2.74
Regulated Urban Pervious		7161.28	7,321	-159.33		
Regulated Urban Impervious	Phosphorus	2564.13	2,524	40.12	28.7	1.44
Regulated Urban Pervious		512.25	524	-11.40		
Regulated Urban Impervious	Total Suspended Solids	986228.53	970,798	15430.16	13,126	656.31
Regulated Urban Pervious		103556.85	105,861	-2304.02		

POC Loads as of June 30, 2009
Naval Support Activity Hampton Roads

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	291.47	9.39	2,737
Regulated Urban Pervious		455.97	6.99	3,187
Regulated Urban Impervious	Phosphorus	291.47	1.76	513
Regulated Urban Pervious		455.97	0.5	228
Regulated Urban Impervious	Total Suspended Solids	291.47	676.94	197,308
Regulated Urban Pervious		455.97	101.08	46,090

POC Loads as of July 1, 2014
Naval Support Activity Hampton Roads

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	299.93	9.39	2,816
Regulated Urban Pervious		447.52	6.99	3,128
Regulated Urban Impervious	Phosphorus	299.93	1.76	528
Regulated Urban Pervious		447.52	0.5	224
Regulated Urban Impervious	Total Suspended Solids	299.93	676.94	203,033
Regulated Urban Pervious		447.52	101.08	45,235

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
Naval Support Activity Hampton Roads

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	2816.32	2,737	79.42	20.3	1.01
Regulated Urban Pervious		3128.13	3,187	-59.12		
Regulated Urban Impervious	Phosphorus	527.87	513	14.89	10.7	0.53
Regulated Urban Pervious		223.76	228	-4.23		
Regulated Urban Impervious	Total Suspended Solids	203033.09	197,308	5725.35	4,870	243.52
Regulated Urban Pervious		45234.85	46,090	-854.90		

POC Loads as of June 30, 2009
Portsmouth Annex

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	51.00	9.39	479
Regulated Urban Pervious		39.15	6.99	274
Regulated Urban Impervious	Phosphorus	51.00	1.76	90
Regulated Urban Pervious		39.15	0.5	20
Regulated Urban Impervious	Total Suspended Solids	51.00	676.94	34,525
Regulated Urban Pervious		39.15	101.08	3,957

POC Loads as of July 1, 2014
Portsmouth Annex

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	51.40	9.39	483
Regulated Urban Pervious		38.75	6.99	271
Regulated Urban Impervious	Phosphorus	51.40	1.76	90
Regulated Urban Pervious		38.75	0.5	19
Regulated Urban Impervious	Total Suspended Solids	51.40	676.94	34,796
Regulated Urban Pervious		38.75	101.08	3,917

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
Portsmouth Annex

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	482.66	479	3.75	1.0	0.05
Regulated Urban Pervious		270.86	274	-2.79		
Regulated Urban Impervious	Phosphorus	90.47	90	0.70	0.5	0.03
Regulated Urban Pervious		19.37	20	-0.20		
Regulated Urban Impervious	Total Suspended Solids	34795.73	34,525	270.59	230	11.51
Regulated Urban Pervious		3916.83	3,957	-40.40		

POC Loads as of June 30, 2009
Scott Center Annex

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 06/30/09	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)
Regulated Urban Impervious	Nitrogen	27.57	9.39	259
Regulated Urban Pervious		25.27	6.99	177
Regulated Urban Impervious	Phosphorus	27.57	1.76	49
Regulated Urban Pervious		25.27	0.5	13
Regulated Urban Impervious	Total Suspended Solids	27.57	676.94	18,663
Regulated Urban Pervious		25.27	101.08	2,554

POC Loads as of July 1, 2014
Scott Center Annex

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 07/01/14	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load as of 07/01/14 (lbs/yr)
Regulated Urban Impervious	Nitrogen	30.61	9.39	287
Regulated Urban Pervious		22.23	6.99	155
Regulated Urban Impervious	Phosphorus	30.61	1.76	54
Regulated Urban Pervious		22.23	0.5	11
Regulated Urban Impervious	Total Suspended Solids	30.61	676.94	20,721
Regulated Urban Pervious		22.23	101.08	2,247

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014
Scott Center Annex

Subsource	Pollutant	Estimated Total POC Load as of 07/01/14 (lbs/yr)	Estimated Total POC Load as of 06/30/09 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)	5% Reduction of Total Load Change
Regulated Urban Impervious	Nitrogen	287.42	259	28.54	7.3	0.36
Regulated Urban Pervious		155.40	177	-21.25		
Regulated Urban Impervious	Phosphorus	53.87	49	5.35	3.8	0.19
Regulated Urban Pervious		11.12	13	-1.52		
Regulated Urban Impervious	Total Suspended Solids	20720.55	18,663	2057.82	1,751	87.53
Regulated Urban Pervious		2247.19	2,554	-307.27		

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

JEB Fort Story

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	8.73	2.14	966.3
5% of New Source Loads Required Reductions	0.74	0.39	177.9
Reduction from January 2006 to June 2009 BMPs	0.00	0.00	0.0
Reduction from July 2009 to June 2014 BMPs	18.84	2.96	1,247.1
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**-9.37**	**-0.43**	**-102.8**

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

JEB Little Creek

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	36.31	8.83	3,973.6
5% of New Source Loads Required Reductions	2.77	1.46	665.4
Reduction from January 2006 to June 2009 BMPs	69.71	14.34	6,325.9
Reduction from July 2009 to June 2014 BMPs	157.67	24.63	11,767.1
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**-188.30**	**-28.68**	**-13,454.0**

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

Naval Air Station Oceana

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	41.48	6.78	2,677.4
5% of New Source Loads Required Reductions	0.00	0.00	0.0
Reduction from January 2006 to June 2009 BMPs	0.00	0.00	0.0
Reduction from July 2009 to June 2014 BMPs	0.00	0.00	0.0
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**41.48**	**6.78**	**2,677.4**

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

Naval Station Norfolk

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	82.56	22.09	10,171.1
5% of New Source Loads Required Reductions	2.74	1.44	656.3
Reduction from January 2006 to June 2009 BMPs	67.19	19.11	9,987.2
Reduction from July 2009 to June 2014 BMPs	164.08	34.97	16,638.6
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**-145.97**	**-30.55**	**-15,798.4**

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

Naval Support Activity Hampton Roads

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	21.88	4.93	2,174.7
5% of New Source Loads Required Reductions	1.01	0.53	243.5
Reduction from January 2006 to June 2009 BMPs	2.08	0.68	282.1
Reduction from July 2009 to June 2014 BMPs	35.31	5.82	2,349.1
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**-14.50**	**-1.03**	**-213.0**

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

Portsmouth Annex

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	2.98	0.79	362.6
5% of New Source Loads Required Reductions	0.05	0.03	11.5
Reduction from January 2006 to June 2009 BMPs	0.00	0.00	0.0
Reduction from July 2009 to June 2014 BMPs	1.57	0.36	145.3
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**1.45**	**0.46**	**228.8**

Pollutant Calculations for Permit Cycle 1, Post 2006 BMPs Incorporated

Scott Center Annex

	Nitrogen (lbs/yr)	Phosphorus (lbs/yr)	Total Suspended Solids (lbs/yr)
5% of Existing Loads Required Reductions	1.69	0.43	197.8
5% of New Source Loads Required Reductions	0.36	0.19	87.5
Reduction from January 2006 to June 2009 BMPs	0.00	0.00	0.0
Reduction from July 2009 to June 2014 BMPs	16.89	6.38	3,158.4
Reqd Red. after January 2006 to June 2014 BMPs Incorp.	**-14.83**	**-5.75**	**-2,873.0**

Final

Local TMDL Action Plan

NAVAL AIR STATION OCEANA

Contract #:

N40080-11-D-0499; WE38

February 2016

Prepared for:

NAVFAC Mid-Atlantic
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Local TMDL Action Plan for Impaired Waters at Naval Air Station Oceana
Contract No. N40080-11-D-0499, WE38

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LIST OF ACRONYMS

Baker	Michael Baker International
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
BST	Bacteria Source Tracking
CBP	Chesapeake Bay Program
cfu	Colony-Forming Unit
CNRMA	Commander, Navy Region Mid-Atlantic
CWA	Clean Water Act
DEQ	Department of Environmental Quality
DoD	Department of Defense
DON	Department of the Navy
EA	Environmental Assessment
ECATTS	Environmental Compliance Assessment Training and Tracking System
ESC	Erosion and Sediment Control
EDB	Extended Detention Basin
EISA	Energy Independence and Security Act
EOS	Edge of Stream
EPA	Environmental Protection Agency (United States)
GIS	Geographic Information Systems
HSPF	Hydrologic Simulation Program – FORTRAN
HUC	Hydrologic Unit Code
INRMP	Integrated Natural Resources Management Plan
LA	Load Allocation
LID	Low Impact Development
MCM	Minimum Control Measure
MCON	Military Construction
MEP	Maximum Extent Practicable
MIDLANT	Mid-Atlantic
MRLC	Multi-Resolution Land Characteristics
MS4	Municipal Separate Storm Sewer Systems
MWR	Morale, Welfare, and Recreation

NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NLCD	National Land Cover Dataset
NPDES	National Pollutant Discharge Elimination System
NSA	Naval Support Activity
NSAP	Naval Support Activity Hampton Roads Portsmouth Annex
NSN	Naval Station Norfolk
OA	Opportunity Assessment
POC	Pollutant of Concern
SOP	Standard Operating Procedure
SPCC	Spill Prevention Control and Countermeasures
SWCB	State Water Control Board
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UFC	Unified Facilities Criteria
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VADEQ	Virginia Department of Environmental Quality
VESCP	Virginia Erosion and Sediment Control Program
VDGIF	Virginia Department of Game and Inland Fisheries
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WIP	Watershed Implementation Plan
WLA	Waste Load Allocation

Executive Summary

This Local Total Maximum Daily Load (TMDL) Action Plan presents Commander, Navy Region Mid-Atlantic's (CNRMA's) plan to meet the requirements found in Section I.B of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems. General Permit Number VAR040114 issued on 1 July 2013 is a consolidated or regional five-year permit that encompasses eight installations in the Hampton Roads, Virginia, area.

The permit requires that Municipal Separate Storm Sewer Systems (MS4s) that have been allocated a wasteload in an approved TMDL, maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for the associated pollutant(s). CNRMA has three installations with associated approved TMDLs. The installations include:

- Naval Air Station (NAS) Oceana
- Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex)
- Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex)

This Local TMDL Action Plan for NAS Oceana was developed in response to the TMDL "*Development of Bacterial TMDLs for the Virginia Beach Coastal Area (London Bridge Creek & Canal #2, Milldam Creek, Nawney Creek, West Neck Creek (Middle), and West Neck Creek (Upper*))" hereafter referred to as the TMDL Report. The TMDL Action Plan for Portsmouth Annex and Scott Center Annex can be found under separate cover since they are regulated under a different TMDL Report.

The TMDL Report identified the horse stable and pastures at NAS Oceana as contributing bacteria consistent with 92 percent of the bacterial impairment in Upper West Neck Creek. However, a study conducted by the Navy in 2007 found the percentage to be significantly lower.

This Action Plan provides background information regarding the significant sources of bacteria, including the horse stable and pastures; other livestock; wildlife; and human and pets. It also addresses management practices that NAS Oceana is currently employing or will employ to address the bacteria TMDL. Finally, the plan provides the methods that will be used to assess the plans effectiveness.

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1 Introduction

This Local Total Maximum Daily Load (TMDL) Action Plan presents the Commander, Navy Region Mid-Atlantic's (CNRMA) plan to meet the requirements found in Section I.B of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). General Permit Number VAR040114 is a consolidated or regional five-year permit that encompasses eight naval installations, including Naval Air Station (NAS) Oceana.

The Special Condition for Local TMDLs in the permit MS4s requires permittees to develop Action Plans that address all pollutants of concern (POC) for which the permittee has been assigned a wasteload allocation (WLA) under an approved TMDL. The permit also states that the Local TMDL Action Plan should identify best management practices (BMPs) and other management strategies that the permittee will implement to meet the TMDL WLAs and achieve compliance with the Special Condition. The permit allows the Local TMDL Action Plan to be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach, provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLAs. The implementation of the TMDL Action Plan should be documented in the permittee's annual reports.

1.1 Background Information

States are required to identify waters that do not meet or are not expected to meet water quality standards even after technology-based or other required controls are in place. These waterbodies are considered water quality-limited and require TMDLs. Since 1998, Virginia Department of Environmental Quality (VADEQ) has developed TMDLs, with public input, to restore and maintain the water quality of impaired waterbodies.

Section 303(d) of the Clean Water Act requires that WLAs be implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. As point sources, MS4s are assigned individual or aggregate WLAs in TMDLs for receiving streams or watersheds to which the MS4 discharges.

Municipalities may also be assigned load allocations (LAs) for those areas outside of the regulated MS4 Service Area that are sources of the POCs. The permit does not require permittees to incorporate approaches for addressing LAs into their Action Plans. LAs are often addressed through TMDL Implementation Plans which are developed through VADEQ and characterize the suite of corrective actions needed to reduce nonpoint source pollutant loads.

1.2 Installation Description

NAS Oceana is located in the southeastern part of the City of Virginia Beach. The installation is bounded by four major roads: Oceana Boulevard to the east, Potters Road to the north, London Bridge Road to the west, and Harpers Road to the south. Refer to **Figure 1-1** for a general location map.

The installation occupies approximately 5,412 acres near the Atlantic Ocean and is the U.S. Navy East Coast Master Jet Base. The receiving waters for NAS Oceana are West Neck Creek, Wolfsnare Creek, Great Neck Creek, and London Bridge Creek. The installation is bounded on all sides by the City of Virginia Beach, Virginia.

The primary mission of NAS Oceana is as a Shore-Based Readiness Integrator, providing the facilities, equipment, and personnel to support shore-based readiness, total force readiness, and maintain operational access of Oceana-based forces.

Figure 1-1 NAS Oceana Location Map

1.3 Authorization, Scope, and Purpose

The MS4 permit requires CNRMA to develop Local TMDL Action Plans for installations with WLAs. Three installations have been identified that are subject to this requirement:

- NAS Oceana
- Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex)
- Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex)

This Local TMDL Action Plan for NAS Oceana was developed in response to the TMDL "*Development of Bacterial TMDLs for the Virginia Beach Coastal Area (London Bridge Creek & Canal #2, Milldam Creek, Nawney Creek, West Neck Creek (Middle), and West Neck Creek (Upper*))" hereafter referred to as the TMDL Report. The Local TMDL Action Plan for Portsmouth Annex and Scott Center Annex will be provided in a separate report since these installations are impacted by another TMDL.

The purpose of this Local TMDL Action Plan is to outline NAVFAC Mid-Atlantic's plan for NAS Oceana to address the WLA, including identifying BMPs and other interim milestone activities to be implemented during the permit as well as methods to assess the plan's effectiveness.

1.4 Fundamental Concepts and Definitions

The definitions of TMDL and other related terminologies, as well as the concept for TMDL computation are provided in this section.

- **Allocation** – the portion of a receiving water's loading capacity attributed to one of its existing or future pollution sources (nonpoint or point) or to natural background sources.
- **Bacteria** – single-celled microorganisms. Bacteria of the coliform group are considered the primary indicators of fecal contamination and are often used to assess water quality. Examples include fecal coliform, *E. coli*, or *enterococci*.
- **Bacterial source tracking (BST)** – a collection of scientific methods used to determine sources of fecal contamination in environmental samples from human, livestock, or wildlife origins.
- **Best management practices (BMPs)** – methods, measures, or practices determined to be reasonable and cost-effective means for a landowner to meet certain, generally nonpoint source, pollution control needs. BMPs include structural and nonstructural controls and operation and maintenance procedures.
- **Load allocation (LA)** – the portion of a receiving waters loading capacity attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. LAs are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading.

- **Margin of safety (MOS)** – a required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body. The MOS is normally incorporated into the conservative assumptions used to develop TMDLs (generally within the calculations or models) and approved by EPA either individually or in state/EPA agreements. If the MOS needs to be larger than that which is allowed through the conservative assumptions, additional MOS can be added as a separate component of the TMDL.
- **Total Maximum Daily Load (TMDL)** – a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that load among the various sources of that pollutant. Pollutant sources are characterized as either point sources that receive a WLA, or nonpoint sources that receive a load allocation (LA).
- **Wasteload allocation (WLA)** – the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

TMDLs can be calculated as the sum of the individual WLAs for point sources, LAs for nonpoint sources and natural background, plus a MOS. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures that relate to a state's water quality standard. The equation for TMDL calculation is presented as:

$$\mathbf{TMDL = WLAs + LAs + MOS}$$

1.5 Report Organization

Pursuant to DEQ draft guidance (**Appendix A**), the Local TMDL Action Plan for NAS Oceana is organized into eight primary sections including:

- **Section 1** – Introduction (including background information; installation description; authorization, scope and purpose; fundamental concepts and definitions; and report organization)
- **Section 2** – Watershed Characterization (including receiving waters and land cover)
- **Section 3** – Supporting Documentation and Reports (including TMDL Report, TMDL Implementation Plans, Bacteria Sources at NAS Oceana, and Environmental Assessment of Stables Expansion)
- **Section 4** – Significant Sources of the Bacteria (including horse stable and pastures; other livestock contributors; wildlife contributors; and human and pet contributors)
- **Section 5** – Legal Authorities
- **Section 6** – Management Practices (including bacteria criteria and treatment; MS4 permit management techniques; and other management techniques)

- **Section 7** – Methods to Assess the TMDL Action Plan (including sampling of outfalls, public awareness evaluation, and annual review of Action Plan)
- **Section 8** – References (providing a list of references utilized in development of this plan)

The report also includes the following Appendices:

- **Appendix A** – VADEQ Local TMDL Action Plan Guidance
- **Appendix B** – Soil Sampling Results from Manure Application Area and Potential Application Areas
- **Appendix C** – Nutrient Management Plan Identification
- **Appendix D** – Measurable Goals, Metrics, and Milestones

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2 Watershed Characterization

This section addresses the major characteristics of the NAS Oceana watersheds including adjacent receiving waters and local land uses to provide important hydrological and geological background information.

2.1 Receiving Waters

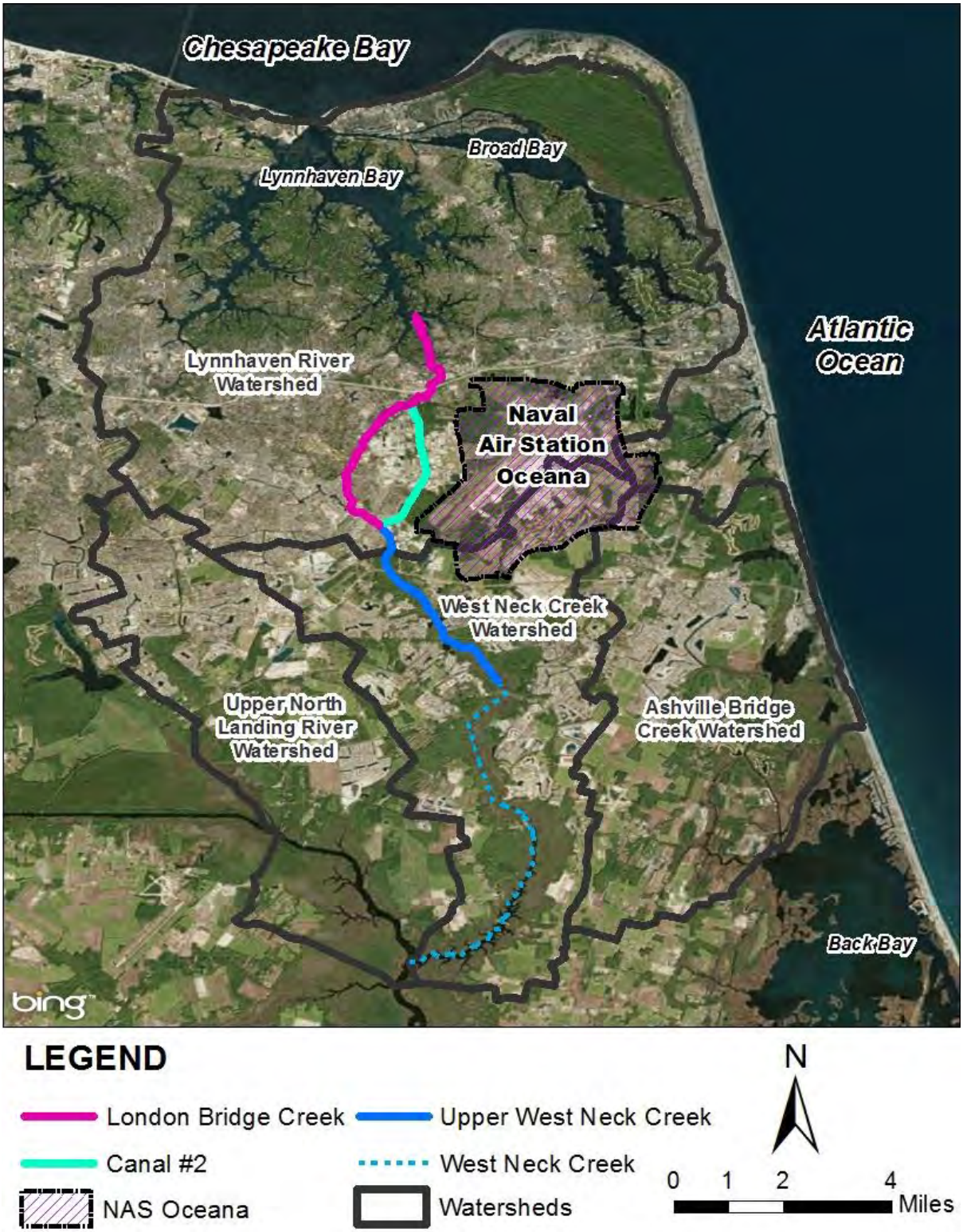
At the regional level, NAS Oceana contains portions of two major drainage basins. The southern half of NAS Oceana drains to Albemarle Basin (HUC 03010205), while the northern portion is located within the Lynnhaven-Poquoson Basin (HUC 02080108).

In a more detailed local level, approximately half of the NAS Oceana installation drains to the north and into the Chesapeake Bay. The developed area south of the flight line drains to the Upper West Neck Creek. A United States Geological Survey (USGS) study (Bales and Skrobialowski, 1994) concluded that 64 percent of the surveyed time the Upper West Neck Creek flows from north to south and to the Albemarle Sound via the North Landing River; while the other 36 percent of the time it flows from south to north and to the Chesapeake Bay via London Bridge Creek. The middle and lower portions of the West Neck Creek are major waterbodies of the West Neck Creek Watershed and drain to the North Landing River. London Bridge Creek and Canal #2 are part of the Lynnhaven River Watershed and eventually drain to the Lynnhaven Bay. As Upper West Neck Creek, London Bridge Creek, and Canal #2 are linked by tidal processes of the Lynnhaven River Watershed, they are included as the receiving waters of NAS Oceana. **Figure 2-1** illustrates the receiving waters of NAS Oceana and its adjacent watersheds.

The storm sewer system at NAS Oceana's northern runway area drains to the Chesapeake Bay. The runoff is collected through drop inlets and is then conveyed through underground pipes that eventually discharge to the north and west. The runoff traveling north discharges into Wolfsnare Creek and the runoff traveling west discharges into London Bridge Creek. Both Wolfsnare Creek and London Bridge Creek flow into the Lynnhaven River, which eventually discharges into the Chesapeake Bay. A small area in the northeastern corner of the facility drains to Great Neck Creek through open channels. Great Neck Creek flows into Linkhorn Bay, then into Broad Bay, which afterwards discharges to Long Creek and finally the Chesapeake Bay.

2.2 Land Cover

Land cover information is critical to assessing ecosystem status and health, modeling nutrient and pesticide runoff, understanding spatial patterns of biodiversity, performing land use planning, deriving landscape pattern metrics, and developing land management policies. The different land uses within and surrounding NAS Oceana were investigated to identify potential pollutant sources.



LEGEND

- London Bridge Creek
- Canal #2
- NAS Oceana
- Upper West Neck Creek
- West Neck Creek
- Watersheds

N

0 1 2 4 Miles

Figure 2-1 Receiving Waters of NAS Oceana and Adjacent Watersheds

Land cover at and surrounding NAS Oceana was evaluated using the National Land Cover Database (NLCD). The NLCD is the most recent national land cover product created by the Multi-Resolution Land Characteristics (MRLC) Consortium. The MRLC consortium is a group of federal agencies who coordinate and generate consistent and relevant land cover information at the national scale for a wide variety of environmental, land management, and modeling applications. The 2011 version of the NLCD was downloaded from the United States Department of Agriculture (USDA) Geospatial Data Gateway. It uses a 16-class land cover classification scheme that has been applied consistently across the United States at a spatial resolution of 30 meters.

The land use types and distributions at and surrounding NAS Oceana are displayed in **Figure 2-2**. It can be observed that the identified areas of high or medium intensity development are correlated with the runways and adjacent support facilities. Surrounding the runways, but still inside the NAS Oceana boundary are land uses associated with cultivated crops, open space, woody wetlands, and hay/pastures. A spatial analysis computed the following percentages of land types within the NAS Oceana boundary:

- 61.8% – Developed Areas (including open space, low intensity, medium intensity and high intensity);
- 6.7% – Forest, Shrub, and Herbaceous;
- 5.1% – Hay/Pastures;
- 6.5% – Cultivated Crops;
- 19.4% – Wetlands; and
- 0.5% – Open Water.

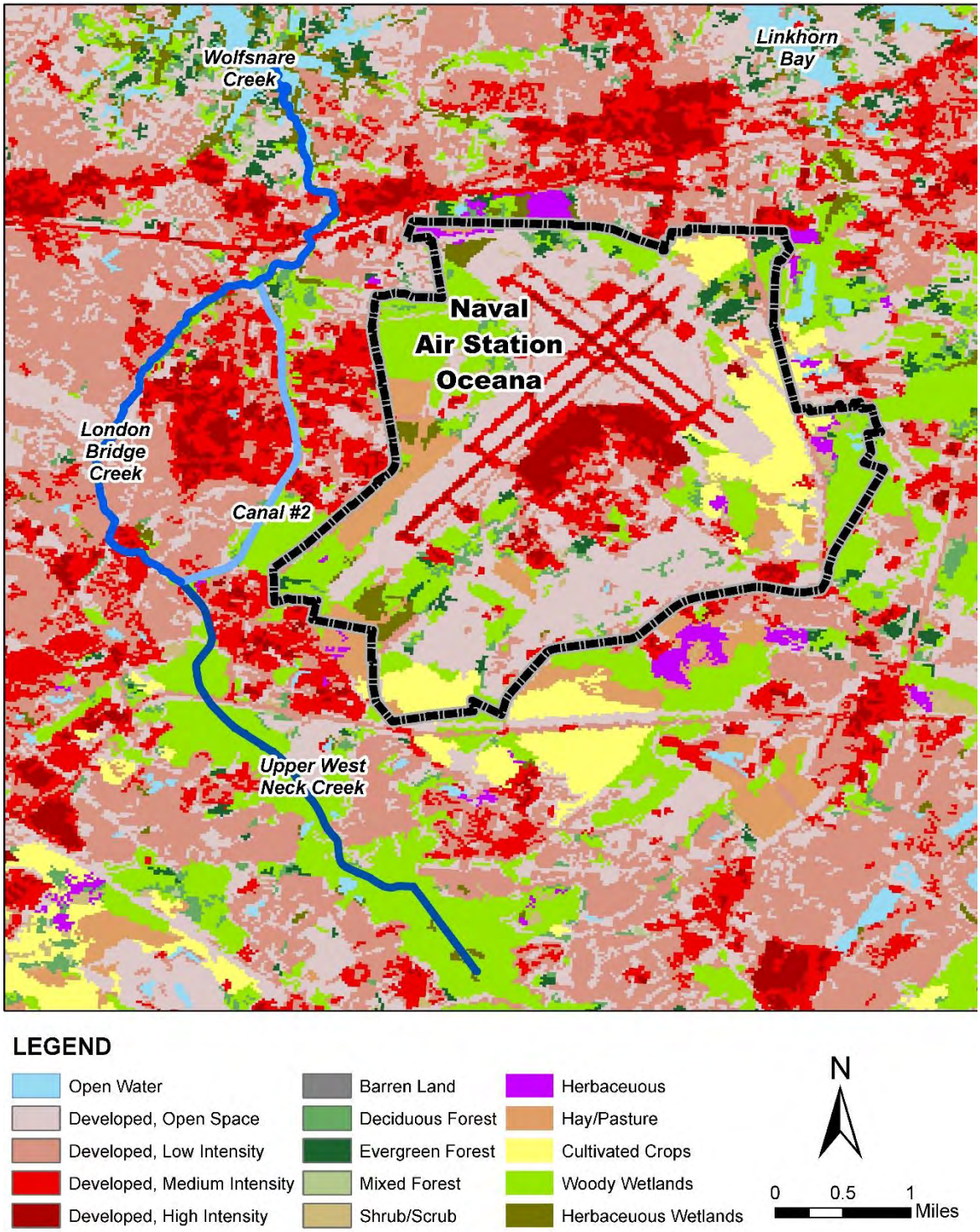


Figure 2-2 Land Cover Types at NAS Oceana

3 Reference Plans and Reports

This section provides a brief review of the current TMDL Report, TMDL Implementation Plans (IPs), and Bacterial Studies at NAS Oceana.

Section 303(d) of the Clean Water Act and the USEPA's Water Quality Planning and Management Regulation (40 CFR Part 130) require states to develop TMDLs for water bodies that exceed water quality standards. Once the TMDL has been developed, a TMDL report is prepared and distributed for public comment and then submitted to the USEPA for approval. Following this process, an IP should be developed to describe actions (i.e. BMPs) to implement to address the TMDL. The goal of a TMDL Implementation Plan is to restore water quality in impaired watersheds. To gage progress towards this goal, VADEQ tracks the installation of BMPs and continues to monitor water quality in the impaired watersheds.

3.1 TMDL Report

The applicable TMDL Report that affects the receiving waters at NAS Oceana is entitled "*Development of Bacterial TMDLs for the Virginia Beach Coastal Area (London Bridge Creek & Canal #2, Milldam Creek, Nawney Creek, West Neck Creek (Middle), and West Neck Creek (Upper*))." As one of the main forms of nonpoint source pollution, bacteria are commonly found in the rivers, streams, and estuaries of the Bay to impair the water quality. VADEQ has identified London Bridge Creek, Canal #2, and Upper West Neck Creek as impaired with regard to bacteria.

The TMDL Report was developed by MapTech Inc. for VADEQ in April 2005. This TMDL Report included a water quality assessment using the samples collected at VADEQ in-stream monitoring stations. A summary of the bacteria sampling data for Upper West Neck Creek, London Bridge Creek, and Canal #2 is provided in **Table 3-1**.

The data collected were analyzed for frequency of violations, patterns in fecal source identification, and seasonal impacts. Results of the analyses are presented in the Bacteria Source Tracking (BST) process to identify the contributions from sources including human, pets, livestock, and wildlife. An assessment of nonpoint sources was performed with consideration of private residential sewage treatment facilities, biosolids, pets, livestock, and wildlife. The USGS Hydrologic Simulation Program – FORTRAN (HSPF) program was used as the modeling framework to simulate existing conditions, to perform TMDL allocations in tidal areas, and to link the sources to the endpoints.

Table 3-1 Summary of Bacteria Sampling for the Streams near NAS Oceana (cfu/100ml)

Stream Name	Station ID	Sampled Dates/Counts	Bacteria	Min	Max	Mean	Median
Upper West Neck Creek	5BWNC010.02	9/95-3/04 (86)	Fecal coliform	22	2,000	715	350
		7/02-3/04 (11)	*E. coli*	10	800	264	200
		7/02-8/04 (13)	*enterococci*	10	2,000	370	280
London Bridge Creek	7LOB001.79	1/90-3/04 (151)	Fecal coliform	11	16,000	1,028	540
		7/02-3/04 (11)	*E. coli*	20	800	275	170
		7/02-8/04 (13)	*enterococci*	40	2,000	425	290
Canal #2	7XBO001.30	12/97-3/04 (32)	Fecal coliform	17	1,700	573	350
		7/02-3/04 (10)	*E. coli*	10	800	199	145

With the assumption that 100 percent of the livestock contribution in the Upper West Neck Creek Watershed was from the NAS Oceana Morale, Welfare, and Recreation (MWR) Horse Stables, the report identified the Stables as a significant contributor to the bacteria impairment with 92% of the annual load at Station 5BWNC010.02 in the Upper West Neck Creek.

The bacteria allocations calculated from the TMDL development process are summarized in **Table 3-2**. The table provides the amount of *enterococci* that is allotted to each MS4 that discharges to those particular streams. The TMDLs are broken up into WLAs (the portion of bacteria coming from permitted discharge sources including nonpoint sources under MS4 permits); and LAs (the portion of bacteria coming from non-permitted or nonpoint sources in the watershed).

Table 3-2 TMDL Allocations in the Streams near NAS Oceana (cfu /year)

Stream Name	TMDL Standard	WLA	LA	MOS	TMDL
London Bridge Creek & Canal #2	*enterococci*	2.17E+13	1.62E+12	Implicit	2.33E+13
City of Va Beach, MS4 VA0088676		1.82E+13			
NAS Oceana, MS4 VAR040043		3.54E+12			
Upper West Neck Creek	*enterococci*	1.88E+13	2.33E+12		2.11E+13
City of Va Beach, MS4 VA0088676		7.81E+12			
NAS Oceana, MS4 VAR040043		1.10E+13			

3.2 TMDL Implementation Plans

Currently, the TMDL Implementation Plan for the TMDL "*Development of Bacterial TMDLs for the Virginia Beach Coastal Area (London Bridge Creek & Canal #2, Milldam Creek, Nawney Creek, West Neck Creek (Middle), and West Neck Creek (Upper)*)" is addressed in the Lynnhaven River, Broad, Linkhorn Bay Watershed IP. Additionally, the Virginia State Water Control Board (SWCB) has approved bacteria TMDL Implementation Plans for a watershed bordering NAS Oceana – North Landing Watershed.

Refer to **Figure 2-1** to see the locations of these watersheds adjacent to NAS Oceana. **Table 3-2** lists these TMDL Implementation Plans and corresponding information. The TMDL Implementation Plans provide instructive information on development of TMDL goals and the conditions of bacterial contamination in these watersheds.

Table 3-3 TMDL Implementation Plans for the Adjacent Watersheds of NAS Oceana

IMPAIRED SEGMENT	CITY	POC	SWCB APPROVAL
Lynnhaven River, Broad, Linkhorn Bay Watersheds	Virginia Beach	Bacteria	3/27/2007
North Landing Watershed	Virginia Beach	Bacteria	12/13/2010

<u>TMDL Implementation Plans for Adjacent Watersheds</u>

In June 2006, the Hampton Roads Planning District Commission completed "*Implementation Plan for the Fecal Coliform Total Maximum Daily Load (TMDL) for Shellfish Areas of Lynnhaven Bay, Broad Bay and Linkhorn Bay Watersheds.*" The plan set allocations to limit bacterial pollutant loads discharged to the 64-square mile Lynnhaven River and Broad and Linkhorn Bay watersheds to levels that were modeled to achieve compliance with the state water quality criteria for bacteria for shell fishing waters. The BST data were used to estimate the percent loading from the major source categories (bird, wildlife, human, pets, and livestock) and to determine where load reductions are needed. It also includes the practical actions to reduce bacteria in nearby streams including the Upper West Neck Creek, London Bridge Creek, and Canal #2.

In December 2010, the Hampton Roads Planning District Commission completed *"Implementation Plan for Bacterial TMDLs in the North Landing River Watershed*." The plan set allocations to limit bacterial pollutant loads discharged to Milldam Creek and the Middle West Neck Creek to levels that were modeled to achieve compliance with the state water quality criteria for bacteria. The actions documented to reduce bacteria in Milldam Creek and the Middle West Neck Creek have also been included in this Local TMDL Action Plan as applicable. The documented management options to achieve appropriate reductions of bacteria included agricultural BMPs, stormwater programs, septic system programs, pet waste programs, erosion/sediment control, aquatic resource restoration, education programs, land use management, wildlife contribution controls, and watershed studies.

These TMDL Implementation Plans provided comprehensive studies to implement TMDLs for waterbodies near NAS Oceana with detailed information on watershed characteristics and water quality impairments. The modeling processes for TMDL development categorized the contamination contributions from both point sources and nonpoint sources to compute the total TMDL loads. The Implementation Plans also identified numerous implementation actions to achieve TMDL goals. These Implementation Plans systematically described the conditions and solutions to remedy the bacterial impairments in the watersheds adjacent to NAS Oceana.

3.3 Bacterial Sources at NAS Oceana

A report entitled *"Investigation of Bacterial Sources in the Outfall 001 and 006 Watershed, NAS Oceana*" was completed by the Navy in August 2007. The purpose of the study was to investigate the sources of bacterial contamination at Outfalls 001 and 006 at NAS Oceana. Furthermore, to compare the data obtained in the study to the April 2005 VADEQ TMDL Report. The VADEQ Monitoring Stations 5BWNC010 and 5BWNC003 can be seen in **Figure 3-1**.

The report was based on a study of water quality sampling and modeling completed in 2005 and 2006. The report quantified the bacteria contamination of three species (fecal coliform, *E. coli*, and *enterococcus*) from the Horse Stables at NAS Oceana to Upper West Neck Creek.

Outfall 001 (Site 1) and Outfall 006 (Site 6) are located to the southwest and northeast of NAS Oceana, respectively. For comparison purposes, a sampling site (Site P) downstream of the horse stables and pastures within NAS Oceana and upstream of Site 1 was also selected. These sampling locations are presented in **Figure 3-2**.

The water quality sampling results showed that, of the three sites, Site P had the highest concentrations of bacteria. The sampling results also indicated that warmer weather (summer and fall) could introduce higher bacteria concentrations and storm events aggravated the water quality (causing a spike concentrations).

The BST method calculated the relative livestock contributions to the total annual loads by dividing the estimated annual livestock contribution loads by the total annual loads. The results of the study are summarized in **Table 3-4**.

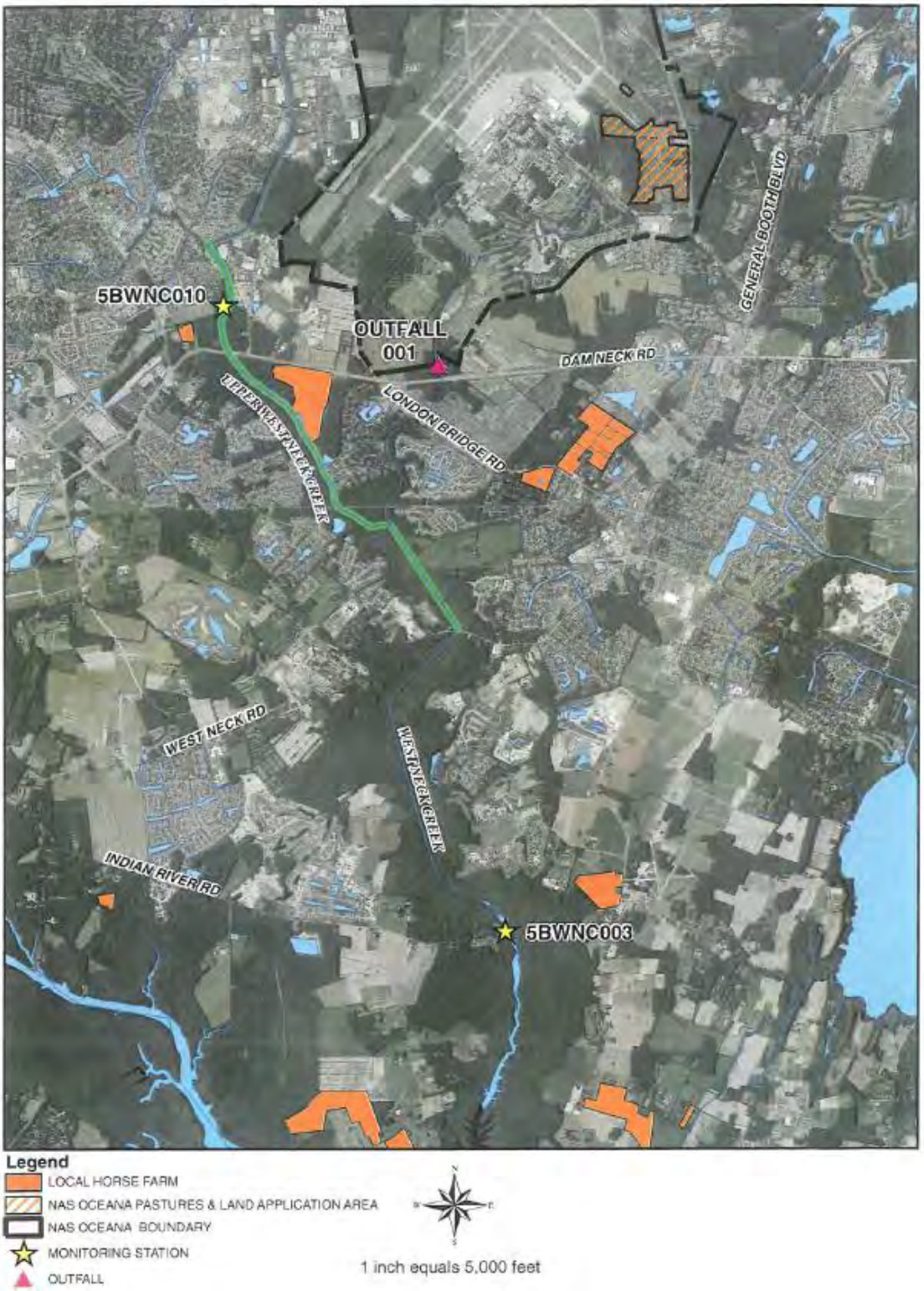


Figure 3-1 Location of VADEQ Monitoring Station

Source: Investigation of Bacterial Sources in Outfall 001 and 006 Watersheds, NAS Oceana

Figure 3-2 Bacterial Sources Report Sampling Locations

Source: Investigation of Bacterial Sources in Outfall 001 and 006 Watersheds, NAS Oceana

Table 3-4 Percentage of Livestock Contribution

LOCATION	FECAL COLIFORM	*E. COLI*	*ENTEROCOCCI*
Site 1	28%	25%	29%
Site 6	14%	19%	21%
Site P	13%	7%	18%

The TMDL Report attributed 92 percent of the annual bacterial load in Upper West Neck Creek to livestock. Since the report also documented that all of the livestock was found at NAS Oceana, this percentage was attributed to the livestock at NAS Oceana. This study concluded that the proportion of bacteria contributed by livestock at Site 1 is significantly less than the 92 percent estimated by VADEQ in the TMDL Report. Therefore, the study supported the argument that there are additional sources contributing bacteria located between Site 1 and the VADEQ Station 5BWNC010.02.

This report also concluded that the livestock contributions were higher than expected at Site 6, since the pastures do not drain to this outfall. Navy personnel have identified other horse pastures in the vicinity of West Neck Creek and NAS Oceana that may contribute to the bacterial impairment. However, these horse stables are not in the Site 6 watershed and the NAS Oceana stable waste is applied along the boundary of the upper reaches of the watershed. See **Figure 3-1** for locations of local horse farms. In addition to the horse pastures, there is evidence that there are other sources of bacteria such as unauthorized hog farms.

3.4 Environmental Assessment of Stables Expansion

In 2005, CNRMA and NAVFAC jointly prepared an Environmental Assessment (EA) for the expansion for the NAS Oceana stable and pastures. The EA analyzed the environmental impacts associated with expanding the capacity of Oceana Stables. The declining amount of useful acreage in the Norfolk, Virginia Beach, and Chesapeake areas was cited as the purpose of the investigation into the expansion.

The assessment documented the following BMPs are implemented by the stables personnel:

- The horse population at the Stable facility is maintained at a maximum of one horse per acre;
- Pasture-generated manure piles are broken up and spread evenly by dragging a chain harrow across the pastures on a weekly basis. This promotes uniform grazing, decomposition, rapid drying and therefore destruction of parasites and odor producing microbes, and minimizes stress to the vegetation underneath the piles;
- Horses are rotated between smaller pasture areas, giving each area a chance for regrowth. This minimizes damage to the turf which minimizes surface runoff and maximizes nutrient uptake;

- Pasture vegetation is professionally fertilized and maintained ensuring a healthy vegetative cover that reduces surface runoff and maximizes nutrient uptake;
- Stall-generated waste (manure, urine, soiled bedding) is kept covered and stored in a spreader to prevent nutrient leaching and pathogen runoff; and
- A rainy-day paddock is used during inclement weather when horse traffic on pasture grasses would damage the turf.

The assessment concluded that the proposed alternatives for expansion would have little to no impact on land use, Virginia's Coastal Zone, the physical conditions, groundwater, floodplains, wetlands, terrestrial environment, air quality, and cultural resources of the affected environment. However, since this EA was completed, there are now terrestrial and wetland resources that would be negatively impacted by such an expansion. Because of this, the conclusion from this previous EA may no longer be valid. Furthermore, with the existing BMPs, only minor impacts to adjacent surface waters were expected. If bacteria loadings in these adjacent waters were excessive, the Navy would implement additional BMPs to ensure the waters were not significantly impacted.

Currently, the plan to expand the stables has been put on permanent hold.

4 Significant Sources of Bacteria

This section describes the possible existing sources that contribute to the bacterial pollution of the adjacent water bodies of NAS Oceana and estimates the relative contribution rates of these sources using outputs from the TMDL Report for Upper West Neck Creek, London Bridge Creek, and Canal #2.

4.1 Horse Stable and Pastures

The horse stable and pastures at NAS Oceana are located in the southeast corner of the installation, west of Oceana Boulevard, as shown in **Figure 3-1**. Five of its 154 acres contain stables, storage buildings, and other management facilities. Currently, more than 100 horses are boarded there (barn and pasture), with 28 being left in the pasture full time. These horse boarding facilities are available to active duty, retirees, eligible family members, and Department of Defense civilians. There is a section toward the front of the stables where individuals can ride the horses.

While the majority of the horse stable and pastures drain to Upper West Neck Creek, there are small portions along Oceana Boulevard that drain to the Juniper Swamp Owls Creek watershed. The stables and pastures produce horse waste that may potentially increase bacteria loadings that can contaminate receiving waters. During the development of a Nutrient Management Plan for The Stables at NAS Oceana, it was determined that the excess manure from the stables is not disposed of on the pastures but is instead transported and spread on a five acre site north of the pasture lands and at the south end of the runways as presented in **Figure 4-1**. This land is not considered part of the pastures but is on NAS Oceana property.

As part of this study, the location where excess manure is being spread was sampled to determine whether it is feasible to continue applying manure to this land at the existing volume and rate. In addition, three other agricultural fields were sampled to determine if excess manure could also be spread at these locations. The results of the soil sampling can be found in **Appendix B**.

Based on the results, the nutrient management planner indicated that horse manure applications can continue to be made in 2016 and 2017 to the pastures. However, the phosphorus levels are high in each of the sampled agricultural fields with the exception of the CUBA field. Fields FCMR1, GOV, and FULLS have reached a phosphorus level such that no additional phosphate can be applied unless the Virginia phosphate index is determined. The manure applications should be made between March and October, with manure being stored between November and February. Refer to **Figure 4-1** for field locations and **Table 4-1** for associated abbreviations. The manure spreading calendar can be found in the nutrient management plan identification report in **Appendix C**. Refer to **Section 6.3** of this report for horse stable and pastures management practices recommendations.

"Investigation of Bacterial Sources in the Outfall 001 and 006 Watershed, NAS Oceana" (described in **Section 3**) estimated the percentages of bacteria contributed by livestock as 13 percent for fecal coliform, 7 percent for *E. coli*, and 18 percent for *enterococcus* at Sample Site

P. Sample Site P can be seen in **Figure 3-2** and is just downstream of the horse stable and pastures. In contrast, the VADEQ TMDL Report attributes 92 percent of the bacteria contribution to livestock, with all of the livestock located at NAS Oceana horse stable and pastures.

The horse pastures and their boundaries are presented in **Figure 4-1** and the corresponding pasture names in **Table 4-1**.

Figure 4-1 NAS Oceana Horse Pastures

Table 4-1 Pasture Abbreviations and Names

Pasture No.	Pasture Abbreviation	Pasture Name
1	CUBA	Cuban
2	YCONS	Cross Country
3	XCONS	Cross County
4	BLVD1	Cross County
5	PBM1	Pasture Board Mare
6	PBG1	Pasture Board Gelding
7	SBGSO	Stall Board Gelding
8	SBGNO	Stall Board Gelding
9	SBMAR	Stall Board Mare
10	PAG1	Pete & George
11	FAT1	Fat Farm
12	GOV1	Government
13	FULLS	New Barn Gelding
14	FCMR2	Hunt Field
15	FCMR1	New Barn Mare

4.2 Other Livestock Contributors

According to the TMDL Report, in addition to the NAS Oceana horse stable and pastures, there are several livestock facilities in the vicinity of Upper West Neck Creek, London Bridge Creek, and Canal #2. These operations range from small to large in size and the predominant type of livestock in the London Bridge Creek/Canal #2 and Upper West Neck Creek Watersheds was horses.

Fecal coliform produced by livestock can enter surface waters through wash-off during runoff events. Livestock with access to streams can also deposit manure directly into waterways. When manure is deposited in water resources, either directly or by runoff, it can negatively impact water resources. The nutrients contained in manure, phosphorus and nitrogen, fertilize aquatic weeds and accelerate weed growth in lakes and ponds. The aquatic plants deplete oxygen levels, reducing the amount of oxygen available for other aquatic species such as fish. When the weeds die, additional oxygen is required for decomposition, further depleting oxygen levels and resulting in fish kills.

Algae blooms are another result of excess nutrients in bodies of water. Algae blooms reduce available oxygen, can cause the water to have a murky green coloring, and generate an unpleasant odor. This phenomenon called eutrophication is the enrichment of an ecosystem with chemical nutrients, typically compounds containing nitrogen, phosphorus, or both.

Pathogens of manure are another serious concern for aquatic environmental quality. The presence of the fecal coliform and other germs from livestock manures in waterbodies can pose a health hazard to animals, humans, and aquatic life. Pathogens in manure like Cryptosporidium

parvum and Giardia duodenalis are the major concerns because they have very low thresholds of infectious dose for humans. However, a 2001 study (Quinn, 2001) concluded that horse guts do not contain significant levels of Cryptosporidium parvum and Giardia duodenalis.

Livestock populations were estimated in the TMDL Report based on communication with government departments, local extension agents, and residential farmers. Based on the waste load and fecal coliform density provided in the TMDL Report, a 1,000 lb. horse would produce 2.17E+09 cfu/day. The TMDL Report also documented 59 horses in the London Bridge Creek/Canal #2 Watershed (not within NAS Oceana) and 140 horses in the Upper West Neck Creek Watershed (within NAS Oceana). Using the calculated fecal coliform amount, the number of horses would correspond to daily waste loads of 1.28E+11 cfu for the London Bridge Creek/Canal #2 Watershed and 3.04E+11 cfu for the Upper West Neck Creek Watershed. The report assumed that the horses were kept in the pasture 100 percent of the time.

4.3 Wildlife Contributors

Multiple species of wildlife consider the NAS Oceana stable and pastures and nearby watersheds their home. Wildlife populations for various species play an important role in the amount of fecal waste and water quality.

In the TMDL Report, wildlife population estimates were developed through consultation with wildlife biologists from the Virginia Department of Game and Inland Fisheries (VDGIF), the United States Fish and Wildlife Service (USFWS), citizens of the watershed, source sampling, and site visits. The population estimates were derived using documented population densities after habitat boundaries were established. The estimates listed the population densities of deer, geese, ducks, muskrats, raccoons, beavers, and gulls, with the corresponding waste load produced by the wildlife. The wildlife populations in the London Bridge Creek/Canal #2 and Upper West Neck Creek Watersheds are summarized in **Table 4-2**.

Table 4-2 Wildlife Populations from TMDL Report

IMPAIRED WATERSHED	DEER	GOOSE	DUCK	MUSKRAT	RACCOON	BEAVER	GULL
London Bridge/Canal #2	43	11	30	740	271	53	104
Upper West Neck	94	27	71	733	580	58	233

The combined results show that these wildlife species could contribute a total fecal coliform load as high as 3.02+11 cfu/day for the London Bridge Creek/Canal #2 Watershed and 5.17E+11 cfu for the Upper West Neck Creek Watershed.

4.4 Human and Pet Contributors

Human activities and pet waste are both major contributors to bacterial contamination that should be taken into account when addressing a TMDL.

Agricultural fields within the watersheds of NAS Oceana apply biosolids with bacteria contents. Between 1997 and 2003, approximately 666 and 196 dry tons of biosolids were applied to London Bridge/Canal #2 and the Upper West Neck Creek Watersheds, respectively. A research article (Wallace, 2014) reported the bacterial runoff from biosolids to grassland contained mean bacteria concentrations as high as 35,720 cfu/100 mL. As shown in **Figure 2-2**, 6.5 percent of land cover within the installation is used for planting cultivated crops. According to personnel at NAS Oceana, the agricultural lease on these lands grants permission to the lessee to use the Hampton Roads Sanitation Division's Biosolids disposal program. As a result, the biosolids applied for crops growth may be a potential source for bacterial contamination.

Another major bacteria source from human activities is the failing or malfunctioning septic systems that leak high concentrations of pollutants. A septic failure occurs when a drain field has inadequate drainage which causes effluent to flow directly to the soil surface and is consequently washed into waterbodies during runoff events. However, based on available information, there are no septic systems at NAS Oceana, and it has a sanitary system for the entire installation. Leaks and illicit connections from sanitary systems have also been documented in studies as the cause of bacterial contamination. However, NAS Oceana has performed illicit discharge surveys in compliance with its industrial stormwater permit and has not found any evidence of illicit sanitary connections.

Pets are another source of fecal bacteria. Due to their popularities, the TMDL Report only considered dogs and cats when discussing bacteria from pets. When pet waste is improperly disposed of or left on the ground, stormwater runoff can wash the waste or bacteria from the waste into nearby waterbodies, causing significant water pollution. Decaying pet waste consumes oxygen and sometimes releases ammonia. Low oxygen levels and ammonia can damage the health of fish and other aquatic life. Pet waste carries bacteria, viruses, and parasites that can threaten the health of humans and wildlife. Pet waste also contains nutrients that promote weed and algae growth resulting from eutrophication. The estimated pet populations of the impaired watersheds near NAS Oceana were reported in the TMDL Report as found in **Table 4-3**.

Table 4-3 Pet Populations from TMDL Report

IMPAIRED WATERSHED	DOGS	CATS
London Bridge/Canal #2	8,226	9,211
Upper West Neck	5,181	5,802

Compared with dogs, the volume of waste loads is much less from cats since they are mainly kept indoors. With the average daily waste load of dogs as 2.16E+08 cfu/animal-day, the total waste loads of fecal coliform are 1.78E+12 cfu/day in London Bridge Creek/Canal #2 Watershed and 1.12E+12 cfu/day in the Upper West Neck Creek Watershed. Since NAS Oceana only has 18 housing units on base, the expected contribution from pets is negligible.

Another documented source of bacteria is caused from trash management. More specifically, leaking dumpsters and garbage cans from restaurants. A recent study found that approximately 20 percent of all dumpster or grease traps inspected had evidence of liquid leaks. Additionally, the liquid leaking from these containers had high concentrations of bacteria (Urban Water Resources Research Council, 2014). NAS Oceana manages these sources of bacteria by requiring that dumpsters and grease bins be covered per the industrial Stormwater Pollution Prevention Plan (SWPPP) and that grease bins be contained per the Spill Prevention Control and Countermeasures (SPCC) Plan.

5 Legal Authorities

This section includes a review of the existing legal authorities, including the regulations applicable to reducing bacteria.

Because CNRMA is not a municipality, it does not have the authority to issue ordinances; however, CNRMA does have authority over its tenants through their host-tenant agreements. In addition, all development and redevelopment inside the installation and annex boundaries must meet local, state, and Federal requirements for erosion and sediment control and stormwater management. This includes the Virginia Erosion and Sediment Control Program Regulations, Virginia Pollutant Discharge Elimination System Permit, the Navy Low Impact Development (LID) policy, and Energy Independence and Security Act (EISA) Section 438.

The primary pollutants addressed in these policies are nutrients. However, CNRMA's MS4 Permit under the NPDES program has specific requirements regarding the implementation of different Minimum Control Measures (MCMs) to reduce pollutants (including bacteria) from entering the storm sewer system. For example, MCM #3 addresses illicit discharge detection and elimination, which includes having written procedures to detect, identify, and address unauthorized non-stormwater discharges. See CNRMA's MS4 Program Plan under separate cover for additional information.

At this time, no new or modifications to existing policies are expected.

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6 Management Practices

This section addresses management practices that are being or will be implemented to reduce bacteria at NAS Oceana. See **Appendix D** for a full list of management practices with corresponding measurable goals, metrics, and schedule.

6.1 Bacteria Criteria and Treatment

Bacteria Criteria

The first U.S. standards for drinking water, established in 1914, were based on coliform evaluations. Monitoring for coliform bacteria was designed to prevent outbreaks of enteric diseases, rather than to detect the presence of specific pathogens. A subset of this group, fecal coliform, is commonly used as the indicator bacteria to detect and estimate the level of contamination of water. Currently, coliform bacteria concentrations are determined using methods provided in Standard Methods for the Examination of Water and Wastewater.

Effective February 1, 2010, VADEQ specified an updated bacteria standard in 9 VAC 25-260-170.A.

"E. coli bacteria shall not exceed a monthly geometric mean of 126 CFU/100 ml in freshwater... Enterococci bacteria shall not exceed a monthly geometric mean of 35 CFU/100 ml in transition and saltwater…Geometric means shall be calculated using all data collected during any calendar month with a minimum of four weekly samples… If there are insufficient data to calculate monthly geometric means in freshwater, no more than 10% of the total samples in the assessment period shall exceed 235 E. coli CFU/100 ml... If there are insufficient data to calculate monthly geometric means in transition and saltwater, no more than 10% of the total samples in the assessment period shall exceed enterococci 104 CFU/100 ml."

Bacteria Treatment Options

Numerous practices can be implemented with the goal of achieving bacteria control. Possible treatment options are listed and briefly described below.

1. Chlorination treatment is to inject a chlorine solution (sodium hypochlorite) or dry powder (calcium hypochlorite) into the water to kill bacteria and germs. This treatment can introduce residual chlorine approximately between 0.3 to 0.5 mg/L into the water.
2. Ozone is a strong oxidant like chlorine to be injected into water to kill bacteria. Ozonation can remove bacteria quickly and efficiently, but it is not popular due to the high costs for equipment installation and system maintenance.

3. Ultraviolet (UV) lamps are effective devices to control bacteria without adding any chemicals into water. However, UV devices lose intensity over time and require frequent replacement. UV treatment is not recommended for highly polluted waters with fecal coliform exceeding 100 cfu/100 ml. For comparison purposes, the TMDL Report documents fecal coliform sampling mean values of 1,028 cfu/100 ml in London Bridge Creek; 573 cfu/100 ml in Canal #2; and 715 cfu/100 ml in Upper West Neck Creek. Therefore, this treatment option would not be recommended.

These technical means discussed above are commonly used as disinfection treatments to remove bacteria from drinking water and treated wastewater. Because of the significant costs associated with these treatment techniques, these are less feasible methods for the cost-effective treatment of bacteria in large scale applications, like treating stormwater.

6.2 MS4 Permit Management Techniques

As stated previously, the naval installations in the Hampton Roads region are currently covered under the CNRMA's Consolidated Phase II MS4 permit coverage, permit number VAR040114. The receiving waterbodies of the Upper West Neck Creek, London Bridge Creek, and Canal #2 are also covered by a Phase I MS4 permit VA0088676 for the stormwater drainage systems owned by the City of Virginia Beach. The phase II permit states, under Section II.A., that the "permittee" must develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act and the State Water Control Law.

The following sections outline bacterial control management techniques that are currently being implemented or that are proposed to be implemented as a result of requirements in CNRMA's MS4 permit. **Table 6-1** presents the current management documentation associated with CNRMA's MS4 permit. Copies of these documents and/or instructions are available in the Regional MS4 Program Plan.

Table 6-1 Management Documentation for TMDLs

MANAGEMENT CATEGORY	DOCUMENT AND/OR INSTRUCTIONS
Nutrient Management	Nutrient Management Plan for The Stables at NAS Oceana
Illicit Discharge Detection and Elimination	COMNAVREG MIDLANT Illegal Discharge and Dumping Instruction (Draft)
Erosion and Sediment Control	COMNAVREG MIDLANT Erosion and Sediment Control Instruction (Draft) An SOP for capital improvements to submit to the state has been finalized
Stormwater Management	COMNAVREG MIDLANT VSMP Construction Permit Instruction (Draft)
	COMNAVREG MIDLANT Post Construction Stormwater Runoff Management Instruction (Draft) SOPs for E&S and Stormwater for capital improvements to submit to the state have been finalized
	EISA Sect 438 & the DON Low Impact Development Policy
	Municipal SWPPPs for NAS Oceana, VA

Structural BMPs

Currently, there is limited data regarding the treatment of bacteria in structural BMPs such as infiltration trenches, vegetated buffers, and bioretention cells. Data presented in the International Stormwater Database, conference proceeds, and elsewhere suggests variability. The available data suggest that it is unlikely that conventional structural stormwater controls using passive treatment can consistently reduce bacteria concentrations in runoff to primary contact recreation standards. (Urban Water Resources Research Council, 2014) However, studies have shown favorable performance in regard to retaining and removing bacteria through mechanisms such as natural inactivation, predation, inert filtration, sedimentation, sorption, and chemical inactivation. Additionally, design of these practices can be altered to improve the removal of bacteria.

In their Chesapeake Bay TMDL Action Plan, CNRMA has outlined a plan for the implementation of numerous structural BMPs to address the POCs in Chesapeake Bay TMDL (total nitrogen, total phosphorus, and total suspended solids). Additional details including the functional characteristics, cost expectations, and design specifications for these structural BMPs is provided. The content of this Local TMDL Action Plan is focused on other management options and programs that are practical for addressing bacteria in the London Bridge Creek, Canal #2, and Upper West Neck Creek at NAS Oceana.

Public Education and Outreach Programs

The Public Education and Outreach Plan is outlined in CNRMA's MS4 Program Plan. Important tools for reducing bacterial pollution from human based contributions (pet waste, stormwater runoff, agricultural practices, and illicit discharges) include distributing brochures and articles in the newspaper at NAS Oceana, the "Jet Observer."

A series of public education tri-fold brochures have been developed as part of the stormwater pollution prevention program. Applicable topics include:

- General Stormwater;
- Construction Sediment and Erosion Control - VSMP; and
- Pet Waste.

Each brochure includes general information about the issues, guidance about what the public can do to help, contact information, and sources of additional data. The brochures are distributed during training/events/functions where members of the target audience will be present. The brochures are also on display and available at each of the installations covered under the MS4 permit in high traffic areas.

Articles and/or ads concerning stormwater pollution prevention related to bacteria have been developed and are issued in the "Jet Observer," or the emailed "Plan of the Week" on a regular basis.

As discussed in **Section 4.4**, pet waste can be an important source for bacterial contamination. However, since there are only 18 houses on NAS Oceana, loadings from this source are expected to be negligible.

Public Involvement and Participation

The Public Involvement and Participation Plan is outlined in CNRMA's MS4 Program Plan. Important tools for reducing bacterial pollution from human based contributions include marking storm drains and providing information at local activities.

The Navy will continue the storm drain marking program, which places markers on inlets to the MS4, to remind the public that materials that flow into the storm drain end up in local waterways. These storm drain markers were developed specifically for the Navy to include the Navy logo and fabricated in metal for durability.

The Navy continues to participate in at least four local activities annually across the permitted naval installations. Every effort will be taken to hold the four activities at four different installations (including NAS Oceana). Outreach information is distributed at these events. When a booth is involved at an event, a banner with the Navy's stormwater pollution prevention logo is used.

Illicit Discharge and Detection Program

Historically at NAS Oceana, field investigations began in 1995 to establish a baseline of non-stormwater discharge locations into the storm drainage system. Outfalls and drop inlets were observed for dry-weather flows not specifically identified in the Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA005266. Buildings were also observed to identify potential illicit discharge points or connections to the storm drainage system. Currently, an outdoor investigation external to the buildings is conducted every three to five years to identify potential pollutant sources from non-stormwater discharges. The most recent investigation of dry-weather flows was held in 2012 with the following results.

- The majority of the dry weather flows were associated with air conditioning condensate, steam, and eye wash stations.
- No sanitary connections were identified.

Draft instructions related to illegal dumping and discharges have been developed by CNRMA. The draft instructions require that periodic inspections occur to detect illicit connections and discharges. It is anticipated that these instructions will be converted to Standard Operating Procedures (SOPs). The procedures will be updated to include the following details pertaining to dry weather field screening methodologies:

- A prioritized schedule based on the age of infrastructure, land use, historical data, dumping, or cross connections;
- A requirement that a minimum of 50 outfalls at the eight installations covered by the Regional Program Plan will be screened annually;
- Methodologies to collect general information;
- Investigation of illicit discharges suspected of being sanitary sewage or significantly contaminated will be conducted first, and other illicit discharges investigations may be delayed;
- Methodologies to determine the source of all illicit discharges;
- Mechanisms to eliminate the identified sources of illicit discharges;
- Methods for conducting follow-up investigations; and
- A mechanism to track all investigations.

These dry weather screening methodologies will be able to identify illegally connected sanitary sewer systems or leaks from these systems. As a result, any bacterial contamination resulting from illicit discharges will be identified and corrected.

In addition, the Navy has implemented the “Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedures,” which outlines reporting and documentation actions that must be taken in response to a spill/release of oil, sewage, or hazardous or non-hazardous substance (solid or liquid).

A hotline phone number, an email address, and/or a website link for public reporting of illicit discharges will be implemented. Currently, the NAVFAC Mid-Atlantic Environmental Administrator's telephone number is listed on the outreach brochures previously described. When a report is received, an inspection will be conducted in response to the comment. If an illicit discharge is found, a follow-up investigation will be completed in accordance with the written procedures.

Construction Site Runoff Control

Construction sites are a potential source of sediments from land disturbance, sanitary wastes from port-a-lets for the construction workers, and litter. Since the focus of this plan is bacteria, the sanitary wastes from construction sites are of primary concern. The Environmental Protection Specifications and the Construction Site SWPPPs both address sanitary wastes from construction sites. In addition, since bacteria can cling to small sediments, erosion prevention measures should also serve to reduce bacteria loading. Erosion and sedimentation control measures may indirectly reduce the bacteria loading to waterbodies. VADCR's State Erosion and Sediment Control (ESC) Program was created to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources.

CNRMA has two sets of draft instructions related to construction site runoff control. The first, entitled "COMNAVREG MIDLANT Virginia Stormwater Management Program Construction Permit Instruction," establishes a procedure for obtaining coverage under the VSMP General Permit for Stormwater Discharges from Construction Activities at installations and annexes and applies to projects with a disturbance of 1 acre or greater. The second set of instructions, entitled "COMNAVREG MIDLANT Erosion and Sediment Control Instruction," establishes minimum standards for the effective control of soil erosion, sediment deposition, and non-agricultural runoff from land-disturbing activities at installations and applies to projects with a disturbance of 10,000 square feet or greater.

CNRMA currently follows the regulations under the Virginia Erosion and Sediment Control Program (VESCP) and regulated land-disturbing activities will not be authorized to begin until an erosion and sediment control plan, or an agreement in lieu of a plan, is approved.

Training

Training continues to be conducted for both Military Base Employees and NAVFAC Construction Contractors using the Web-based Environmental Compliance Assessment, Training and Tracking System (ECATTS). Several stormwater training modules have been developed including Principals or Erosion and Sedimentation, Erosion and Sediment Control Practices, Vegetative Stabilization, Stormwater Runoff, Stormwater BMPs, Construction Site Pollution Prevention, and Sediment and Stormwater Plans. The training modules are reviewed annually and updated as needed.

Good Housekeeping Policies and Procedures

CNRMA has a comprehensive list of Good Housekeeping Policies and Procedures for Municipal Operations including:

- Daily Operations Procedures (vehicle and associated equipment washing; vehicle fueling; storage areas; vehicle and equipment storage areas; recycle facilities and storage; road, street, and parking lot maintenance; landscaping; construction activities; and storm drain/utility line maintenance)
- Equipment Maintenance Procedures (vehicle maintenance and storage)
- Pesticide, Herbicide, and Fertilizer Procedures (application; storage; transport; disposal; and nutrient management plans)
- Miscellaneous (inspections; general spill and discharge response procedures; general dewatering; training; and contractor requirements/oversight)

In these policies and procedures, the importance providing covers over dumpsters and/or ensuring that the lids are closed and the containers have watertight lids.

6.3 Other Management Techniques

Other miscellaneous management techniques for bacteria are described below and address biosolids, wildlife controls, and horse stable and pasture controls.

Biosolids

As stated in **Section 4.4**, the agricultural lease on these lands grants permission to the lessee to use the Hampton Roads Sanitation Division's Biosolids disposal program. As a result, the biosolids applied for crop growth may be a potential source for bacterial contamination. However, biosolids have not been applied to the crops lands in the past five years and the Navy will explore modifying the agricultural leases to prohibit their use. Should biosolids be prohibited by the agricultural lease, an annual waste load reduction of 4.19E+13 cfu/year (measured in fecal coliforms) would be removed. **Table 6-2** displays the data used to calculate the load reduction, which is from the bacteria TMDL development.

Table 6-2 Waste Load Reduction from Biosolids

Type	Waste Load 1997-2003	Waste Load	Waste Load	Application Area	Fecal Coliform Density	Waste Load in Fecal Coliforms
	(dry tons)	(tons/year)	(g/year)	(Acres)	(cfu/g)	(cfu/year)
Biosolids-London Bridge	666	95.1	86,312,148	143.1	375,000	3.24E+13
Biosolids-Upper West Neck	196	28.0	25,401,173	56.1	375,000	9.53E+12
					Total	4.19E+13

Wildlife Contribution Controls

As described in **Section 4.3**, wildlife is a significant contributor to bacterial contamination. The current program to control wildlife populations will be reviewed and updated, as necessary.

Due to the nature of the operations conducted at NAS Oceana, it is imperative to minimize the bird populations at NAS Oceana, especially near the flight lines. The Department of Defense (DoD) has implemented a Bird/Wildlife Air Strike Hazard (BASH) prevention program. Air operation, aviation safety, and natural resources personnel work together to reduce the risk of bird and wildlife strikes. As part of this program, measures are taken to deter birds/wildlife from living and frequenting the areas near the runway and taxiways.

The deer population is also a hazard to the flight operations at NAS Oceana. Since 2010, active management of deer to keep them from the runway has reduced the population to 200. The previous population was 500 based on the Integrated Natural Resources Management Plan (INRMP). Based on this reduction and the data from the TMDL development, a bacteria loading reduction can be quantified. **Table 6-3** shows that a 3.21E+13 cfu/year (measured in fecal coliforms) will be reduced.

Table 6-3 Waste Load Reductions from Change in Deer Population

Type	Waste Load	Fecal Coliform Density	Population	Waste Load in Fecal Coliforms	Waste Load in Fecal Coliforms
	(g/day)	(cfu/g)		(cfu/day)	(cfu/year)
Deer (pre 2010)	772	380,000	500	1.4668E+11	5.35E+13
Deer (post 2010)	772	380,000	200	5.8672E+10	2.14E+13
				Difference	3.21E+13

Horse Stable and Pastures Management Practices

Since the NAS Oceana horse stable pastures is a source of bacteria (although, there are ongoing discussions regarding the allocated percentage), it is good practice to implement manure management practices including the proper disposal of excess manure. The Nutrient Management Plan for The Stables at NAS Oceana was recently updated in July 2015. The plan is to serve as a guideline for fertilization practices and include a discussion regarding manure management at the stable and pastures. A nutrient management consultant has recommended:

- Taking soil samples once every three years
- Calibrating spreaders and spraying to ensure proper application rates
- Ensuring that soils with a leaching index above 10 (1) receive split applications of nitrogen on non-legumes and small grains, and (2) be a high priority for timely fall-planted winter cereal grains to trap available soil nitrogen
- Testing fields for crop rotations at least once every three years

- Analyzing representative liquid manure samples at least annually and semi-solid manure samples once every three years
- Harvesting all crops in a timely manner and using commercially acceptable management practices
- Applying manure at or near planting or to existing crops to ensure the nutrients are properly utilized
- Establishing an adequate stand of hay and/or pasture crop species prior to manure application
- Applying manure in a uniform manner
- Prohibiting the spread of manure from setback areas
    - 100 feet from wells or springs
    - 50 feet from surface waters (25 feet if injected or incorporated)
    - 50 feet from sinkholes
    - 50 feet from limestone rock outcrops
    - 25 feet from other rock outcrops
    - 10 feet from agriculture drainage ditches (5 feet if injected)
- Avoiding manure runoff from application fields by:
    - Not applying manure on soils that are saturated
    - Not applying liquid manure (above 85.5 percent moisture content) or commercial fertilizers to frozen, ice-, or snow-covered ground
- Avoiding manure spreading on windy days
- Using a liquid application rate that is at or below the specified maximum hydraulic application rate
- Calibrating equipment at least annually
- Designing, constructing, and operating new waste storage facilities in accordance with the USDA-NRCS *Field Office Technical Guide*
- Inspecting on a regular basis:
    - Waste handling structures, piping, pumps, etc.
- Installing 120-180 days of waste storage capacity in most situations
- Revising Nutrient Management Plans for row crop fields at least once every three years
- Amended Nutrient Management Plans if the number of animals increases

Refer to the nutrient management plan identification report in **Appendix C** for the manure spreading schedule. The horse manure data was estimated by assuming time and dates the

horses would be stabled and manure collected. An estimated total of 164 tons of collected manure was calculated. This number was derived by 16 horses in the stable for half a day for 365 days, 44 horses in the stable for 45 days, and 44 horses in the stable for half a day for 26 days (not all horses were put in a stable). The amount of manure produced for the horse and bedding material is estimated at 60 pounds per day. Calculations are provided below:

$$16\ horses * \frac{365}{2} days * 60 \frac{lbs}{day} = \frac{175{,}200}{2000} lbs = 87.6\ tons$$

$$44\ horses * 45\ days * 60 \frac{lbs}{day} = \frac{118{,}800}{2000} lbs = 59.4\ tons$$

$$44\ horses * \frac{26}{2} days * 60 \frac{lbs}{day} = \frac{34{,}320}{2000} lbs = 17.16\ tons$$

$$87.6 + 59.4 + 17.16 = \mathbf{164\ tons}$$

Based on the tons of manure produced by the horses stored in the stables, a horse equivalent was calculated that represents the number of equivalent horses stored in the stables for 24-hours a day for 365 day of the year.

$$164\ tons * \frac{2000\ lbs}{1\ ton} * \frac{days}{60\ lbs} * \frac{\#\ of\ Horses}{365\ days} = \mathbf{15\ Horses}$$

In addition to the horses, there is a small petting zoo located at the stables. Waste from these animals will also be collected and disposed offsite. Using the horse equivalent number, and assuming all waste is collected and disposed of for all animals stored in the stables, a load reduction can be quantified. **Table 6-4** shows that 1.20E+13 cfu/year (measured in fecal coliforms) can be reduced by collecting and disposing of waste from the stabled horses and petting zoo animals.

Table 6-4 Waste Load Reduction for Manure Collection and Disposal

Type	Waste Load	Waste Load	Fecal Coliform Density	Livestock	Waste Load in Fecal	Waste Load in Fecal
	(lb/day)	(g/day)	(cfu/g)		(cfu/day)	(cfu/year)
Horse (1,000 lb)	51.0	23,133	94,000	15	3.26E+10	1.19E+13
Sheep/Goat (60 lb)	2.4	1,089	43,000	3	1.4E+08	5.13E+10
					Total	1.20E+13

Onsite storage/treatment of manure prior to spreading on the agricultural fields (once the phosphorus levels are acceptable) was evaluated but deemed as not a viable long-term option since this would require a very large storage facility and associated capital expense. Permits require 180 days of storage and application is not allowed for three months of the year (since little nutrient uptake in the winter).

Additionally, several BMPs are being implemented to prevent bacterial contamination of receiving waters. These BMPs are described in **Section 3.4**. In addition, horse manure from the riding ring and horse washing area will be collected for offsite disposal and the stable employees will received training/outreach on manure management practices.

When managed properly, horse manure can be a valuable resource. Manure is a source of nutrients for pasture production and can be utilized as part of a pasture management strategy to improve soil quality. Because of this, if there is still excess manure, NAS Oceana may want to research if other organizations are interested in obtaining the manure for their fertilization needs.

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7 Methods to Assess the TMDL Action Plan

This section describes the methods to assess this TMDL Action Plan for its effectiveness in reducing the pollutants identified in the TMDL Report. Sampling of the NAS Oceana outfalls and annual review of the TMDL Action Plan are discussed.

7.1 Sampling of Outfalls

Sampling of outfalls to assess bacterial loading reduction was considered but rejected due to the magnitude of uncontrollable sources of bacteria and the difficulty in distinguishing the loading from controllable and uncontrollable sources of bacteria. Instead, as outlined in the VADEQ Draft Local TMDL Action Plan Guidance found in **Appendix A**, evaluation metrics other than monitoring will be used to determine compliance. These measureable goals and metrics are listed in **Appendix D**.

7.2 Annual Review of Action Plan

A review of this Local TMDL Action Plan will be conducted annually. The review will evaluate the following aspects of the plan:

- Compliance;
- Appropriateness of the identified BMPs/management techniques; and
- Progress toward achieving the measurable goals.

Following this review, the plan will be updated as needed, including any changes to BMPs/management techniques, to ensure NAS Oceana is addressing bacteria reduction appropriately.

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APPENDIX A

VADEQ Local TMDL Action Plan Guidance

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COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

Subject: Guidance Memo No. XXX,

To:

From: Melanie D. Davenport, Director

Date: April XX, 2015

Copies:

Summary: This guidance document provides staff and permittees with background information and procedures for developing and implementing local TMDL Action Plans as required in the Special Condition of the 2013-2018 General Permit for Discharges of Stormwater from Small (Phase II) MS4s, the reissued Phase I MS4 permits, and any Individual Phase II permits that are issued.

Contact Information:

Disclaimer:
This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, establishment of a wasteload allocation, or establishment of a permit limit. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

DEFINTIONS – For the purposes of this guidance document, the following definitions shall apply:

Best Management Practices ("BMPs") – Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, including both structural and nonstructural practices to prevent or reduce the pollution of surface waters and groundwater systems.

Load Allocation ("LA") - The portion of the loading capacity attributed to (1) the existing nonpoint sources of pollution and (2) natural background sources.

Newly Designated MS4 permittees – MS4 permittees receiving initial permit coverage under the July 1, 2013 General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems.

Pollutant(s) of Concern ("POC") – The pollutant(s) impairing a water body for which one or more TMDL(s) has been developed.

TMDL Implementation Plan – A document guided by an approved TMDL(s) that at a minimum provides details of the corrective actions to address the load allocation of one or more TMDLs. The plan includes measureable goals needed to achieve pollutant(s) source load reductions; outlines a schedule to attain water quality standards along with costs, benefits, and environmental impacts to reduce pollutant(s) and remediate impaired waterbodies.

Total Maximum Daily Load ("TMDL") – The sum of the individual wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, natural background loading and a margin of safety.

Wasteload Allocation ("WLA") - The portion of a receiving waters' pollutant loading capacity that is allocated to existing or future point sources of pollution, such as an MS4.

For terms not defined above, please refer to the 9VAC25-890-1, 9VAC25-870-10, or 9VAC25-31-10 of the Virginia Administrative Code.

BACKGROUND

Since 1998 DEQ has developed Total Maximum Daily Loads ("TMDL"), with public input, to restore and maintain the water quality of impaired waterbodies. Section 303(d) of the Clean Water Act requires that wasteload allocations be implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. As point sources, MS4s are assigned individual or aggregate WLAs in TMDLs for receiving streams or watersheds to which the MS4 discharges. Municipalities may also be assigned an LA for those areas outside of the regulated MS4 Service Area that are sources of the POC. TMDLs may quantify both LA and WLA loads from the Census designated urbanized area. Permittees are not required to incorporate approaches for addressing those LAs into their Action Plans. Load allocations are often addressed through TMDL Implementation Plans (IPs) which characterize the suite of corrective actions needed to reduce nonpoint source pollutant loads. This guidance document only addresses the requirements to address WLAs to meet the special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL" ("Special Condition for Local TMDLs").

The Special Condition for Local TMDLs in the 2013 General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (VAR04) ("GP") and the eleven Phase I Individual MS4 permits, as they are reissued, require permittees to develop Action Plans that address all POC(s) for which the permittee has been assigned a WLA under an approved TMDL. The Local TMDL Action Plans should identify BMPs and other management strategies that the permittee will implement to meet the TMDL WLA and achieve compliance with the Special Condition. Local TMDL Action Plans can be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLA(s). Implementation of the TMDL Action Plans is tracked via the permittee's Annual Reports.

PERMIT REQUIREMENTS

With the exception of newly designated permittees, the Phase II Small MS4 GP requires that:

1. Action Plans for local TMDLs approved before July 1, 2008 must be completed by July 1, 2015 and submitted with the Annual Report due October 1, 2015.

2. Action Plans for local TMDLs approved between July 1, 2008 and June 30, 2013 must be completed by July 1, 2016 and submitted with the annual report due October 1, 2016.

Newly designated MS4 permittees should have included a schedule for developing local TMDL Action Plans as part of the MS4 Program Plan and registration statement submitted to obtain initial coverage under the 2013 GP and should follow that approved schedule. Likewise, Phase I permittees must follow the schedule in their individual permit. In accordance with Section I.B.7 of the GP, permittees must include an estimated date by which they will achieve the assigned WLAs as part of the reapplication package.

The Phase II Small MS4 local TMDL Action Plans and updates become effective and enforceable 90 days after the date received by the Department unless specifically denied in writing. DEQ may request additional information in the review process, as needed. In the Action Plan permittees are responsible for establishing schedules and milestones to meet the assigned WLA(s). The approved Action Plan schedule will supersede any implied or explicit completion date or schedule provided in the local TMDL or Implementation Plan. Permittees are strongly encouraged to work closely with the DEQ regional TMDL and MS4 staff throughout the development of the Action Plan(s).

APPLICABLE WLAs

Prior to Action Plan development, permittees will need to determine the local TMDLs in which the MS4 has been assigned a WLA. Permittees may search for approved local TMDLs by city and/or county on the TMDL Reports page of DEQ's website. Permittees may verify whether they are subject to a local TMDL by using the Virginia Environmental Geographic Information System (VEGIS) to determine the waterbodies to which the MS4 discharges. This information should be refined and/or corrected as the permittee completes the mapping efforts required under GP Section II.B.3. General instructions for using VEGIS are located on the Department's VEGIS website.

Detailed information regarding the portion of each watershed that drains to an MS4 system may not be available during local TMDL development and WLA assignment, so a conservative, land-use based approach is often used. It is important to note that the actual areas within a local TMDL watershed that are subject to a MS4 WLA are those areas that are specifically regulated under the MS4 permit. TMDL studies do not attempt or intend to define the MS4 regulatory area. Rather, the areas used to develop loadings associated with the MS4 permits in local TMDLs (e.g. impervious developed or Census designated urbanized areas) are only surrogates for establishing WLAs and estimating a reasonable pollutant loading that is expected to be contributed by these permitted sources.

The Department encourages permittees to participate in both the local TMDL and Implementation Plan development processes, which may provide insight into BMP applicability and strategies to meet water quality standards. If an Implementation Plan has been developed for a TMDL, permittees may examine the Implementation Plan for appropriate non-point source BMPs for the POC and other strategies for reducing pollutants. While an Implementation Plan may provide strategies for permittees to consider, permittees are not required to follow the strategies listed in an Implementation Plan to address their WLA(s).

Aggregate WLAs

In some circumstances multiple permittees may be assigned one WLA, or an aggregate WLA, for their discharges to the impaired waterbody. Aggregate WLAs are intended to address a watershed wide pollutant without discrete MS4 boundaries. Aggregated WLAs may be developed when permittees are closely interconnected, there is not sufficient information or detail to disaggregate the WLA, or the scale of the TMDL is too great to delineate individual WLAs. MS4 permittees are encouraged to work together to create a collaborative watershed strategy to meet these WLAs.

Forthcoming WLAs for Existing TMDLs

Newly designated Phase II and existing Phase II MS4 permittees with expanded urbanized areas as the result of the 2010 Census may drain to impaired waters for which a local TMDL has been developed. These permittees may not currently have a WLA assigned to them under these TMDLs.

Existing Permittees with Expanded Area
Existing permittees who were previously assigned a WLA and whose urbanized area expanded as a result of the 2010 Census are required to meet the WLA(s) assigned prior to the identification of an expanded urbanized area. As WLAs are revised and/or finalized by DEQ to incorporate the expanded urbanized area, permittees will be required to address those POC reductions in future permit cycles.

New permittees
New permittees that discharge to impaired waterbodies with one or more approved local TMDL(s) may not have been assigned WLA(s) yet. The Department recommends permittees begin planning for future WLAs by considering land use based reductions as discussed above.

ACTION PLAN CONTENT

The proposed strategies and the end date by which permittees will demonstrate compliance with their assigned WLA(s) will be determined by the permittee; however, the Action Plan should also include justification for these choices. Permittees should address the following in their Action Plan(s):

1. The name(s) of the Final TMDL report(s);
2. The pollutant(s) causing the impairment(s);
3. The WLA(s) assigned to the MS4 as aggregate or individual WLAs;
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;
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;
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;
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;
8. A schedule of interim milestones and implementation of the items in 5, 6, and 7;
9. Methods to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs; and
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).

Approaches to meeting WLAs

Action Plans should be developed in accordance with information and data in the TMDL. However, it is not necessary for a permittee to employ the same models and tools used to develop the TMDL in development and evaluation of the Action Plan. For example, watershed-based TMDLs often use Hydrological Simulation Program-Fortran (HSPF) to model the hydrology and pollutant fate and transport. The permittee may use other tools and models that may be better suited to their specific circumstance to develop a control strategy and evaluate alternatives. Permittees should consult with DEQ regional TMDL staff if they have questions regarding the methodology and data used in development of the MS4 TMDL WLAs.

Permittees may employ both structural and non-structural BMPs to address WLAs. There are a number of other resources permittees may reference to identify BMPs that may be implemented to address local WLAs. Reports are available through the Center for Watershed Protection and the Water Environment Research Foundation (WERF) that provide information on BMPs that can be used to address non-nutrient TMDLs. Existing Implementation Plans may also be valuable resources for permittees for information concerning relevant BMPs, BMP reduction efficiencies, cost and benefits, and strategies to address POC reductions necessary to meet the WLAs. Demonstration of adequate progress may be achieved through tracking, monitoring, and/or reporting of BMP implementation, and/or other strategies as approved by DEQ as part of the TMDL Action Plan.

Nutrient and Sediment TMDLs
Permittees may refer to the Chesapeake Bay TMDL Action Plan Guidance (GM14-2012) for strategies and information on how to calculate reductions from BMPs in watersheds with local nutrient and sediment TMDLs. It should be noted that the Action Plans for local TMDLs **do not** need to follow the requirements for the Chesapeake Bay TMDL Action Plan.

Pathogenic Pollutant TMDLs
For pathogenic pollutants (i.e. Enterococci, fecal coliform, and E. coli), any illicit discharges must be addressed by the permittee regardless of the assignment of a WLA. Existing programmatic practices, ordinances, and outreach currently in place under the MS4 program may be sufficient to address anthropogenic sources of bacteria. For these TMDLs, permittees are encouraged to consider practices such as public outreach and education to influence behaviors. This may include signage and supplies to encourage the collection and removal of pet waste at areas of high concentration, such as dog parks; residential outreach through fliers or pamphlets included with utility bills; and other education programs. Permittees may wish to reference the Environmental and Water Resource Institute's 2014 Pathogens in Urban Stormwater Report for techniques that can be used to address these TMDLs.

Polychlorinated Biphenyl (PCB) TMDLs
The recommended method to address these contaminants is through a pollutant minimization approach. Permittees may consider tracing back through the system and identifying past and current high risk land uses, followed by confirmation monitoring of soil and/or stormwater runoff when appropriate to address PCB sources. Upon discovery of a source of PCBs, a collaborative effort with DEQ may be necessary to address the site.

COMPLIANCE

To demonstrate compliance with the Special Condition for Local TMDLs, permittees must submit TMDL Action Plans that include all of the items listed in Section I.B in accordance with the schedule described in the permit. Permittees are responsible for meeting the schedule and milestones set in the approved Action Plan. If a permittee determines that elements of the approved Action Plan are insufficient to meet the WLA, a modification request should be submitted to DEQ as soon as the permittee determines that the plan needs to be updated. Modifications to the approved Action Plan may be made in accordance with GP Section II.F.1. The Department may also request that the Action Plan be modified to include

additional and/or alternative strategies to address the POC. The Department encourages permittees subject to aggregate WLA(s) to take a collaborative approach to addressing those WLAs.

The permittee must make adequate progress in meeting the WLA in accordance with the approved Action Plan(s). Permittees are encouraged to discuss any concerns regarding demonstration of adequate progress with DEQ's MS4 permitting staff.

MODIFICATIONS

Permittees may make modifications to the approved TMDL Action Plan(s) as new opportunities become available or proposed projects/strategies are deemed infeasible or ineffective. TMDL Action Plan modification may be requested by the permittee at any time during the implementation of the Action Plan(s) by contacting the DEQ regional MS4 staff.

PRIORITIZATION

MS4 permittees may be assigned multiple TMDL WLAs. Permittees may prioritize TMDL Action Plan implementation using best professional judgment, including knowledge of the local watersheds, the local infrastructure, and insight into local water quality planning efforts to determine the number and types of BMPs that will be necessary to meet the requirements of the local TMDLs. The permittee should include as part of the Action Plan a section that establishes the justification for the prioritization and the proposed implementation schedule. If appropriate, permittees may address multiple TMDLs within a single Action Plan, although all applicable TMDL WLA's must be addressed in accordance with the schedule described above.

APPENDIX B

Soil Sampling Results from Manure Application Area and Potential Application Areas

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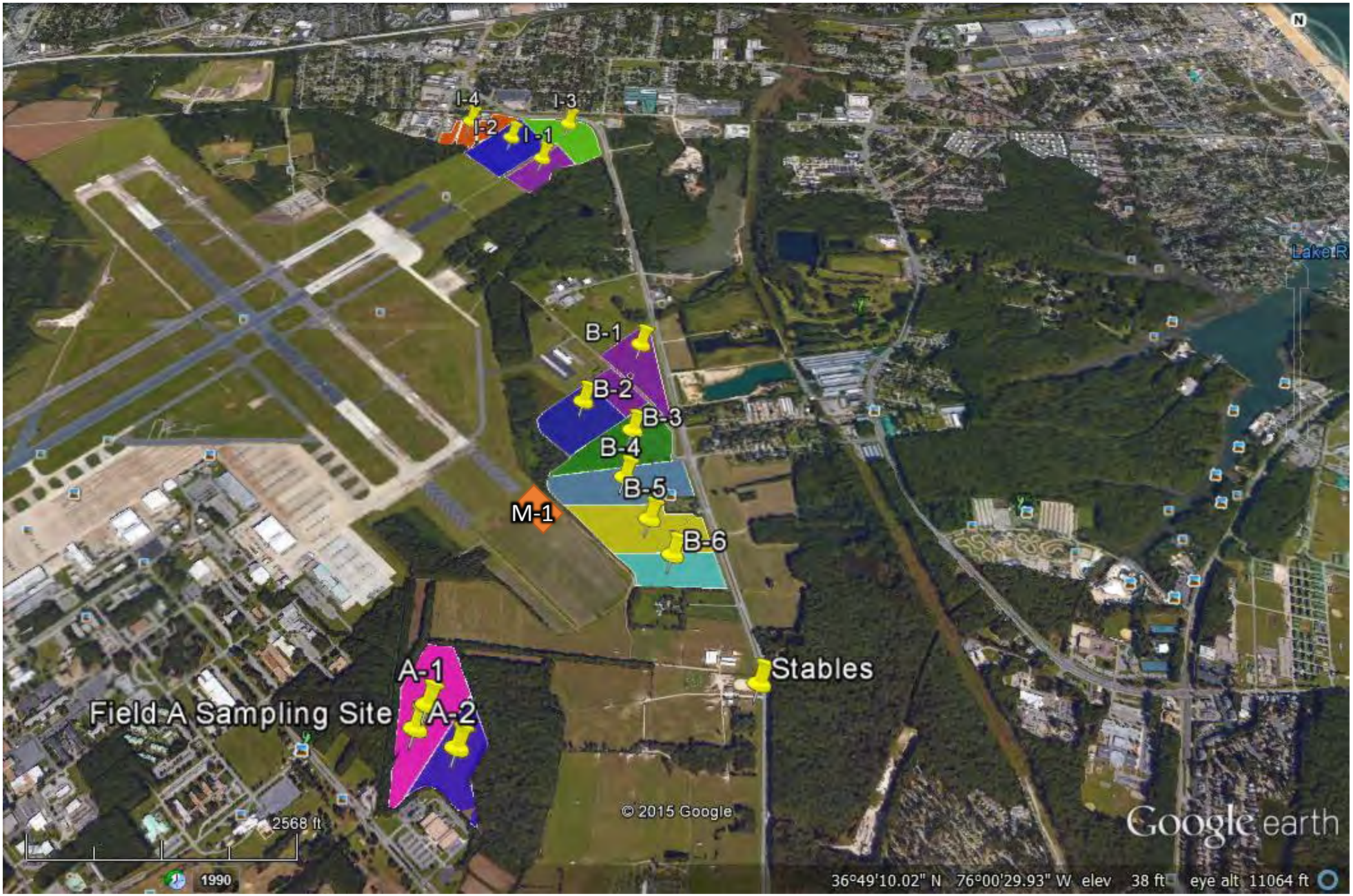

NAS Oceana Sampling Locations for Manure Management

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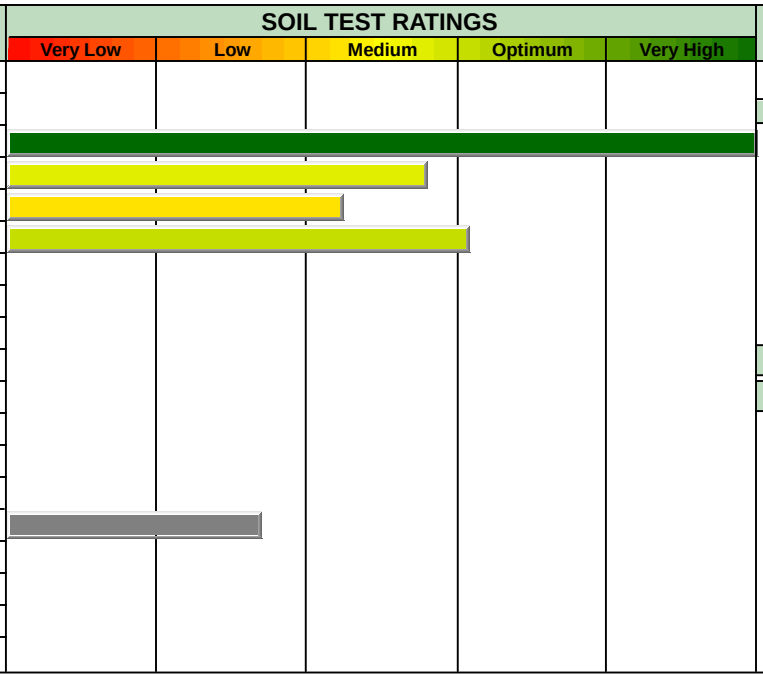
SOIL ANALYSIS

Client :	Grower :	
ESSENTIAL ELEMENTS MATT AUSTIN 3997 DRIFTWOOD WAY WILLIAMSBURG VA 23188	NAS OCEANA	Report No: 15-321-0638 Cust No: 07469 Date Printed: 11/18/2015 Date Received : 11/17/2015 PO: Page : 1 of 13

Lab Number : 18577 **Field Id :** **Sample Id :** I1

Test	Method	Results
Soil pH	1:1	5.9
Buffer pH	BPH	6.87
Phosphorus (P)	M3	531 ppm
Potassium (K)	M3	86 ppm
Calcium (Ca)	M3	434 ppm
Magnesium (Mg)	M3	73 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.0 % ENR 84
Nitrate Nitrogen		

SOIL TEST RATINGS



Calculated Cation Exchange Capacity: **4.0** meq/100g

%Saturation

	%sat	meq
K	5.5	0.2
Ca	54.3	2.2
Mg	15.2	0.6
H	25.0	1

K/Mg Ratio: 0.33

Ca/Mg Ratio: 3.57

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	63	7						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	78	7						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

· If dolomitic lime is not used, apply required magnesium with magnesium oxide. Epsom Salts, K-Mag or Sul-PO-Mag.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

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SOIL ANALYSIS

Client :	Grower :	
ESSENTIAL ELEMENTS MATT AUSTIN 3997 DRIFTWOOD WAY WILLIAMSBURG VA 23188	NAS OCEANA	Report No: 15-321-0638 Cust No: 07469 Date Printed: 11/18/2015 Date Received : 11/17/2015 PO: Page : 2 of 13

Lab Number : 18578 **Field Id :** **Sample Id :** I2

Test	Method	Results
Soil pH	1:1	5.9
Buffer pH	BPH	6.87
Phosphorus (P)	M3	227 ppm
Potassium (K)	M3	84 ppm
Calcium (Ca)	M3	414 ppm
Magnesium (Mg)	M3	100 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.5 % ENR 94
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **4.1** meq/100g

%Saturation

	%sat	meq
K	5.3	0.2
Ca	50.5	2.1
Mg	20.3	0.8
H	24.4	1

K/Mg Ratio: 0.25

Ca/Mg Ratio: 2.49

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	66	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	80	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

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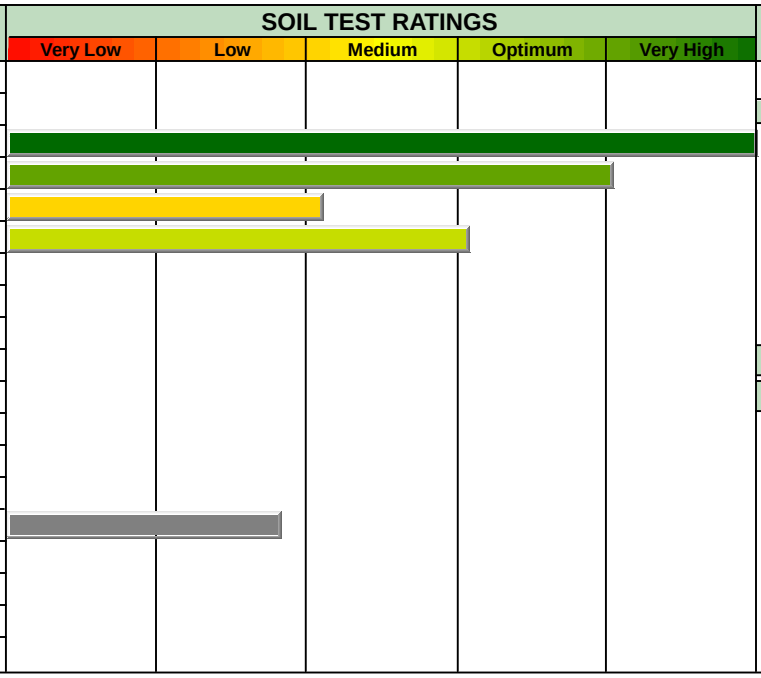
Lab Number : 18579 **Field Id :** **Sample Id :** I3

Test	Method	Results
Soil pH	1:1	6.0
Buffer pH	BPH	6.87
Phosphorus (P)	M3	481 ppm
Potassium (K)	M3	134 ppm
Calcium (Ca)	M3	442 ppm
Magnesium (Mg)	M3	77 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.2 % ENR 88
Nitrate Nitrogen		

SOIL TEST RATINGS



Calculated Cation Exchange Capacity: **4.2** meq/100g

%Saturation

	%sat	meq
K	8.2	0.3
Ca	52.6	2.2
Mg	15.3	0.6
H	23.8	1

K/Mg Ratio: 0.50

Ca/Mg Ratio: 3.44

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	33	3						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	40	3						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

· If dolomitic lime is not used, apply required magnesium with magnesium oxide. Epsom Salts, K-Mag or Sul-PO-Mag.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

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Lab Number : 18580 **Field Id :** **Sample Id :** I4

Test	Method	Results
Soil pH	1:1	5.9
Buffer pH	BPH	6.83
Phosphorus (P)	M3	306 ppm
Potassium (K)	M3	119 ppm
Calcium (Ca)	M3	654 ppm
Magnesium (Mg)	M3	134 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.7 % ENR 96
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **5.7** meq/100g

%Saturation

	%sat	meq
K	5.4	0.3
Ca	57.4	3.3
Mg	19.6	1.1
H	17.5	1

K/Mg Ratio: 0.27

Ca/Mg Ratio: 2.93

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	69	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	75	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

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Lab Number : 18581 **Field Id :** **Sample Id :** A1

Test	Method	Results
Soil pH	1:1	5.1
Buffer pH	BPH	6.67
Phosphorus (P)	M3	217 ppm
Potassium (K)	M3	159 ppm
Calcium (Ca)	M3	602 ppm
Magnesium (Mg)	M3	116 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	6.3 % ENR 150
Nitrate Nitrogen		

SOIL TEST RATINGS

Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **7.4** meq/100g

%Saturation

	%sat	meq
K	5.5	0.4
Ca	40.7	3.0
Mg	13.1	1.0
H	40.5	3

K/Mg Ratio: 0.40

Ca/Mg Ratio: 3.11

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
4000	2	15	0	33	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

4000	2	153	0	47	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

· Apply dolomitic lime to raise pH and improve the magnesium level.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

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Lab Number : 18583 **Field Id :** **Sample Id :** A2

Test	Method	Results
Soil pH	1:1	5.1
Buffer pH	BPH	6.59
Phosphorus (P)	M3	207 ppm
Potassium (K)	M3	121 ppm
Calcium (Ca)	M3	893 ppm
Magnesium (Mg)	M3	98 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	7.4 % ENR 150
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **8.6** meq/100g

%Saturation

	%sat	meq
K	3.6	0.3
Ca	51.9	4.5
Mg	9.5	0.8
H	34.9	3

K/Mg Ratio: 0.38

Ca/Mg Ratio: 5.46

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
4000	2	15	0	68	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

4000	2	153	0	74	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

· Apply dolomitic lime to raise pH and improve the magnesium level.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

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Lab Number : 18584 **Field Id :** **Sample Id :** B1

Test	Method	Results
Soil pH	1:1	5.9
Buffer pH	BPH	6.86
Phosphorus (P)	M3	485 ppm
Potassium (K)	M3	117 ppm
Calcium (Ca)	M3	509 ppm
Magnesium (Mg)	M3	83 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.2 % ENR 88
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **4.5** meq/100g

%Saturation

	%sat	meq
K	6.7	0.3
Ca	56.6	2.5
Mg	15.4	0.7
H	22.2	1

K/Mg Ratio: 0.43

Ca/Mg Ratio: 3.68

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	33	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	44	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

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Lab Number : 18585 **Field Id :** **Sample Id :** B2

Test	Method	Results
Soil pH	1:1	5.7
Buffer pH	BPH	6.86
Phosphorus (P)	M3	432 ppm
Potassium (K)	M3	93 ppm
Calcium (Ca)	M3	354 ppm
Magnesium (Mg)	M3	74 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.6 % ENR 97
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **3.6** meq/100g

%Saturation

	%sat	meq
K	6.6	0.2
Ca	49.2	1.8
Mg	17.1	0.6
H	27.8	1

K/Mg Ratio: 0.33

Ca/Mg Ratio: 2.88

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	56	6						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	71	6						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

· If dolomitic lime is not used, apply required magnesium with magnesium oxide. Epsom Salts, K-Mag or Sul-PO-Mag.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

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Lab Number : 18586 **Field Id :** **Sample Id :** B3

Test	Method	Results
Soil pH	1:1	5.9
Buffer pH	BPH	6.85
Phosphorus (P)	M3	390 ppm
Potassium (K)	M3	95 ppm
Calcium (Ca)	M3	527 ppm
Magnesium (Mg)	M3	95 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.6 % ENR 95
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **4.7** meq/100g

%Saturation

	%sat	meq
K	5.2	0.2
Ca	56.1	2.6
Mg	16.8	0.8
H	21.3	1

K/Mg Ratio: 0.25

Ca/Mg Ratio: 3.34

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs)	LIME (tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	54	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	68	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

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Lab Number : 18587 **Field Id :** **Sample Id :** B4

Test	Method	Results
Soil pH	1:1	5.8
Buffer pH	BPH	6.85
Phosphorus (P)	M3	498 ppm
Potassium (K)	M3	97 ppm
Calcium (Ca)	M3	531 ppm
Magnesium (Mg)	M3	79 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.6 % ENR 95
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **4.6** meq/100g

%Saturation

	%sat	meq
K	5.4	0.2
Ca	57.7	2.7
Mg	14.3	0.7
H	21.7	1

K/Mg Ratio: 0.29

Ca/Mg Ratio: 4.03

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	51	1						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	66	1						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

- Apply dolomitic lime to raise pH and improve the magnesium level.
- If dolomitic lime is not used, apply required magnesium with magnesium oxide. Epsom Salts, K-Mag or Sul-PO-Mag.

Corn

Limestone application is targeted to bring soil pH to 6.2.

- The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

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Lab Number : 18588 **Field Id :** **Sample Id :** B5

Test	Method	Results
Soil pH	1:1	5.9
Buffer pH	BPH	6.87
Phosphorus (P)	M3	473 ppm
Potassium (K)	M3	94 ppm
Calcium (Ca)	M3	422 ppm
Magnesium (Mg)	M3	75 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.8 % ENR 100
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **4.0** meq/100g

%Saturation

	%sat	meq
K	6.0	0.2
Ca	52.8	2.1
Mg	15.6	0.6
H	25.0	1

K/Mg Ratio: 0.33

Ca/Mg Ratio: 3.38

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	55	5						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	69	5						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

· If dolomitic lime is not used, apply required magnesium with magnesium oxide. Epsom Salts, K-Mag or Sul-PO-Mag.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

Analysis prepared by: Waypoint Analytical Virginia, Inc.

Waypoint ANALYTICAL
7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 º Fax 804-271-6446
www.waypointanalytical.com

"Every acre...Every year."™

SOIL ANALYSIS

Client :	Grower :	
ESSENTIAL ELEMENTS MATT AUSTIN 3997 DRIFTWOOD WAY WILLIAMSBURG VA 23188	NAS OCEANA	Report No: 15-321-0638 Cust No: 07469 Date Printed: 11/18/2015 Date Received : 11/17/2015 PO: Page : 12 of 13

Lab Number : 18589 **Field Id :** **Sample Id :** B6

Test	Method	Results
Soil pH	1:1	6.1
Buffer pH	BPH	6.87
Phosphorus (P)	M3	490 ppm
Potassium (K)	M3	136 ppm
Calcium (Ca)	M3	537 ppm
Magnesium (Mg)	M3	85 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	2.2 % ENR 87
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **4.7** meq/100g

%Saturation

	%sat	meq
K	7.4	0.3
Ca	57.1	2.7
Mg	15.1	0.7
H	21.3	1

K/Mg Ratio: 0.43

Ca/Mg Ratio: 3.78

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1500	0.8	15	0	33	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1500	0.8	153	0	40	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

Analysis prepared by: Waypoint Analytical Virginia, Inc.

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"Every acre...Every year."™

SOIL ANALYSIS

Client :	Grower :	
ESSENTIAL ELEMENTS MATT AUSTIN 3997 DRIFTWOOD WAY WILLIAMSBURG VA 23188	NAS OCEANA	Report No: 15-321-0638 Cust No: 07469 Date Printed: 11/18/2015 Date Received : 11/17/2015 PO: Page : 13 of 13

Lab Number : 18590 **Field Id :** **Sample Id :** M1

Test	Method	Results
Soil pH	1:1	5.7
Buffer pH	BPH	6.76
Phosphorus (P)	M3	227 ppm
Potassium (K)	M3	531 ppm
Calcium (Ca)	M3	653 ppm
Magnesium (Mg)	M3	193 ppm
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	LOI	8.5 % ENR 150
Nitrate Nitrogen		

SOIL TEST RATINGS: Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity: **8.2** meq/100g

%Saturation

	%sat	meq
K	16.6	1.4
Ca	39.8	3.3
Mg	19.6	1.6
H	24.4	2

K/Mg Ratio: 0.88

Ca/Mg Ratio: 2.03

SOIL FERTILITY GUIDELINES

Crop : Soybeans **Yield Goal :** 45 bu **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
1000	0.5	15	0	0	0						

Crop : Corn **Yield Goal :** 125 bu **Rec Units:** LB/ACRE

1000	0.5	153	0	0	0						

Comments :

Soybeans

Limestone application is targeted to bring soil pH to 6.2.

Corn

Limestone application is targeted to bring soil pH to 6.2.

· The N recommendation for corn for grain is based on the use of best management and environmental practices for this soil, if the N applications are not divided into a pre-plant or starter and side-dress application.

BPH - Lime Index M3 - Mehlich 3 LOI - Loss On Ignition 1:1 - Water pH

Analysis prepared by: Waypoint Analytical Virginia, Inc.

APPENDIX C

Nutrient Management Plan Identification

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NUTRIENT MANAGEMENT PLAN IDENTIFICATION

Operator
Oceana Stables / Joe Hoffenberger
875 D Ave Blg 85
Virginia Beach, VA 23460
757-635-6079

Integrator:*None*

Farm Coordinates
Easting: 0, Northing: 0, zone: 17

Watershed Summary
watershed: AS14
county: Virginia Beach

Nutrient Management Planner
Ed Joyner
528 Lake Kilby Road
Suffolk, VA 23434

Certification Code: 189

Acreage Use Summary
Total Acreage in this plan: 153.9

Cropland:	0.
Hayland:	0.
Pasture:	153.9
Specialty:	0.

Livestock Summary

Beef Cattle	0
Dairy Cattle	0
Poultry	0
Swine	0
Other	15

Manure Production Balance

	Imported	Produced	Exported	Used	Net
kgals	0.	0.	0.	0.	0.
tons	0.	164.3	0.	109.5	54.7

Plan written 3/21/2015
Valid until 3/21/2018

Signature: _____ **Planner** 11/30/15 **date**

Application Summary Report

2015: Bermudagrass pasture, maint.

Tract	Field	Acres	Manure Rate and Type (Season)	Broadcast Commercial	Banded Commercial	Topdress Commercial	Lime (tons)
Oceana	Blvd	11.1		40-0-40(Sp) 40-0-0(Su) 40-0-0(Su)			1.0 (Sp)
	Cuba	10.8		40-0-65(Sp) 40-0-0(Su) 40-0-0(Su)			
	FAT	3.2		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FCMR 1	4.8		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			1.0 (Sp)
	FCMR 2	5.5		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FULLS	5.0		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	GOV	30.4		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			1.0 (Sp)
	PAG	7.3		40-0-40(Sp) 40-0-0(Su) 40-0-0(Su)			
	PBG	19.2		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	PBM	11.7		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	SB MAR	15.2		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	SBG N	10.4		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	SBG S	6.6		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			0.8 (Sp)
	X Con	6.3		40-0-65(Sp)			

				40-0-0(Su) 40-0-0(Su)			
	Y Con	6.4		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			

2016: Bermudagrass pasture, maint.

Tract	Field	Acres	Manure Rate and Type (Season)	Broadcast Commercial	Banded Commercial	Topdress Commercial	Lime (tons)
Oceana	Blvd	11.1		40-0-40(Sp) 40-0-0(Su) 40-0-0(Su)			
	Cuba	10.8	3.0t Horse(Sp)	40-0-55(Sp) 40-0-0(Su) 40-0-0(Fa)			
	FAT	3.2	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FCMR 1	4.8		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FCMR 2	5.5		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FULLS	5.0		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	GOV	30.4		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	PAG	7.3	2.0t Horse(Sp) 2.0t Horse(Su)	40-0-30(Sp) 40-0-0(Su) 40-0-0(Fa)			
	PBG	19.2	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	PBM	11.7	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	SB MAR	15.2		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	SBG N	10.4		40-0-0(Sp) 40-0-0(Su)			

				40-0-0(Su)			
	SBG S	6.6	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	X Con	6.3	2.0t Horse(Sp)	40-0-55(Sp) 40-0-0(Su) 40-0-0(Su)			
	Y Con	6.4	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			

2017: Bermudagrass pasture, maint.

Tract	Field	Acres	Manure Rate and Type (Season)	Broadcast Commercial	Banded Commercial	Topdress Commercial	Lime (tons)
Oceana	Blvd	11.1	2.0t Horse(Sp)	40-0-30(Sp) 40-0-0(Su) 40-0-0(Su)			
	Cuba	10.8	2.0t Horse(Sp) 2.0t Horse(Sp) 2.0t Horse(Su)	40-0-65(Sp) 40-0-0(Su) 37-0-0(Su)			
	FAT	3.2		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FCMR 1	4.8		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FCMR 2	5.5	2.0t Horse(Sp) 2.0t Horse(Su)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	FULLS	5.0		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	GOV	30.4		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	PAG	7.3		40-0-40(Sp) 40-0-0(Su) 40-0-0(Su)			
	PBG	19.2		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			
	PBM	11.7		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)			

SB MAR	15.2	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)
SBG N	10.4	2.0t Horse(Sp)	40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)
SBG S	6.6		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)
X Con	6.3		40-0-65(Sp) 40-0-0(Su) 40-0-0(Su)
Y Con	6.4		40-0-0(Sp) 40-0-0(Su) 40-0-0(Su)

Soil Map—City of Virginia Beach, Virginia

Environmentally Sensitive

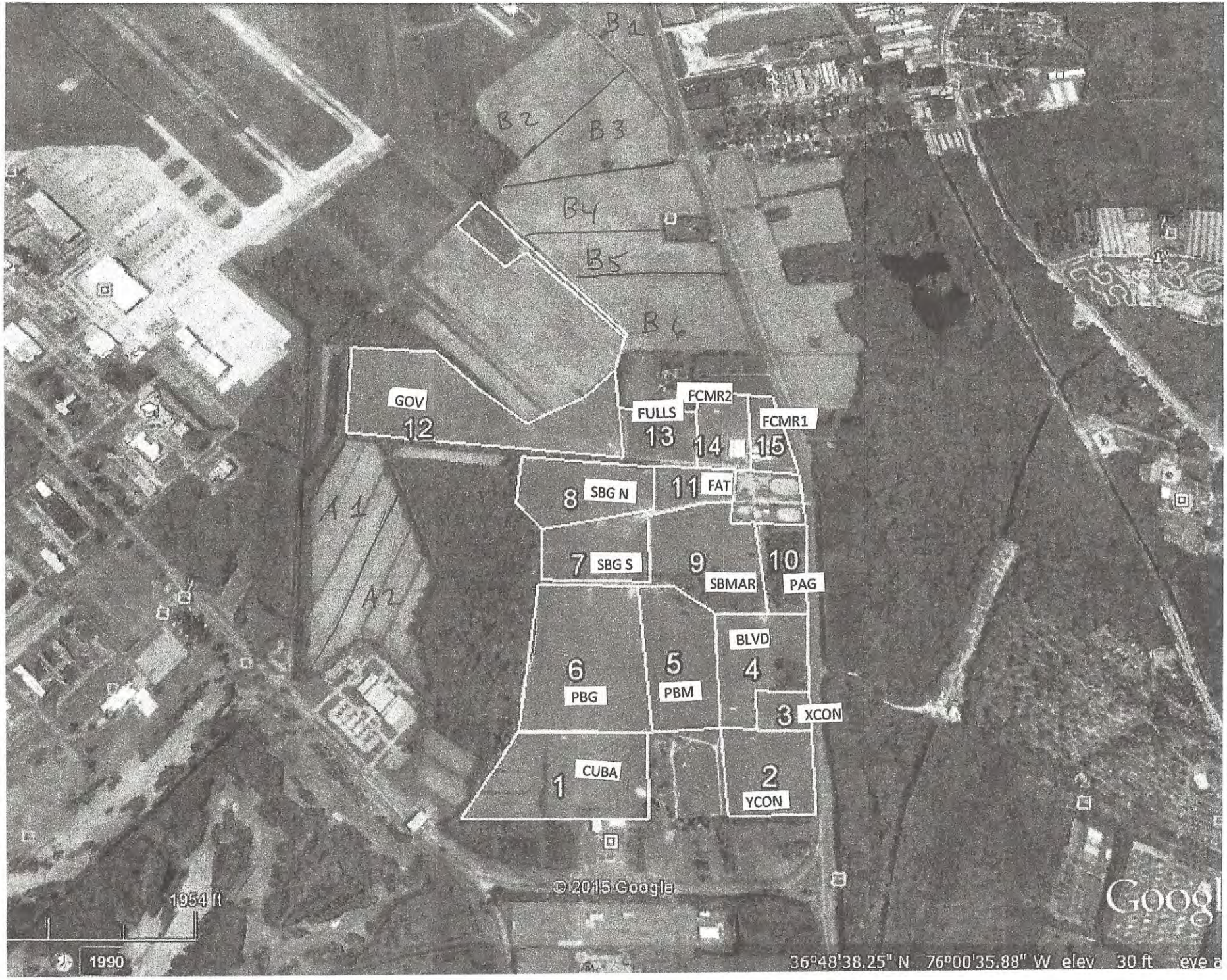
Map Scale: 1:9,860 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84


B1
B2
B3
B4
B5
B6
A1
A2
GOV
12
FULLS
13
FCMR2
14
FCMR1
15
8
SBG N
11
FAT
7
SBG S
9
SBMAR
10
PAG
BLVD
6
PBG
5
PBM
4
3
XCON
1
CUBA
2
YCON
© 2015 Google
1954 ft
1990
36°48'38.25" N 76°00'35.88" W elev 30 ft

Conservation Plan

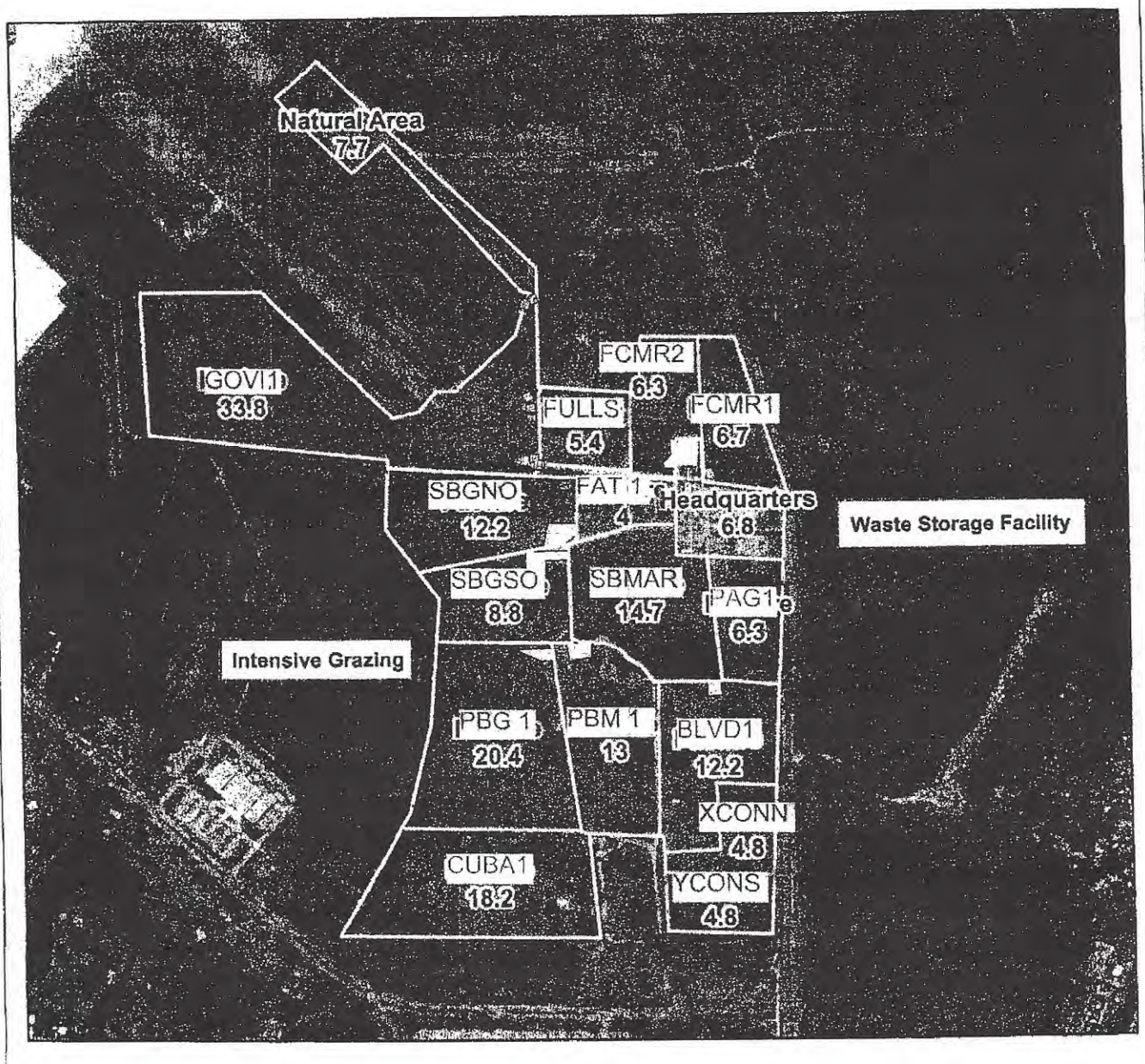
Date: 3/30/2009

Field Office: CHESAPEAKE SERVICE CENTER

Customer(s): OCEANA STABLES

District: VIRGINIA DARE SOIL & WATER CONSERVATION DISTRICT

Assisted By: Luncsford, Bernadette



Legend

- Access Road
- Conservation Plan
- Critical Area Seeding
- Drainage or Exclusion Fencing

Environmentally Sensitive

450 0 450 900 1,350 1,800 Feet

N

NAS Oceana Stables Narrative

NAS Oceana has a section of the base that contains approximately 110 horses with pastures and stables. The horse manure data was estimated by assuming time and dates the horses would be stabled and manure collected. An estimated total of 163.5 tons of collected manure was calculated. This number was derived by 16 horses in the stable for half a day for 365 days, 44 horses in the stable for 45 days and 44 horses in the stable for half a day for 26 days, not all horses were put in a stable. The number of manure produced for the horse and bedding material is estimated at 60 pounds per day. On 2/1/2016 an engineer with Michael Baker International wanted to simplify the calculations by making the horse numbers 15 and stabled 365 days with an estimated total manure production of 164 tons per year which agreed with the plan manure numbers. The horse area is located at Oceana Blvd and Tomcat Road. The pastures consist of coastal Bermuda grass. **All of the pastures have very high phosphate levels except for field CUBA therefore, no phosphate should be applied to any field; however, the manure collected in the stables can be applied to the pastures using this nutrient management plan**. **It is recommended that the manure be collected and moved off site as the current phosphorus levels are very high and on fields FULLS and FCMR the phosphate level is so high no phosphate should be applied and the rest are at phosphorus removal rate. The only exception is the CUBA field. This is according to the Virginia Department of Conservation and Recreation, Virginia Nutrient Management Standards and Criteria.** All the fields are environmentally sensitive except for BLVD, CUBA, GOV, XCON and PAG. Nutrient management practices should be intense on environmentally sensitive sites.

1. Efficient timing of nitrogen applications using split applications. Significant nitrogen applications (greater than 50 pounds) should be applied just prior to the crop's maximum nitrogen uptake.
2. Liquid or solid manure and sludge applied using ground spreaders should be delayed until just prior to crop planting. If applied through the irrigation system, the majority of applications should occur after cover is established and crop nutrient uptake is significant.
3. Manure or sludge applications on slopes greater than 15% should be avoided, but if applied, should not exceed crop removal needs for phosphorus over the rotation.
4. Timely planted winter cereal grains are recommended to trap available soil nitrogen in the fall and winter following crops which leave residual nitrogen in an available form.

This plan was developed using actual soil tests results, soil survey information, and the Virginia Agricultural Land Use Evaluation Systems (VALUES) productivity system to determine nutrient requirements.

In order to achieve the full benefit of this plan the following guidelines should be followed:

1. Soil samples should be taken once a rotation or every three (3) years to maximize utilization of soil nutrients.

2. Spreader and sprayer calibration is extremely important to ensure proper application rates.

3. It is important for soils with a leaching index above 10 to receive split applications of nitrogen on corn and other non-legume summer annuals and split spring nitrogen on small grains. Soils with a leaching index above 10 should also be a high priority for timely fall-planted winter cereal grains to trap available soil nitrogen.

4. Every field should be tested after each crop rotation. All crop fields should be tested at least once every three years.

This Nutrient Management Plan is intended as a guide for assisting fertilizer application decisions, which affect crop production and the environment. The purpose of this plan is to better utilize the nutrients applied to the crops resulting in better water quality. Further information for specific crops can be found on the following pages of this plan and job sheets.

Nutrient Management Plan Special Conditions for Voluntary Nutrient Management Plans Developed for Non-permitted Operations

September 2011

The following management practices will be utilized for <u>dairy/beef operations</u> not requiring a VPA or VPDES permit:

1. Soil samples for manure application fields will be analyzed at least once every three (3) years for pH, phosphorus, potassium, calcium, and magnesium in order to maximize the efficient utilization of nutrients. A representative soil sample of each field will be comprised of at least twenty (20) cores randomly sampled throughout the field. Soil sampling core depth will be from 0-4 inches for land which has not been tilled within the past three (3) years, or 0-6 inches for land that has been tilled within the past three (3) years. Soil pH will be maintained at appropriate agronomic levels to promote optimum crop growth and nutrient utilization.

2. Soil test analysis will be performed by one of the laboratories listed below. Soil phosphorus levels must be determined using the Mehlich I or Mehlich III procedure.
   - • A&L Eastern Laboratories
   - Agri-Analysis Testing Laboratory
   - AgroLab
   - Brookside Laboratories
   - Logan Labs
   - Midwest Laboratories (must request Mehlich III)
   - Spectrum Analytical Laboratories
   - Virginia Tech Soil Testing Lab
   - Waters Agricultural Laboratories (GA)

3. Representative manure samples should be analyzed at a minimum of once per year for liquid manure and once every three (3) years for semi-solid manure for the following: total nitrogen or total Kjeldahl nitrogen (TKN), ammonium nitrogen, total phosphorus, total potassium, calcium, magnesium, and percent (%) moisture. Separate samples should be taken from all manure sources to be used for application (i.e. liquid, solid, etc.). All manure analyses shall be performed using laboratory methods consistent with *Recommended Methods of Manure Analysis*, publication A3769, University of Wisconsin, 2003 or other methods approved by the Virginia Department of Conservation and Recreation (DCR). Manure analysis results will be used to determine actual manure rates that do not exceed the nitrogen and phosphorus application rates specified in the nutrient management plan using either the most recent manure analysis results (not greater than 1 year old) or the facility's average results based on actual manure analysis. Dairy manure coefficients for organic nitrogen availability in manures (found in Table 8-2 of *Virginia Nutrient Management Standards and Criteria, Revised October 2005*) shall be used for beef manure.

4. All crops will be planted and harvested in a timely manner using commercially acceptable management practices.

5. Make manure applications at or near planting or to existing actively growing crops to ensure that nutrients are properly utilized. Utilize the spreading schedule contained in the nutrient management plan and the spreading schedule in #21 of this document to determine appropriate manure application times and rates. Additional commercial fertilizer applications (especially nitrogen) should be made as a split application separate from the manure applications, either as a sidedress or topdress application.

6. For permanent hay or pasture, an adequate stand of hay and/or pasture crop species will be established prior to land application of manure. Commercially acceptable stands of the listed species will be maintained and other weeds and grasses controlled. All hay crops will be harvested in a timely and regular manner, removed from fields, and utilized for a suitable purpose.

7. Manure will be applied to application sites in a uniform manner.

8. Do not spread manure within the following setback areas:
   - 100 feet from wells or springs
   - 50 feet from surface waters (25 feet if injected or incorporated)
   - 50 feet from sinkholes*
   - 50 feet from limestone rock outcrops
   - 25 feet from other rock outcrops
   - 10 feet from agricultural drainage ditches (5 feet if injected)

   *Waste shall not be applied in areas subject to concentrated flow generated by runoff from storm events such that it would discharge into sinkholes in the area.

9. To avoid manure runoff from application fields*:
   - Do not spread manure on soils that are saturated.
   - Do not apply liquid manure (above 85.5% moisture content) or commercial fertilizers to frozen, ice or snow-covered ground.

   *If runoff is observed, reduce the application rate immediately to prevent overland flow, which reaches buffer areas or accumulates in low-lying areas.

10. For odor control and to reduce drift, avoid spreading on windy days.

11. Liquid irrigation systems will be operated in a manner to prevent runoff into buffered areas and low-lying areas. Use a liquid application rate at or below the specified maximum hydraulic application rate for each field per application. Traveling guns used for irrigation of effluent should be operated in a full circle pattern whenever possible to allow for maximum infiltration. A small wedge shaped area may be left dry ahead of the gun to reduce soil compaction.

12. Spreader calibration is extremely critical to ensure proper application rates. Calibration of equipment or verification of actual equipment application rates should occur at a minimum of once per year.

13. New waste storage facilities should be designed, constructed and operated in accordance with the USDA-NRCS *Field Office Technical Guide* and other appropriate NRCS design criteria.

14. Earthen waste storage structures should be regularly inspected and repaired if leaks, slope failures, excessive embankment settlement, eroded banks, or burrowing animals are detected. A protective cover of appropriate vegetation should be established and maintained on all disturbed areas (lagoon and storage pit embankments, berms, pipe runs, etc.). Vegetation such as trees, shrubs and other woody species are limited to areas considered to be appropriate such as wind breaks or visual screens, and are not to be present on lagoon and storage pit embankments, berms, or pipe runs.

15. Waste handling structures, piping, pumps, etc. should be inspected on a regular basis to prevent breakdowns, leaks and spills.

16. Composting of animal mortalities will be conducted in accordance with the latest guidance developed by Virginia Cooperative Extension.

17. State water control law does not allow discharge of waste to state waters (ground or surface) except as specifically authorized by a permit issued by the Virginia Department of Environmental Quality (DEQ). To minimize the risk of waste discharge, and fully utilize this nutrient management plan, it is recommended that 120-180 days of waste storage capacity be installed in most situations.

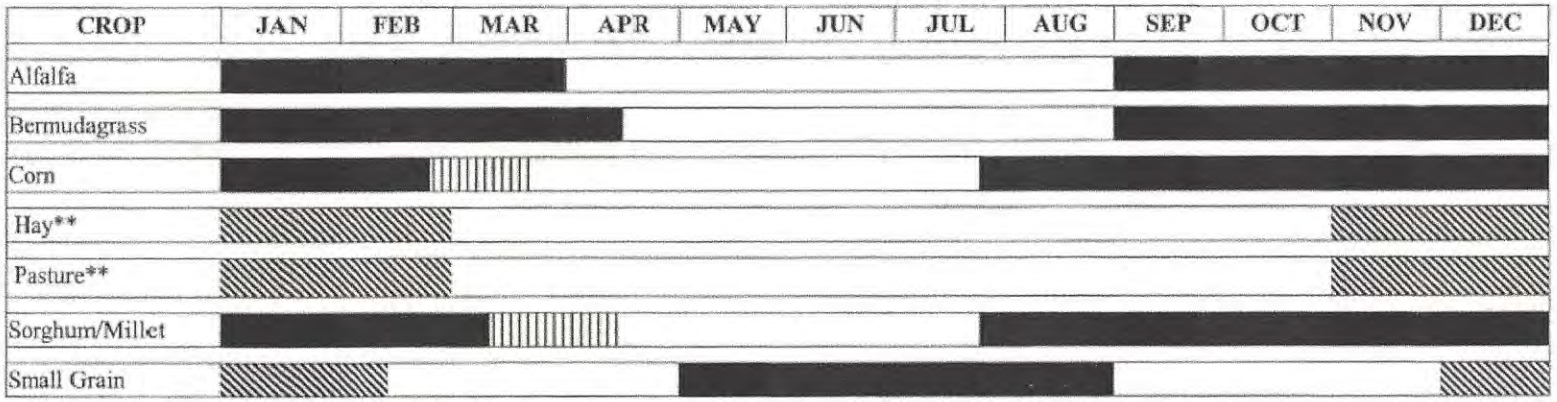
18. Nutrient management plans that contain fields in which row crops will be grown will be revised at least once every three (3) years. Nutrient management plans that contain only hay or pasture fields will be revised at least once every five (5) years.

19. This nutrient management plan should be amended or modified if animal numbers increase above the level specified in the plan; animal types including intended market weights are changed; additional imported manure, biosolids, or industrial waste that was not identified in the existing plan is applied to fields under the control of the operator; available land area for the utilization of manure decreases below the level necessary to utilize manure in the plan; and/or manure application fields have Mehlich I soil phosphorus levels at or above 55ppm (110 lbs/acre) where either cropping systems, rotations, or fields are changed.

20. These conditions do not override any more restrictive plan requirements if required by other specific legislative, regulatory or incentive programs which apply to a specific operator.21. Manure spreading schedule:

6. Manure spreading schedule.

DAIRY/BEEF MANURE SPREADING SCHEDULE*



*Do not spread liquid manure, dry or semi solid manure, or parlor effluent on soils that are saturated.

*Do not spread liquid manure/effluent (above 85.5% moisture content) to frozen, ice or snow covered ground.

*Application of dry or semi solid manure (85.5% moisture content or less) should be avoided on frozen, ice or snow covered ground. If necessary applications may be made to fields that have: (i) slopes not greater than 6.0%, (ii) 60% uniform ground cover from crop residue or an existing actively growing crop such as a small grain or tall fescue with an exposed plant height of ≥ 3", (iii) a minimum 200-foot vegetated or adequate crop residue buffer between the application area and all surface water courses, and (iv) soils characterized by USDA as "well drained".

** Cool season grasses only, Fescue and or Orchardgrass

Spread liquid manure, dry or semi solid manure, and parlor effluent at the rates and times specified in the nutrient management plan

Do not spread liquid manure, dry or semi solid manure, and parlor effluent during these shaded months.

Manure applications will not be made earlier than 30 days prior to planting on environmentally sensitive sites.
On fields <u>not listed as environmentally sensitive</u>:

- Liquid manure applications will not occur more than 60 days prior to spring planting.
- Applications of semi-solid beef manure (85.5% moisture content or less) or semi-solid dairy manure (85.5% moisture content or less) for operations using straw or sawdust (not sand) bedding will not occur more than 90 days prior to spring planting on fields having (i) slopes less than 7% throughout the application area or (ii) having at least 60% uniform ground cover from crop residue.

Manure applications are not recommended during this period (late fall-winter). If necessary uniformly apply a maximum of 3,000 gallons per acre per application. If using an irrigation system apply up to a maximum of a ¼ inch per acre per hour. Do not exceed 40 pounds of plant available nitrogen per acre during this entire period. Allow sufficient drying time between applications. Fields must have greater than 60% uniform live cover with plant height greater than three (3) inches.

Nutrient Management Plan Balance Sheet
(Spring, 2015-Summer, 2018)
NAS Oceana Stables
Planner: Ed Joyner (cert. No. 189)

Tract: Oceana Location: Virginia Beach
(N = N based, 1P = P based, 1.5P = P based at 1.5 removal, 0P = No P allowed)

Field CFSA No. /Name	Size (ac) Total/ Used	Yr.	Crop	Needs N-P-K (lbs/ac)	Leg /Man Resid	Manure/Biosld Rate & Type (season)	IT (d)	Man/Bios N-P-K (lbs/ac)	Net = Needs - appld N-P-K (lbs/ac)	Sum P rem cred	Commercial N-P-K (lbs/ac)	Notes	
4/Blvd(1P)	11/11	2015	Bermudagrass pasture	120-0-40	0/0				120-0-40	30	40-0-40(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-40	0/0				120-0-40	60	40-0-40(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-40	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-30	90	40-0-30(br) 40-0-0(br) 40-0-0(br)		
1/Cuba(N)	11/11	2015	Bermudagrass pasture	120-0-65	0/0				120-0-65	N/A	40-0-65(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-65	0/0	3.t Horse(Sp)	>7	1-9-16	120-(10)-50	N/A	40-0-55(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-65	0/2	2.t Horse(Sp) 2.t Horse(Sp) 2.t Horse(Su)	>7 >7 >7	1-6-10 1-6-10 1-6-10	115-(30)-30	N/A	40-0-65(br) 40-0-0(br) 37-0-0(br)		
11/FAT(1P)	3/3	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	60	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-0	0/1				120-(5)-(10)	90	40-0-0(br) 40-0-0(br) 40-0-0(br)		
14/FCMR 1(0P)	5/5	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	25	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-0	0/0				120-0-0	50	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-0	0/0				120-0-0	75	40-0-0(br) 40-0-0(br) 40-0-0(br)		
15/FCMR 2(1P)	6/6	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	25	40-0-0(br) 40-0-0(br)		

											40-0-0(br)		
		2016	... ...	120-0-0	0/0				120-0-0	50	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2017	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(10)-(20)	75	40-0-0(br)		
						2.t Horse(Su)	>7	1-6-10			40-0-0(br)		
											40-0-0(br)		
13/FULLS(0P)	5/5	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2016	... ...	120-0-0	0/0				120-0-0	60	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2017	... ...	120-0-0	0/0				120-0-0	90	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
12/GOV(0P)	30/30	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	20	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2016	... ...	120-0-0	0/0				120-0-0	40	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2017	... ...	120-0-0	0/0				120-0-0	60	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
10/PAG(1P)	7/7	2015	Bermudagrass pasture	120-0-40	0/0				120-0-40	30	40-0-40(br)		
											40-0-0(br)		
											40-0-0(br)		
		2016	... ...	120-0-40	0/0	2.t Horse(Sp)	>7	1-6-10	120-(10)-20	60	40-0-30(br)		
						2.t Horse(Su)	>7	1-6-10			40-0-0(br)		
											40-0-0(br)		
		2017	... ...	120-0-40	0/2				120-(10)-30	90	40-0-40(br)		
											40-0-0(br)		
											40-0-0(br)		
6/PBG(1P)	19/19	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	25	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2016	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	50	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2017	... ...	120-0-0	0/1				120-(5)-(10)	75	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
5/PBM(1P)	12/12	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2016	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	60	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		
		2017	... ...	120-0-0	0/1				120-(5)-(10)	90	40-0-0(br)		
											40-0-0(br)		
											40-0-0(br)		

9/SB MAR(1P)	15/15	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-0	0/0				120-0-0	60	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	90	40-0-0(br) 40-0-0(br) 40-0-0(br)		
8/SBG N(1P)	10/10	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-0	0/0				120-0-0	60	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	90	40-0-0(br) 40-0-0(br) 40-0-0(br)		
7/SBG S(1P)	7/7	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	60	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-0	0/1				120-(5)-(10)	90	40-0-0(br) 40-0-0(br) 40-0-0(br)		
3/X Con(1P)	6/6	2015	Bermudagrass pasture	120-0-65	0/0				120-0-65	30	40-0-65(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-65	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-55	60	40-0-55(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-65	0/1				120-(5)-65	90	40-0-65(br) 40-0-0(br) 40-0-0(br)		
2/Y Con(1P)	6/6	2015	Bermudagrass pasture	120-0-0	0/0				120-0-0	30	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2016	... ...	120-0-0	0/0	2.t Horse(Sp)	>7	1-6-10	120-(5)-(10)	60	40-0-0(br) 40-0-0(br) 40-0-0(br)		
		2017	... ...	120-0-0	0/1				120-(5)-(10)	90	40-0-0(br) 40-0-0(br) 40-0-0(br)		

Commercial Application Methods:

br - Broadcast ba - Banded sd - Sidedress

Notes:

Field Productivities for Major Crops

Tract Name	Tract/ Field	Field Name	Acres	Predominant Soil Series	Corn	Small Grain	Alfalfa	Grass Hay	Environmental Warnings
Oceana	Oceana/4	Blvd	11	Munden	IIb	I	III	II	
	Oceana/1	Cuba	11	Dragston	IIIb	III	Not Suited	III	
	Oceana/11	FAT*	3	Nimmo	IIa	I	Not Suited	II	Poor Drainage
	Oceana/14	FCMR 1*	5	Bojac2	IIIb	II	Not Suited	III	High Leaching
	Oceana/15	FCMR 2*	6	Bojac2	IIIb	II	Not Suited	III	High Leaching
	Oceana/13	FULLS*	5	Nimmo	IIa	I	Not Suited	II	Poor Drainage
	Oceana/12	GOV	30	Acredale	IVb	IV	Not Suited	IV	
	Oceana/10	PAG	7	Munden	IIa	I	III	II	
	Oceana/6	PBG*	19	Bojac2	IIIa	II	Not Suited	III	High Leaching
	Oceana/5	PBM*	12	Munden	IIb	I	III	II	High Leaching
	Oceana/9	SB MAR*	15	Munden	IIb	I	III	II	High Leaching, Poor Drain
	Oceana/8	SBG N*	10	Nimmo	IIa	I	Not Suited	II	Poor Drainage
	Oceana/7	SBG S*	7	Munden	IIb	I	III	II	High Leaching, Poor Drain
	Oceana/3	X Con	6	Munden	IIa	I	III	II	
	Oceana/2	Y Con*	6	Bojac2	IIb	I	Not Suited	II	High Leaching, Poor Drain

* Do not apply manure or biosolids more than 30 days prior to planting. Apply commercial fertilizer nitrogen to row crops in split spring applicaions.

Yield Range

Field Productivity Group	Corn Grain Bu/Acre	Barley/Intensive Wheat Bu/Acre	Std. Wheat Bu/Acre	Alfalfa Tons/Acre	Grass/Hay Tons/Acre
I	>170	>80	>64	>6	>4.0
II	150-170	70-80	56-64	4-6	3.5-4.0
III	130-150	60-70	48-56	<4	3.0-3.5
IV	100-130	50-60	40-48	NA	<3.0
V	<100	<50	<40	NA	NA

Manure Production Summary

Manure Name: Horse

Animal Summary
Other: 15

Manure Storage Capacity: 0. tons

Manure Analysis:
TKN: 5.3
P_2O_5: 3.03
NH_4: .8
K_2O: 5.22

Plant Available Nutrients:
Immediate Incorporation:
.72 lbs N
3.03 lbs P_2O_5
5.22 lbs K_2O
Surface Applied:
.40 lbs N
3.03 lbs P_2O_5
5.22 lbs K_2O
Residual N:
yr 1: .54 lbs
yr 2: .23 lbs
yr 3: .09 lbs

Manure Production

Dec-Feb	41
Mar-May	41
Jun-Aug	41
Sep-Nov	41

Total Produced:	164
Manure Sold/yr:	0
Manure purch./yr:	0

Solid Manure Production Calculation Details

Production [tons/yr] = (# confined)[animals] * (avg. wt) [animal-lbs/animal] * (prod factor)[lbs-manure/day/K-animal-lbs] * (0.001)[K-animal-lbs/animal-lb] * (365)[days/yr] * (1/2000)[tons/lbs-manure]

Group Name	Animal	%(#) confined	avg wt	prod factor	produced
Horse	Other	100(15)	1000.	60.	164

Manure Spreading Summary

Season	Manure	Rate/ac	Tract	Field	Acres	Crop	Total in Field	Running Total
2016Sp	Horse	3.0 tons	Oceana	Cuba	11	Bermudagrass pasture, mai	32 tons	32 tons
		2.0 tons	Oceana	FAT	3	Bermudagrass pasture, mai	6 tons	39 tons
		2.0 tons	Oceana	PAG	7	Bermudagrass pasture, mai	15 tons	53 tons
		2.0 tons	Oceana	PBG	19	Bermudagrass pasture, mai	38 tons	92 tons
		2.0 tons	Oceana	PBM	12	Bermudagrass pasture, mai	23 tons	115 tons
		2.0 tons	Oceana	SBG S	7	Bermudagrass pasture, mai	13 tons	128 tons
		2.0 tons	Oceana	X Con	6	Bermudagrass pasture, mai	13 tons	141 tons
		2.0 tons	Oceana	Y Con	6	Bermudagrass pasture, mai	13 tons	154 tons
2016Su	Horse	2.0 tons	Oceana	PAG	7	Bermudagrass pasture, mai	15 tons	15 tons

Season	Manure	Rate/ac	Tract	Field	Acres	Crop	Total in Field	Running Total
2017Sp	Horse	2.0 tons	Oceana	Blvd	11	Bermudagrass pasture, mai	22 tons	22 tons
		2.0 tons	Oceana	Cuba	11	Bermudagrass pasture, mai	22 tons	44 tons
		2.0 tons	Oceana	Cuba	11	Bermudagrass pasture, mai	22 tons	65 tons
		2.0 tons	Oceana	FCMR 2	6	Bermudagrass pasture, mai	11 tons	76 tons
		2.0 tons	Oceana	SB MAR	15	Bermudagrass pasture, mai	30 tons	107 tons
		2.0 tons	Oceana	SBG N	10	Bermudagrass pasture, mai	21 tons	128 tons
2017Su	Horse	2.0 tons	Oceana	Cuba	11	Bermudagrass pasture, mai	22 tons	22 tons
		2.0 tons	Oceana	FCMR 2	6	Bermudagrass pasture, mai	11 tons	33 tons

Soil Test Summary

Tract	Field	Acre	Date	P2O5	K2O	Lab	Soil pH	Lime Date	rec. lime tons/Ac
Oceana	Blvd	11	2015-Sp	VH (202 P ppm)	M+ (174 K ppm)	A&L MIII	5.7	2015Sp	1.
Oceana	Cuba	11	2015-Sp	H+ (111 P ppm)	M (99 K ppm)	A&L MIII	6.2		
Oceana	FAT	3	2015-Sp	VH (191 P ppm)	H (184 K ppm)	A&L MIII	6.3		
Oceana	FCMR 1	5	2015-Sp	VH (273 P ppm)	H (152 K ppm)	A&L MIII	5.7	2015Sp	1.
Oceana	FCMR 2	6	2015-Sp	VH (208 P ppm)	H- (139 K ppm)	A&L MIII	6.4		
Oceana	FULLS	5	2015-Sp	VH (298 P ppm)	VH (234 K ppm)	A&L MIII	5.9		
Oceana	GOV	30	2015-Sp	VH (265 P ppm)	VH (232 K ppm)	A&L MIII	5.7	2015Sp	1.
Oceana	PAG	7	2015-Sp	VH (139 P ppm)	M+ (106 K ppm)	A&L MIII	6.2		
Oceana	PBG	19	2015-Sp	VH (153 P ppm)	H+ (200 K ppm)	A&L MIII	5.9		
Oceana	PBM	12	2015-Sp	VH (160 P ppm)	H (152 K ppm)	A&L MIII	6.1		
Oceana	SB MAR	15	2015-Sp	VH (243 P ppm)	H- (126 K ppm)	A&L MIII	6.2		
Oceana	SBG N	10	2015-Sp	VH (222 P ppm)	H+ (209 K ppm)	A&L MIII	5.9		
Oceana	SBG S	7	2015-Sp	VH (163 P ppm)	VH (220 K ppm)	A&L MIII	5.8	2015Sp	0.75
Oceana	X Con	6	2015-Sp	VH (251 P ppm)	M (97 K ppm)	A&L MIII	6.		
Oceana	Y Con	6	2015-Sp	VH (167 P ppm)	H (165 K ppm)	A&L MIII	6.1		

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Recommendations for the Horse Stables at Naval Air Station Oceana...

1. The nutrient plan allows for horse manure applications to be made for years 2016 and 2017 to the pastures; however, except for the CUBA field, the phosphorus levels are very high. Fields FCMR, GOV and FULLS have reached a phosphorus level so that no additional phosphate can be applied unless the Virginia phosphorus index is run. The rest of the fields are at a phosphate removal rate and phosphate can be applied only at the rate of phosphorus removal. This is the preceding step to zero phosphate application. The next soil test in 2017 will determine the new soil phosphate levels for manure applications. The manure applications should be made March-October, therefore manure storage is needed for November-February. The manure spreading schedule calendar is in the nutrient plan.
2. It is recommended to move manure to other locations that do not have very high phosphorus levels. The need in these locations is some type of phosphorus removal activity off the property as continued phosphate applications will continue to build soil phosphate levels.
3. Bill Widner with Natural Resources Conservation Service (NRCS) is an engineer that designs manure buildings. Mr. Widner is willing to assist in designing a building to handle the storage needs at Oceana. Mr. Widner is also willing to assist in finding off-site uses for the horse manure. Bill Widner 757-357-7004 ext. 127
4. Looking at the soil phosphate levels in the current soil samples, the current manure sample, and using the current Virginia standards for manure applications according to phosphate levels, it is estimated that many fields will not reach a zero phosphate application level for many years. This is assuming that no commercial phosphate is added, only the horse manure. An off-site movement of horse manure to needed phosphate areas would be an environmentally sound practice.

The top recommendations summary:

1. **Absolutely no commercial phosphate be applied on the pastures.**
2. Spread manure according to nutrient plan.
3. Get Bill Widner to design a manure storage shed.
4. Find an off-site area to spread or sell manure.
5. 2017 will need new soil and manure samples to write a new nutrient management plan.

Ed Joyner

Nutrient Management Planner
Ag Con, LLC

APPENDIX D

Measurable Goals, Metrics, and Milestones

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Primary Bacteria Reducing BMPs

Management Practices- Primary BMPs (with direct impact on bacteria load reduction)
N40080-11-D-0499; WE68
Project Title: NAS Oceana Local TMDL Action Plan

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
1	Manure Handling and Disposal	Discontinue current land application of livestock manure and collect in a covered roll-off bin and haul offsite. Stop land application of manure.	Collect all manure from the confined animal areas including the: 1) stables; 2) riding ring; and 3) petting zoo. Maintain records of number of livestock at NAS Oceana. Investigate feasiblity of collecting manure from pastures and riding trails.	Record and report the number of livestock present at NAS Oceana from which manure was collected.	Phase II Water Program Media Manager and Installation Water Program Media Manager	By 2017, stop current land application at the stables and collect all manure from confined areas (stables, riding ring, petting zoo). By 2018, determine need and feasibility of collecting waste from pastures and trails.
2	NAS Oceana Stables Nutrient Management Plan	Follow the guidance regarding manure management found in the Stables Nutrient Management Plan and provide training/outreach to Stable employees.	Ensure that the manure management recommendations in the Nutrient Management Plan are followed.	Document methods used to manage the manure at NAS Oceana stable and pastures.	Phase II Water Program Media Manager	Continuously ensure that the manure management guidance for the horse stable and pastures is followed.
3	Biosolids	Limit the amount of biosolids applied in the agricultural fields, if necessary.	Investigate the amount of biosolids used on the agricultural fields and the impact on the high P levels in the fields.	Document the current biosolid application procedures.	Phase II Water Program Media Manager	By July 2016, quantify the amount of biosolids applied to the agricultural fields and document the timing of the application. By July 2017, explore modifying Ag leases to prohibit the use of boisolids.
4	Wildlife Controls	Update the Wildlife Control Program to control wildlife populations, if necessary.	Review the current program to control wildlife populations and assess the program's effectiveness (including if the program recommendations are in practice and if any updates to the program are required.)	Document the findings regarding the review of the current wildlife control program. Identify any required updates. Monitor deer and other populations to see if numbers and associated loads are reduced.	Phase II Water Program Media Manager	By July 2016, determine if any updates are required to the wildlife control program. By July 2017, update and implement the program.
5	Illicit Discharge and Detection	Develop and implement written procedures to detect, identify, and eliminate illicit discharges in accordance with Section II of 4VAC50-60-1240.	Finalize draft procedures to detect, identify and eliminate illicit discharges. These procedures will likely be identified as Standard Operating Procedures (SOP). Implement these final procedures.	Document the number of outfalls screened, the screening results, and other pertinent details. Document each investigation into a suspected illicit discharge. All reporting shall be in accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Media Manager	By July 2016, finalize the draft procedures to detect, identify and eliminate illicit discharges. Begin implementation of these procedures by July 2017.
6	Horse Washing Procedures	Follow appropriate procedures for horse washing to prevent stormwater runoff into the storm system.	Wash the horses in an area away from the storm drains to encourage the infiltration of the wash water into the ground (and prevent from entering the storm system).	Document the procedures.	Phase II Water Program Media Manager and Installation Water Program Media Manager	Continuously ensure that appropriate horse washing procedures are followed.

Primary Bacteria Reducing BMPs

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
7	Evaluation and Assessment	Evaluation and Assessment	Annually evaluate and assess the effectiveness of manure removal from the watershed. Determine if additional manure removal from the unconfined areas such as the pastures and riding trails is warranted. Also determine if the application of biosolids should be restricted in the agricultural land leases.	In permit years 1 through 5, on an annual basis, estimate the amount of bacteria diverted from the watershed from the collection of the confined animal waste (including the stables, riding ring and petting zoo). If additional removal from the unconfined areas (pastures and riding trails) is deemed appropriate, add this amount for a total amount of bacteria (and nutrients) diverted. Also if the elimination of biosolids application is deemed appropriate, add this amount for a total amount of bacteria (and nutrients) diverted. Monitor deer and other populations to see if numbers and associated loads are reduced.	Phase II Water Program Media Manager	Annually

Secondary BMPs

Management Practices - Secondary BMPs *(with indirect impact on bacteria load reduction)*
N40080-11-D-0499; WE68
Project Title: NAS Oceana Local TMDL Action Plan

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
1	ECATTS Training	Conduct training through the ECATTS or the web-based Environmental Compliance Assessment, Training, and Tracking System. Ensure that bacterial contamination is discussed.	Annually review and update as needed the ECATTS stormwater training modules.	Record and report the number of people trained on each stormwater training module presented through ECATTS.	Phase II Water Program Media Manager and Installation Water Program Media Manager	Conduct and evaluate training annually.
2	Stormwater Education Brochures	Distribute the tri-fold brochures for general stormwater, construction sediment and erosion control, and pet waste.	On a semi-annual basis distribute stormwater educational brochures and/or place brochures at highly frequented areas like food courts.	Retain a copy of each brochure and record the date, location, and number of brochures distributed.	Phase II Water Program Media Manager	Distribute brochures at least semi-annually and/or place at highly frequented areas.
3	Newspaper Articles and Ads	Place articles and/or ads related to bacterial contamination in NAS Oceana's newspaper (Jet Observer) and/or the Plan of the Week emails.	On a semi-annual basis, include at least one article/ad in NAS Oceana publications addressing bacterial contamination in stormwater.	Retain a copy of all articles/advertisements published and record the dates of publication.	Phase II Water Program Media Manager	Public article/ad semi-annually.
4	External Website	Maintain a website that the general public can access that includes information about stormwater education.	Maintain the website and update content as needed.	Document the number of hits that the website has per year and the average amount of time each user spends on the website.	Phase II Water Program Media Manager	By July 2016, develop a website that provides information regarding stormwater pollution. Review and update the site at least annually.
5	Storm Drain Marking Program	Place storm drain markers on inlets to the MS4 reminding the public that flows that drain into the system go directly to streams and waterways.	Evaluate and target areas for storm drain marking efforts. Conduct annual storm drain marking efforts.	Record location, date, number of storm drains marked, and if applicable the number of volunteer participants for each storm drain marking event.	Phase II Water Program Media Manager	By July 2016, determine which inlet at NAS Oceana still need markers. In each following year, mark at least 20% of the remaining inlets.
6	Local Activity Participation	Participate during the Annual Clean the Bay Day and Earth Day Events held at NAS Oceana. Outreach information will be distributed during these events.	Participate in the Clean the Bay Day and Earth Day Events.	For Clean the Bay Day, record the number of volunteers utilized and an estimate of the volume of litter collected. For both events, document the amount of outreach materials distributed.	Phase II Water Program Media Manager	Participate in the Clean the Bay Day and Earth Day Events annually.
7	Promote, Publicize, and Facilitate Public Reporting	Use reporting mechanisms such as hotlines, email, and website links to allow the public to report suspected illicit discharges.	Generate a hotline phone number, an email address, and/or a website link for public reporting of suspected illicit discharges. Publicize this information through public outreach.	Record the details (date, problem location, etc.) and number of the reports received using each reporting mechanism. Document follow-up actions.	Phase II Water Program Media Manager	By July 2016, have a hotline phone number, an email address, and/or a website link available. By July 2017, publicize this information through public outreach.
8	Approval of Erosion and Sediment Control Plan	Ensure that all Erosion and Sediment Control Plans are approved prior to commencement of the land disturbing activity. Also ensure that the Plans address sanitary wastes at construction sites from port-a-lets.	Ensure that all regulated project have Erosion and Sediment Control Plans approved.	Retain copies of all approved plans. Document the number of plans approved annually.	Phase II Water Program Media Manager	Continuously ensure that erosion and sediment control plans are submitted and approved.

Secondary BMPs

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
9	VSMP Regulation and Construction Permit Instruction	Maintain and enforce the regulations under the VSMP and the VSMP Construction Permit Instruction, including requirments related to sanitary wastes at construction sites.	Convert the VSMP Construction Permit Instruction to an SOP and enforce the instruction accordingly. Enforce all regulations under the VSMP.	Retain copies of all approved permits, inspection procedures, and enforcement actions. Document the number each item.	Phase II Water Program Media Manager	Continuously ensure that the regulations under the VSMP and Construction Permit Instruction are being followed.
10	Structural Best Management Practices (BMPs)	Install structural BMPs like bioretention areas, infiltration trenches, wet ponds, etc. for new construction.	Install structural BMPs for new construction.	Document the number of BMPs installed.	Phase II Water Program Media Manager	The schedule will depend on the number of structural BMPs that need to be installed to address regulatory requirements.

Final

Local TMDL Action Plan

PORTSMOUTH ANNEX

Contract #:

N40080-11-D-0499: WE38

April 2016

Prepared for:

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Local TMDL Action Plan for Impaired Waters at Naval Support Activity Portsmouth Annex
Contract No. N40080-11-D-0499: WE38

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LIST OF ACRONYMS

BMP	Best Management Practice
BST	Bacteria Source Tracking
COMNAVREG	Commander, Navy Region
CNO	Chief of Naval Operations
CNRMA	Commander, Navy Region Mid-Atlantic
CWA	Clean Water Act
DON	Department of Navy
E&S	Erosion & Sediment
ECATTS	Environmental Compliance Assessment Training and Tracking System
EISA	Energy Independence and Security Act
EPA	Environmental Protection Agency (United States)
ESC	Erosion and Sediment Control
HUC	Hydrologic Unit Code
INRMP	Integrated Natural Resources Management Plan
LA	Load Allocation
LID	Low Impact Development
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
mg	Milligram
mg/L	Milligrams/Liter
MIDLANT	Mid-Atlantic
mL	Milliliter
MOS	Margin of Safety
MS4	Municipal Separate Storm Sewer System
MWR	Morale, Welfare, and Recreation
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NPDES	National Pollutant Discharge Elimination System
NSA	Naval Support Activity
POC	Pollutant of Concern
Portsmouth Annex	NSA Hampton Roads Portsmouth Annex

Scott Center Annex	Norfolk Naval Shipyard Scott Center Annex
SOP	Standard Operating Procedure
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USC	United States Code
USDA	United States Department of Agriculture
UV	Ultraviolet
VAC	Virginia Administrative Code
VADCR	Virginia Department of Conservation and Recreation
VADEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VESCP	Virginia Erosion and Sediment Control Program
VSMP	Virginia Stormwater Management Program
WLA	Waste Load Allocation

Executive Summary

This Local Total Maximum Daily Load (TMDL) Action Plan presents Commander, Navy Region Mid-Atlantic's (CNRMA) plan to meet requirements found in Section I.B of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). General Permit Number VAR040114, issued on 1 July 2013, is a consolidated or regional five-year permit that encompasses eight installations in the Hampton Roads, Virginia area.

The permit requires MS4s that have been allocated a waste load in an approved TMDL maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for the associated pollutant(s). CNRMA has three installations with associated approved TMDLs. The installations and their associated pollutants of concern (POCs) include:

- Naval Air Station (NAS) Oceana – Fecal Coliform
- Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex) – *Enterococci*
- Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex) – *Enterococci*

This Local TMDL Action Plan for Portsmouth Annex was developed in response to the report *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed*, hereafter referred to as the TMDL Report. Local TMDL Action Plans for Scott Center Annex and NAS Oceana can be found under separate covers.

This Local TMDL Action Plan provides background information regarding the significant sources of bacteria, including wildlife, humans, and pets. It also addresses management practices that Portsmouth Annex is currently employing or will employ to address the bacteria TMDL. Finally, the plan provides the methods that will be used to assess the plan's effectiveness, including annual review of the plan.

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1 Introduction

This Local Total Maximum Daily Load (TMDL) Action Plan presents the Commander, Navy Region Mid-Atlantic's (CNRMA) plan to meet requirements found in Section I.B of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). General Permit Number VAR040114 is a consolidated or regional five-year permit that encompasses eight naval installations, including Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex).

The Special Condition for Local TMDLs in the permit requires permittees to develop Action Plans that address all pollutants of concern (POCs) for which the permittee has been assigned a waste load allocation (WLA) under an approved TMDL. The permit also states that the Local TMDL Action Plan should identify best management practices (BMPs) and other management strategies that the permittee will implement to meet the WLAs and achieve compliance with the Special Condition. The permit allows the Local TMDL Action Plan to be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach, provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLAs. The implementation of the Local TMDL Action Plan should be documented in the permittee's annual reports.

1.1 Background Information

States are required by the Clean Water Act (CWA) to identify waters that do not meet or are not expected to meet water quality standards even after technology-based or other required controls are in place. These waterbodies are considered water quality-limited and require TMDLs. Since 1998, Virginia Department of Environmental Quality (VADEQ) has developed TMDLs, with public input, to restore and maintain the water quality of impaired waterbodies.

Section 303(d) of the CWA requires that WLAs be implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. As point sources, MS4s are assigned individual or aggregate WLAs in TMDLs for receiving streams or watersheds to which the MS4 discharges.

Municipalities may also be assigned load allocations (LAs) for areas outside of the regulated MS4 Service Area that are sources of the POCs. The permit does not require permittees to incorporate approaches for addressing LAs into their Action Plans. LAs are often addressed through TMDL Implementation Plans, which are developed through VADEQ and characterize the suite of corrective actions needed to reduce nonpoint source pollutant loads.

1.2 Installation Description

Portsmouth Annex, formerly Naval Medical Center Portsmouth, is a U.S. medical center in Portsmouth, Virginia that is bordered by the Elizabeth River to the east. Refer to **Figure 1-1** for a general location map. Portsmouth Annex is in the southeastern corner of the Commonwealth of Virginia, in an area that is commonly referred to as "Hampton Roads." This area generally includes the cities of Newport News, Hampton, Norfolk, Portsmouth, Virginia Beach, Chesapeake, and Suffolk, and has a population of over 1.5 million.

Portsmouth Annex began operations in 1830 and includes the oldest continuously running hospital in the Navy medical system. It occupies 3.4 million square feet and contains 26 buildings, and the main campus is home to 5,000 men and women. Building 1 in the northeast portion of the campus, the oldest building on campus, houses the Command Suite and administrative support buildings. Building 2 in the middle of the property is the main hospital and the newest building on campus. Building 3 in the southeastern portion of the property is the tallest building on campus. It houses some clinics, clinical support services, Customer Service, Health Benefits, Navy Medicine East, administrative support offices, food court, credit union, Morale Welfare and Recreation (MWR) office, barber shop, auditorium, and chapel. A parking garage in the western portion of the campus contains the pass office and walkways to the second floors of Buildings 2 and 3.

Figure 1-1 Portsmouth Annex Location Map

1.3 Authorization, Scope, and Purpose

The MS4 permit requires CNRMA to develop Local TMDL Action Plans for installations with WLAs. Three installations have been identified that are subject to this requirement:

- Naval Air Station (NAS) Oceana
- Portsmouth Annex
- Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex)

The Local TMDL Action Plan for Portsmouth Annex was developed in response to the report *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed*, hereafter referred to as the TMDL Report. Local TMDL Action Plans for Scott Center Annex and NAS Oceana can be found under separate covers.

The purpose of this Local TMDL Action Plan is to outline Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic's plan for Portsmouth Annex to address the WLA, including identifying BMPs and other interim milestone activities to be implemented during the permit, as well as methods to assess the plan's effectiveness.

1.4 Fundamental Concepts and Definitions

The definitions of TMDL and related terminology, as well as the concept for TMDL computation, are provided in this section.

- **Allocation** – the portion of a receiving water's loading capacity attributed to one of its existing or future pollution sources (nonpoint or point) or to natural background sources.
- **Bacteria** – single-celled microorganisms. Bacteria of the coliform group are considered the primary indicators of fecal contamination and are often used to assess water quality. Examples include fecal coliform, *E. coli*, or *enterococci*.
- **Bacterial source tracking (BST)** – a collection of scientific methods used to determine sources of fecal contamination from human, livestock, or wildlife origins in environmental samples.
- **Best management practices (BMPs)** – methods, measures, or practices determined to constitute reasonable and cost-effective means for a landowner to meet certain, generally nonpoint source, pollution control needs. BMPs include structural and nonstructural controls and operation and maintenance procedures.
- **Load allocation (LA)** – the portion of a receiving water's loading capacity attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. LAs are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading.

- **Margin of safety (MOS)** – a required component of the TMDL that accounts for the uncertainty about the relationship between pollutant loads and the quality of the receiving water body. The MOS is normally incorporated into the conservative assumptions used to develop TMDLs (generally within the calculations or models) and approved by the U.S. Environmental Protection Agency (EPA), either individually or in state-EPA agreements. If the MOS needs to be larger, which is allowed through the conservative assumptions, additional MOSs can be added as a separate component of the TMDL.
- **Total Maximum Daily Load (TMDL)** – a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that load among the various sources of that pollutant. Pollutant sources are characterized as either point sources, which receive a WLA, or nonpoint sources, which receive an LA.
- **Waste load allocation (WLA)** – the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

TMDLs can be calculated as the sum of the individual WLAs for point sources, LAs for nonpoint sources and natural background, and the MOS. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures that relate to a state's water quality standard. The equation for TMDL calculation is presented as:

$$\mathbf{TMDL} = \mathbf{WLAs} + \mathbf{LAs} + \mathbf{MOS}$$

1.5 Report Organization

Pursuant to VADEQ draft guidance (**Appendix A**), the Local TMDL Action Plan for Portsmouth Annex is organized into eight primary sections:

- **Section 1** – Introduction (including background information; installation description; authorization, scope, and purpose; fundamental concepts and definitions; and report organization)
- **Section 2** – Watershed Characterization (including receiving waters and land cover)
- **Section 3** – Reference Plans and Reports (including TMDL Report, TMDL Implementation Plans, and Bacteria Sources at Portsmouth Annex)
- **Section 4** – Significant Sources of Bacteria (including wildlife contributors and human and pet contributors)
- **Section 5** – Legal Authorities
- **Section 6** – Management Practices (including bacteria criteria and treatment, MS4 permit management techniques, and other management techniques)

- **Section 7** – Methods to Assess the TMDL Action Plan (including outfall screening and annual review of action plan)
- **Section 8** – References (providing a list of references used in the development of this plan)

The report also includes the following Appendices:

- **Appendix A** – VADEQ Local TMDL Action Plan Guidance
- **Appendix B** – Measurable Goals, Metrics, and Milestones
- **Appendix C** – Field Photo Log

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2 Watershed Characterization

This section addresses the major characteristics of the Portsmouth Annex watersheds, including adjacent receiving waters and local land cover, to provide hydrological and geological background information.

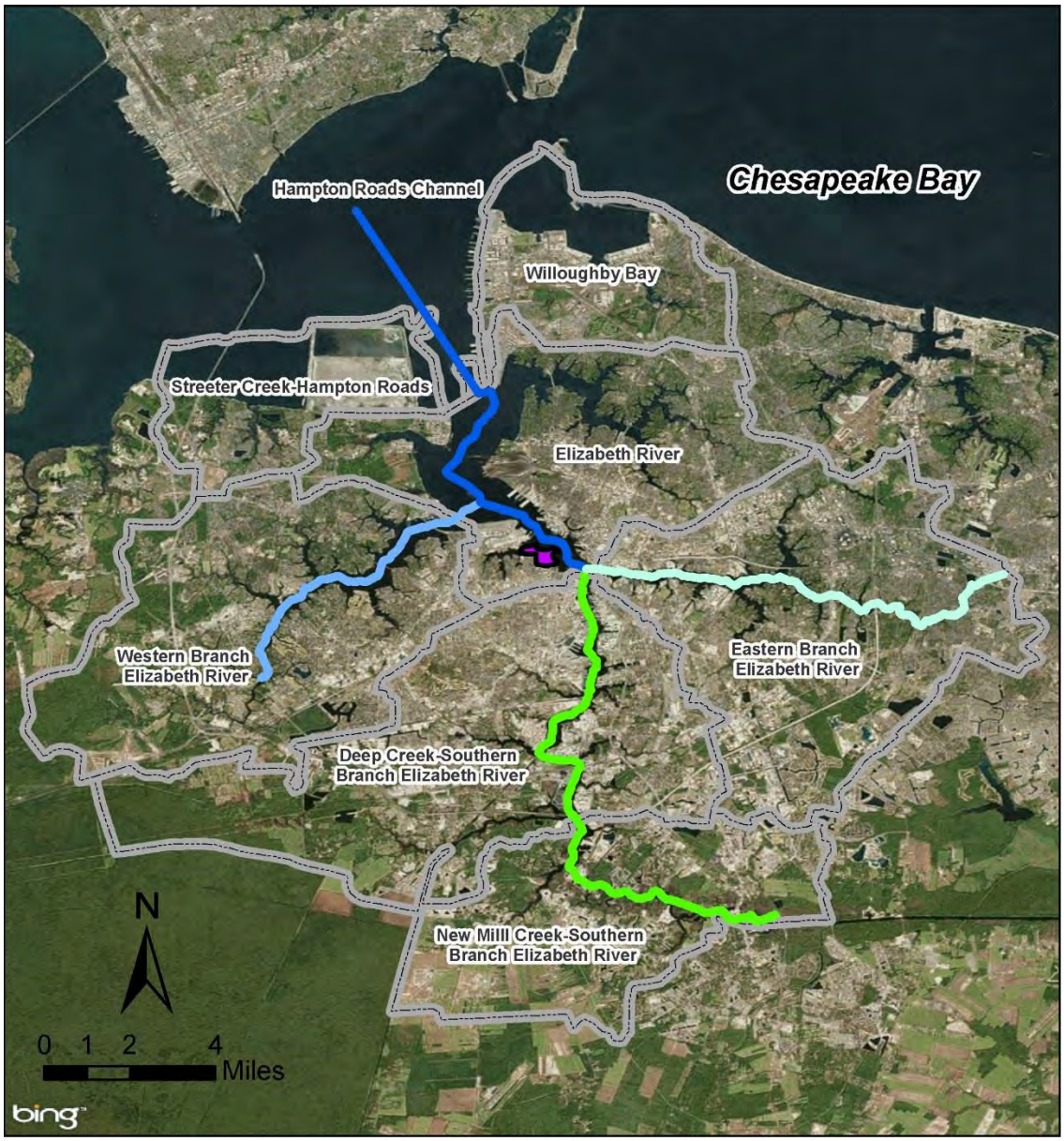
2.1 Receiving Waters

At the regional level, Portsmouth Annex is located within the Hampton Roads Basin (hydrologic unit code [HUC] 02080208). At a more detailed local level, the Portsmouth Annex installation drains to the north to the main branch of the Elizabeth River (HUC 020802080206). The main branch of the Elizabeth River has a drainage area of 20,561 acres. Portsmouth Annex has a drainage area of 90 acres, which represents 0.44 percent of the Elizabeth River watershed area.

The storm sewer system at Portsmouth Annex runs mainly to the north and east and discharges directly into the Elizabeth River. A small portion of the site discharges to the west to Scott Creek, which drains into the Elizabeth River. **Figure 2-1** illustrates the receiving waters of Portsmouth Annex and its adjacent watersheds.

2.2 Land Cover

Land cover information is critical to assessing ecosystem status and health, modeling nutrient and pesticide runoff, understanding spatial patterns of biodiversity, performing land use planning, deriving landscape pattern metrics, and developing land management policies. The different land uses within and surrounding Portsmouth Annex were investigated to identify potential pollutant sources.



LEGEND

- Elizabeth River (main branch)
- Southern Branch Elizabeth River
- Western Branch Elizabeth River
- Eastern Branch Elizabeth River
- Naval Medical Center Portmouth
- Watersheds

Figure 2-1 Receiving Waters of Portsmouth Annex and Adjacent Watersheds

The land cover types and distributions using GIS data provided by NAVFAC at and surrounding Portsmouth Annex are displayed in **Figure 2-2**. National Wetlands Inventory data were used to calculate wetland areas. It can be observed that nearly the entire installation has been identified as developed areas. Areas of high- or medium-intensity development are correlated with the parking lots and buildings. Along the northwest corner of Portsmouth Annex, directly adjacent to Scott Creek, are woody wetlands. A small portion of Scott Creek, at its confluence with the Elizabeth River, is within the boundary of the Portsmouth Annex. A spatial analysis computed the following percentages of land types within the boundaries of Portsmouth Annex:

- 98.5% – Developed Areas and
- 1.5% –Wetland Areas.

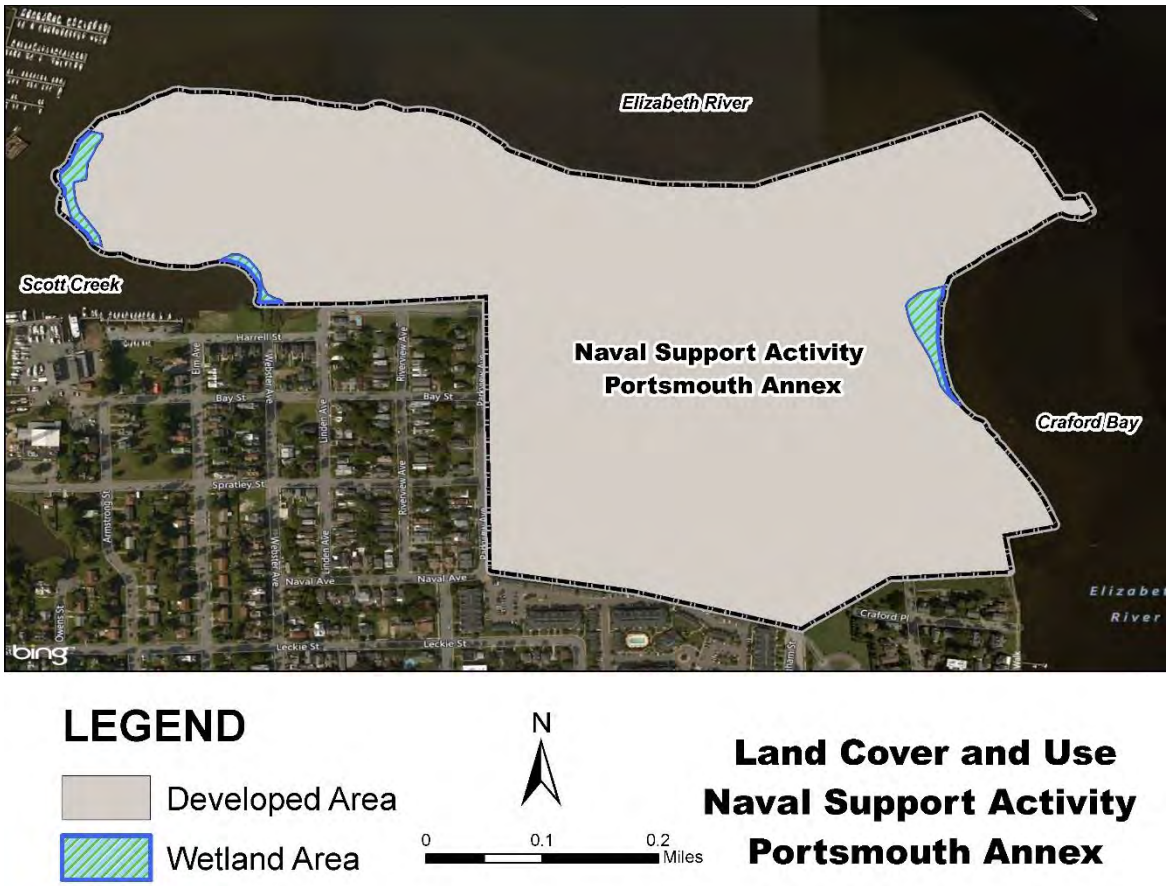


Figure 2-2 Land Cover Types at Portsmouth Annex

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3 Reference Plans and Reports

This section provides a brief review of the current TMDL Report, TMDL Implementation Plans, and bacterial sources at Portsmouth Annex.

Section 303(d) of the CWA and the EPA's Water Quality Planning and Management Regulation (40 CFR Part 130) require states to develop TMDLs for water bodies that exceed water quality standards. Once the TMDL has been developed, a TMDL report is prepared and distributed for public comment and then submitted to the EPA for approval. Following this process, an Implementation Plan should be developed to describe actions (i.e., BMPs) to address the TMDL. The goal of a TMDL Implementation Plan is to restore water quality in impaired watersheds. No implementation plan was developed for the Elizabeth River so this information will be included in the TMDL Action Plan. To gauge progress toward this goal, VADEQ tracks the implementation of BMPs and continues to monitor water quality in the impaired watersheds.

3.1 TMDL Report

The applicable TMDL Report that affects the receiving waters at Portsmouth Annex is entitled *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed*. As one of the main forms of nonpoint source pollution, bacteria are commonly found in the rivers, streams, and estuaries of the Chesapeake Bay and impair the water quality. VADEQ has identified the Upper Mainstem, Lower Eastern Branch, Lower Southern Branch, and Lower and Upper Western Branch of the Elizabeth River, as well as Broad Creek, Indian River, Paradise Creek, and Upper Lafayette River, as impaired with regard to bacteria.

The TMDL Report was developed by The Louis Berger Group, Inc. for VADEQ in April 2010. This TMDL Report included a water quality assessment using the samples collected at VADEQ in-stream monitoring stations. A summary of the bacteria sampling data for TMDL #1 is provided in **Table 3-1**. This TMDL includes impaired segments of the Upper Mainstem, Lower Eastern Branch, and Lower Southern Branch of the Elizabeth River; Broad Creek; and the Indian River.

The collected data were analyzed for frequency of violations, patterns in *enterococci* source identification, and seasonal impacts. Results of the analyses are presented in the BST process to identify the contributions from sources, including human, pets, livestock, and wildlife. An assessment of nonpoint sources was performed with consideration of private residential sewage treatment facilities, pets, livestock, and wildlife. The simplified tidal prism bacteria model program was used as the modeling framework to simulate existing conditions, to perform TMDL allocations in tidal areas, and to link the sources to the endpoints.

Table 3-1 Summary of Enterococci Bacteria Sampling for the Streams near Portsmouth Annex (count/100 mL)

Stream Name	Station ID	Sampled Dates/Counts	Min[1]	Max[1]	Mean	Exceedances[2] # / %
Mainstem	2-ELI006.02	2/02-6/09 (80)	10	520	58	10 (13%)
	2-ELI004.79	8/02-6/09 (79)	10	550	38	4 (5%)
	2-ELI002.00	7/02-6/09 (75)	10	100	26	0 (0%)
Lower Southern Branch	2-SBE001.53	8/02-6/09 (78)	10	1,800	141	18 (23%)

[1] *Enterococci* detection range is between 10 and 2,000 count values per 100 milliliters (mL). Therefore, recorded count values of 2,000 could be greater than 2,000 and count values of 10 could be less than 10.

[2] Requirements of at least two measurements per months for calculating geometric mean for *enterococci* were not met. Single Sample Maximum *enterococci* bacteria of 104 count/100 mL

The bacterial allocations calculated from the TMDL development process are summarized in **Table 3-2** for the TMDL applicable to Portsmouth Annex. The table provides the amount of *enterococci* that is allotted to each MS4 that discharges to those particular streams. The TMDLs are broken up into WLAs (the portion of bacteria coming from permitted discharge sources including nonpoint sources under MS4 permits) and LAs (the portion of bacteria coming from non-permitted or nonpoint sources in the watershed).

Table 3-2 TMDL Allocations for the Elizabeth River Watershed (count/day)

TMDL Watershed	TMDL Standard	Current Load	Allowable Load	Required Reduction
TMDL #1 Lower Eastern Branch, Lower Southern Branch, Upper Mainstem, Broad Creek, Indian River	*Enterococci*	2.80E+15	1.42E+14	94.9%

According to the TMDL Report, bacterial sources within the TMDL area include livestock, wildlife, pets, failed septic systems, and sanitary sewer overflows. The results of the TMDL #1 model are shown in **Figure 3-1**. The TMDL allocations for MS4 permit holders near Portsmouth Annex are displayed in **Table 3-3**.

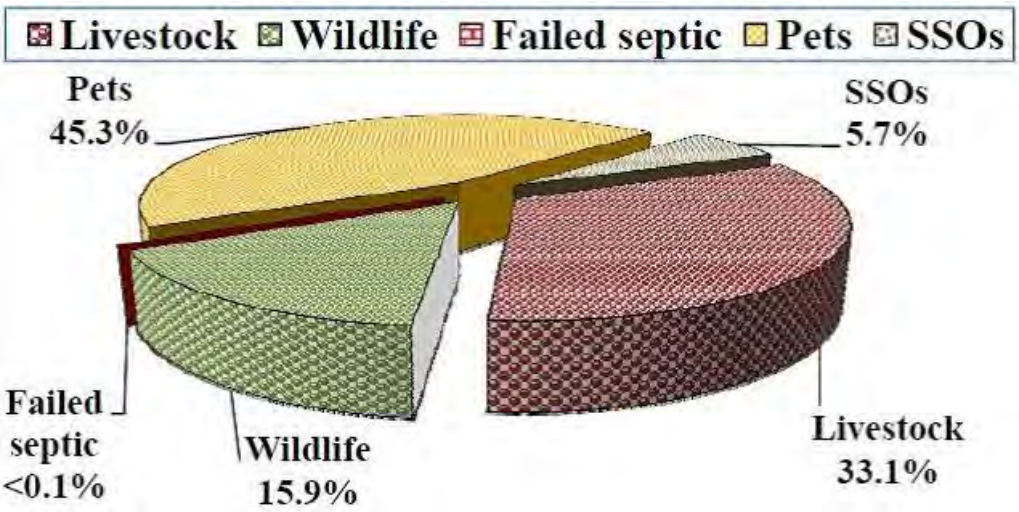

Figure 3-1 Bacterial Contribution by Source for TMDL #1
Source: Bacteria TMDL Development for the Elizabeth River Watershed

Table 3-3 TMDL Allocations for MS4 Permit holders near Portsmouth Annex (count/day)

MS4 PERMIT HOLDER	TMDL STANDARD	WLA	LA	MOS	TMDL
City of Norfolk (Phase 1), MS4 VA0088650	*Enterococci*	1.18E+13	8.45E+13	Implicit	1.42E+14
City of Portsmouth (Phase 1), MS4 VA0088668		4.42E+12			
City of Chesapeake (Phase 1), MS4 VA0088625		3.04E+13			
City of Virginia Beach (Phase 1), MS4 VA0088625		1.03E+13			
Portsmouth Annex, MS4 Phase II VAR040114		9.48E+10			

3.2 TMDL Implementation Plans

Currently, no TMDL Implementation Plan has been developed for the Elizabeth River. A significant portion of the Elizabeth River watershed area covered by the TMDL is permitted under an MS4 permit. Portsmouth Annex is covered under the Navy's regional MS4 permit, Number VAR040114. Information from the MS4 permit was used in the development of this Local TMDL Action Plan.

3.3 Bacterial Sources at Portsmouth Annex

A site visit inventory of the identified bacterial sources at Portsmouth Annex was conducted on January 21, 2016. Data was also obtained from discussions with the Navy regarding activities on their facility. The inventories showed no livestock, marinas, septic systems, or combined sewers within the boundaries of Portsmouth Annex. Reductions for wildlife are applied when the reduction of more controllable loads (human, livestock, and pets) does not achieve the water quality standard. Portsmouth Annex does have wildlife and is held to bacterial reductions from wildlife.

4 Significant Sources of Bacteria

This section describes the possible existing sources that contribute to the bacterial pollution of the water bodies adjacent to Portsmouth Annex and their relative contributions to the waterbodies. Contributions from livestock are not included, as no livestock are present at Portsmouth Annex.

4.1 Wildlife Contributors

Multiple species of wildlife inhabit Portsmouth Annex and nearby watersheds. Wildlife populations for various species play an important role in the amount of fecal waste that impacts water quality.

In the TMDL Report, wildlife population estimates were developed through consultation with wildlife biologists from the Virginia Department of Game and Inland Fisheries (VDGIF), citizens of the watershed, source sampling, and site visits. The population estimates were derived using documented population densities after habitat boundaries were established. The estimates listed the population densities of deer, geese, ducks, muskrats, raccoons, and nutria, with the corresponding waste load produced by the wildlife. The wildlife populations in the TMDL Watersheds are summarized in **Table 4-1**.

Table 4-1 Wildlife Populations from TMDL Report

IMPAIRED WATERSHED	DEER	GEESE	DUCKS	MUSKRATS	RACCOONS	NUTRIA
TMDL #1 Upper Mainstem Lower Southern Branch Lower Eastern Branch Broad Creek Indian River	2,056	1,819	164	945	3,164	3,134

Although Portsmouth Annex accounts for only 2.9 percent of the TMDL land area, a significant goose presence at the installation has been reported. However, no geese were seen at the facility during a field study on January 21, 2016, and no evidence of deer, ducks, rodents, or other wildlife was observed. Management alternatives to mitigate the bacterial load from wildlife are discussed in **Section 6.3** of this report.

4.2 Human and Pet Contributors

Human activities and pet waste are both major contributors to bacterial contamination that should be taken into account when addressing a TMDL. A major source of bacteria from human activities in many areas is failing or malfunctioning septic systems that leak high concentrations of pollutants. A septic failure occurs when a drain field has inadequate drainage. This causes effluent to flow directly to the soil surface, from which it is consequently washed into waterbodies

during runoff events. However, based on available information, there are no septic systems at Portsmouth Annex; instead, it has a sanitary system for the entire installation. Leaks and illicit connections from sanitary systems have also been documented in studies as a cause of bacterial contamination. While Portsmouth Annex has performed surveys in compliance with its municipal stormwater permit and has not found any evidence of illicit sanitary connections, leaks in the sanitary system may still be a possibility.

Another documented human source of bacteria is poor trash management, specifically including leaking dumpsters and garbage cans from sites such as restaurants and construction sites. A study performed in the San Diego River Watershed found that approximately 20 percent of all dumpster or grease traps inspected had evidence of liquid leaks (Weston, 2009). The liquid leaking from these containers had high concentrations of bacteria (Urban Water Resources Research Council, 2014). Portsmouth Annex manages these sources of bacteria by requiring that dumpsters be covered and grease bins be contained per the *Good Housekeeping Policies and Procedures for Municipal Operations* (procedure requirement per Minimum Control Measure [MCM] #6). Portsmouth Annex has designated locations for garbage dumpsters, and most dumpsters are in enclosed areas. Trash cans are available throughout the installation. Significant trash was present on the beach at a field view on January 21st, 2016, but this appears to have washed up with the tide. Trash management is discussed in more detail in **Section 6.2** of this report. See **Appendix B** for more information on measurable goals, metrics, and milestones. See **Appendix C** for a field photo log that includes pictures of dumpsters at Portsmouth Annex.

Pets are another source of bacteria. Due to their popularity relative to other pet species, the TMDL Report only considered dogs and cats when discussing this source. When pet waste is improperly disposed of or left on the ground, stormwater runoff can wash the waste, or bacteria from the waste, into nearby waterbodies, causing water degradation. Decaying pet waste consumes oxygen and sometimes releases ammonia. Low oxygen levels and ammonia can damage the health of fish and other aquatic life. Pet waste carries bacteria, viruses, and parasites that can threaten the health of humans and wildlife. Pet waste also contains nutrients that promote weed and algae growth resulting from eutrophication. The estimated pet populations of the impaired watersheds near Portsmouth Annex were reported in the TMDL Report as found in **Table 4-2**.

Table 4-2 Pet Populations from TMDL Report for Elizabeth River

Impaired Watershed	Dogs	Cats
TMDL #1 Upper Mainstem, Lower Southern Branch, Lower Eastern Branch, Broad Creek, Indian River	45,245	49,412

Compared with that of dogs, the volume of waste loads from cats is much lower, since they are mainly kept indoors. Portsmouth Annex participates in public outreach to educate residents of the importance of picking up after their pets. Pet waste management is discussed in **Section 6.2** of this report. In accordance with a January 2002 Chief of Naval Operations (CNO) Policy Letter on Preventing Feral Cat and Dog Populations on Navy Property, stray cats and dogs are humanely removed, and there is no anticipated contribution from stray animals.

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5 Legal Authorities

This section includes a review of the existing legal authorities, including the regulations applicable to reducing bacteria.

Because CNRMA is not a municipality, it does not have the authority to issue ordinances; however, CNRMA does have authority over its tenants through their host-tenant agreements. In addition, all development and redevelopment inside the installation and annex boundaries must meet local, state, and Federal requirements for erosion and sediment control and stormwater management. This includes, but is not limited to, the Virginia Erosion and Sediment Control Program Regulations, Virginia Pollutant Discharge Elimination System Permit, the Navy Low Impact Development (LID) policy, and Energy Independence and Security Act (EISA) Section 438.

Also, CNRMA's MS4 Permit under the NPDES program has specific requirements regarding the implementation of different MCMs to reduce pollutants (including bacteria) from entering the storm sewer system. For example, MCM #3 addresses illicit discharge detection and elimination, which includes having written procedures to detect, identify, and address unauthorized non-stormwater discharges. See CNRMA's MS4 Program Plan under separate cover for additional information.

At this time, no new or modifications to existing policies are expected.

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6 Management Practices

This section addresses management practices that are currently being or will be implemented to reduce bacteria at Portsmouth Annex. See **Appendix B** for a full list of management practices with corresponding measurable goals, metrics, and milestones, each with corresponding schedule.

6.1 Bacteria Criteria and Treatment

Bacteria Criteria

The first U.S. standards for drinking water, established in 1914, were based on coliform evaluations. Monitoring for coliform bacteria was designed to prevent outbreaks of enteric diseases, rather than to detect the presence of specific pathogens. A subset of this group, fecal coliform, is commonly used as the indicator bacteria to detect and estimate the level of contamination of water. Currently, coliform bacterial concentrations are determined using methods provided in *Standard Methods for the Examination of Water and Wastewater*.

Effective February 1, 2010, VADEQ specified an updated bacteria standard in 9 Virginia Administrative Code (VAC) 25-260-170.A:

> *Enterococci bacteria shall not exceed a monthly geometric mean of 35 CFU/100 mL in transition and saltwater…Geometric means shall be calculated using all data collected during any calendar month with a minimum of four weekly samples… If there are insufficient data to calculate monthly geometric means in transition and saltwater, no more than 10% of the total samples in the assessment period shall exceed enterococci 104 CFU/100 mL.*

Bacteria Treatment Options

Numerous practices can be implemented with the goal of achieving bacterial control. Possible treatment options are listed and briefly described below.

1. Chlorination treatment involves the injection of a chlorine solution (sodium hypochlorite) or dry powder (calcium hypochlorite) into the water to kill bacteria and germs. This treatment can introduce residual chlorine—approximately 0.3 to 0.5 milligrams (mg)/L—into the water.
2. Ozone, like chlorine, is a strong oxidant that can be injected into water to kill bacteria. Ozonation can remove bacteria quickly and efficiently, but it is not popular due to the high costs for equipment installation and system maintenance.
3. Ultraviolet (UV) lamps are effective devices to control bacteria without adding any chemicals to the water. However, UV devices are expensive, lose intensity over time, and require frequent replacement. UV treatment is not recommended for areas of high flows or areas where wildlife may introduce additional bacteria downstream of the treatment.

These practices are commonly used as disinfection treatments to remove bacteria from drinking water and treated wastewater. Because of the significant costs associated with these techniques, they are less feasible for the cost-effective treatment of bacteria in large-scale applications, like treating stormwater. Therefore, this report recommends implementing the MS4 permit and other management practices discussed in **Sections 6.2** and **6.3**.

6.2 MS4 Permit Management Techniques

Most of the naval installations in the Hampton Roads region are currently covered under the CNRMA's Consolidated Phase II MS4 permit coverage, Permit Number VAR040114. The receiving waterbodies of Paradise Creek are also covered by Phase I MS4 Permit Number VA0088668 for the stormwater drainage systems owned by the City of Portsmouth. Section II.A of the Phase II permit states that the "permittee" must develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) to protect water quality and to satisfy the appropriate water quality requirements of the CWA and the State Water Control Law.

The following sections outline bacterial control management techniques that are currently being implemented or that are proposed to be implemented as a result of requirements in CNRMA's MS4 permit. **Table 6-1** presents the current management documentation associated with CNRMA's MS4 permit. Copies of these documents and/or instructions are available in the Regional MS4 Program Plan.

Table 6-1 Management Documentation for TMDLs

MANAGEMENT CATEGORY	DOCUMENT AND/OR INSTRUCTIONS
Illicit Discharge Detection and Elimination	Commander, Navy Region (COMNAVREG) Mid-Atlantic (MIDLANT) Illegal Discharge and Dumping Instruction (Draft)
Erosion and Sediment Control	COMNAVREG MIDLANT Erosion and Sediment Control Instruction (Draft) Standard Operating Procedures (SOP) for capital improvements to submit to the state have been finalized
Stormwater Management	COMNAVREG MIDLANT VSMP Construction Permit Instruction (Draft)
	COMNAVREG MIDLANT Post Construction Stormwater Runoff Management Instruction (Draft) SOPs for Erosion & Sediment (E&S) and Stormwater for capital improvements to submit to the state have been finalized
	EISA Sect 438 & the Department of Navy (DON) Low Impact Development Policy
	Municipal Stormwater Pollution Prevention Plans (SWPPPs) for Portsmouth Annex, VA

Structural BMPs

Currently, limited data is available regarding the treatment of bacteria in structural BMPs, such as infiltration trenches, vegetated buffers, and bioretention cells. Data presented in the International Stormwater Database, conference proceeds, and elsewhere suggests variability. The available data suggests that conventional structural stormwater controls using passive treatment, including soils and vegetation, are unlikely to be able to consistently reduce bacterial concentrations in runoff to primary contact recreation standards (Urban Water Resources Research Council, 2014). The natural materials found in traditional structural BMPs are inefficient at retaining and removing bacteria. However, studies have shown favorable performance in retaining and removing bacteria through mechanisms such as natural inactivation, predation, inert filtration, sedimentation, sorption, and chemical inactivation. Additionally, design of these practices can be altered to improve the removal of bacteria.

In their Chesapeake Bay TMDL Action Plan, CNRMA outlined a plan for the implementation of numerous structural BMPs to address the POCs in the Chesapeake Bay TMDL (total nitrogen, total phosphorus, and total suspended solids). Additional details, including the functional characteristics, cost expectations, and design specifications for these structural BMPs, is provided. The content of this Local TMDL Action Plan is focused on other management options and programs at Portsmouth Annex that are practical for addressing bacteria in the Elizabeth River.

Public Education and Outreach Programs

The Public Education and Outreach Plan is outlined in CNRMA's MS4 Program Plan. Important tools for reducing bacterial pollution from human-based contributions (pet waste, stormwater runoff, agricultural practices, and illicit discharges) include distributing brochures and articles in the Navy's regional newspaper, "The Flagship."

A series of public education tri-fold brochures have been developed (with one needing minor updates) as part of the stormwater pollution prevention program. Applicable topics include:

- General Stormwater;
- Construction Sediment and Erosion Control – VSMP;
- Pet Waste; and
- Household Hazardous Waste.

Each brochure includes general information about the issues, guidance about what the public can do to help, contact information, and sources of additional data. The brochures are distributed during training/events/functions where members of the target audience will be present. The brochures are also on display and available in high-traffic areas of the installations covered under the MS4 permit.

Articles and/or advertisements concerning stormwater pollution prevention related to bacteria have been developed and are issued in "The Flagship" or the emailed "Plan of the Week".

Public education and outreach activities will be reviewed and updated to address wildlife, including the dangers of feeding geese and other wildlife. Providing food for geese and other wildlife encourages them to congregate onsite. Geese and other wildlife are an important source of bacterial contamination.

Public Involvement and Participation

The Public Involvement and Participation Plan is outlined in CNRMA's MS4 Program Plan. Important tools for reducing bacterial pollution from human-based contributions include marking storm drains and providing information at local activities.

The Navy will continue the storm drain marking program, which places markers on inlets to the MS4, to remind the public that materials that flow into the storm drain end up in local waterways. These storm drain markers were developed specifically for the Navy to include the Navy logo and are fabricated in metal for durability.

The Navy continues to participate in at least four local activities annually across the permitted naval installations. Every effort will be made to hold the four activities at four different installations (including Portsmouth Annex). Outreach information is distributed at these events. When a booth is involved at an event, a banner with the Navy's stormwater pollution prevention logo is used.

Illicit Discharge and Detection Program

Draft instructions related to illegal dumping and discharges have been developed by CNRMA. The draft instructions require that periodic inspections occur to detect illicit connections and discharges. It is anticipated that these instructions will be converted to SOPs. The procedures will be updated to include the following details pertaining to dry weather field screening methodologies for outfalls:

- A prioritized schedule based on the age of infrastructure, land use, historical data, dumping, or cross connections;
- A requirement that a minimum of 50 outfalls at the eight installations covered by the Regional Program Plan will be screened annually;
- Methodologies to collect general information;
- Illicit discharges suspected of being sanitary sewage or significantly contaminated will be investigated first, which may delay investigations of other illicit discharges;
- Methodologies to determine the source of all illicit discharges;
- Mechanisms to eliminate the identified sources of illicit discharges;
- Methods for conducting follow-up investigations; and
- A mechanism to track all investigations.

These dry weather screening methodologies will identify illegally connected sanitary sewer systems or leaks from these systems or illicit dumping. As a result, any bacterial contamination resulting from illicit discharges will be identified and corrected.

A complete screening of the facility occurred in August 2014, and the results are documented in an Illicit Discharge Summary Report for Portsmouth Annex. The screening identified a need for storm drain maintenance throughout the installation. Many inlets and manholes were noted to contain standing water, sediment, trash, debris, and/or vegetation. A number of Portsmouth Annex outfalls discharge into the Elizabeth River, below the water surface, during high and/or low tide. River backwater and wave action were noted in inlets and manholes discharging to outfalls 1, 12, 13, 17, 23, 24, 27, 28, 30, 31, 32, and 33. The screening also identified the following potential dry weather flows:

- Catch basin 288 is located under a dumpster. This dumpster serves the loading dock and cannot be relocated so that the potential for leachate entering the inlet be reduced.
- Dry weather flows discharge into manholes 302, 325, and 358, and inlet 326 from the direction of the Fire Station. Dry weather flows discharge into manhole 327 from the direction of the Hospital kitchen.
- Air conditioner is contributing condensate to inlet 326. Note that air condition condensate is an allowable discharge. This flow has a low potential for bacteria and is a relatively insignificant bacterial source, compared to direct loads including wildlife contributions.
- Steam line is contributing condensate to catch basin 430.
- Roof drain from Building 272 contributes flow to catch basin 213. No evidence that birds congregate on this rooftop was noted in the illicit discharge report or at a field view on April 1, 2016.

Note that these dry weather flows are not from sanitary sources. All the discharges noted were clean water, according to the latest illicit discharge report. Air conditioner condensate, steam line condensate, and rooftop runoff has a relatively insignificant potential for contributing bacteria to the drainage network, compared to direct loading sources including wildlife and trash. See **Appendix C** for a field photo log that includes pictures of dumpsters at Portsmouth Annex.

In addition, the Navy has implemented the Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedures, which outline reporting and documentation actions that must be taken in response to a spill/release of oil, sewage, or hazardous or non-hazardous substance (solid or liquid).

During construction activities, temporary portable toilets may be brought onsite. Portable toilets should be hydraulically distant from storm drains or placed on permeable surfaces. As discussed in **Section 4.2**, human and pet waste can be a significant source for bacterial contamination.

A hotline phone number, an email address, and/or a website link for public reporting of illicit discharges will be implemented. Currently, the NAVFAC Mid-Atlantic Environmental Administrator's telephone number is listed on the previously described outreach brochures. When a report is received, an inspection will be conducted in response to the comment. If an illicit discharge is found, a follow-up investigation will be completed in accordance with the written procedures.

Construction Site Runoff Control

Since bacteria can cling to small sediments, erosion prevention measures should also serve to reduce bacterial loading. Erosion and sedimentation control measures may indirectly reduce the bacterial loading to waterbodies. Virginia Department of Conservation and Recreation's (VADCR's) State Erosion and Sediment Control (ESC) Program was created to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources.

CNRMA has two sets of draft instructions related to construction site runoff control. The first, entitled *COMNAVREG MIDLANT Virginia Stormwater Management Program Construction Permit Instruction*, establishes a procedure for obtaining coverage under the VSMP General Permit for Stormwater Discharges from Construction Activities at installations and annexes and applies to projects with a disturbance of one acre or greater. The second set of instructions, entitled *COMNAVREG MIDLANT Erosion and Sediment Control Instruction*, establishes minimum standards for the effective control of soil erosion, sediment deposition, and non-agricultural runoff from land-disturbing activities at installations. It applies to projects with a disturbance of 10,000 square feet or greater.

CNRMA currently follows the regulations under the Virginia Erosion and Sediment Control Program (VESCP), and regulated land-disturbing activities will not be authorized to begin until an erosion and sediment control plan, or an agreement in lieu of a plan, is approved.

Training

Training continues to be conducted for both Military Base Employees and NAVFAC Construction Contractors using the web-based Environmental Compliance Assessment, Training and Tracking System (ECATTS). Several stormwater training modules have been developed, including Principals of Erosion and Sedimentation, Erosion and Sediment Control Practices, Vegetative Stabilization, Stormwater Runoff, Stormwater BMPs, Construction Site Pollution Prevention, and Sediment and Stormwater Plans. The training modules are reviewed annually and updated as needed.

Good Housekeeping Policies and Procedures

CNRMA has a comprehensive list of Good Housekeeping Policies and Procedures for Municipal Operations as part of their MS4 Program Plan, including:

- Daily Operations Procedures (vehicle and associated equipment washing; vehicle fueling; storage areas; vehicle and equipment storage areas; recycle facilities and storage; road, street, and parking lot maintenance; landscaping; construction activities; and storm drain/utility line maintenance)
- Equipment Maintenance Procedures (vehicle maintenance and storage)
- Pesticide, Herbicide, and Fertilizer Procedures (application; storage; transport; disposal; and nutrient management plans)
- Miscellaneous (inspections; general spill and discharge response procedures; general dewatering; training; and contractor requirements/oversight)

The importance of providing covers over dumpsters and/or ensuring that the lids are closed and the containers have watertight lids is emphasized in these policies and procedures. Dumpster stickers are recommended to be installed on all dumpsters owned and operated by NAVFAC informing users to keep the lid closed. Dumpsters located hydraulically near to the storm drain network should be investigated to determine if a more desirable location is feasible. More desirable locations are farther away from the nearest storm drain or are separated from the storm drain by a pervious surface.

6.3 Other Management Techniques

Other miscellaneous management techniques for bacteria, described below, address sampling programs and wildlife controls.

Sampling Programs

Sampling of outfalls to assess bacterial loading reduction was considered but rejected due to the magnitude of uncontrollable sources of bacteria and the difficulty in distinguishing the loading from controllable and uncontrollable sources of bacteria. Instead, as outlined in the VADEQ Draft Local TMDL Action Plan Guidance found in **Appendix A**, "Evaluation metrics other than monitoring may be used to determine compliance with the TMDL(s)." These measureable goals, metrics, and milestones are listed in **Appendix B**.

Wildlife Contribution Controls

As described in **Section 4.1**, wildlife is a significant contributor to bacterial contamination at Portsmouth Annex.

To attain water quality requirements at the installation, it is imperative to minimize the bird populations. In accordance with the TMDL Report, "However, neither the Commonwealth of Virginia, nor EPA are proposing the elimination of wildlife to allow for the attainment of water quality standards."

Geese and water fowl can be passively discouraged from congregating at the facility by changing the habitat so it does not appeal to them. All attractive anthropogenic sources, including large mowed areas, cleared stream buffers, and Kentucky bluegrass plantings, should be removed to the maximum extent possible.

Geese congregate on lawns adjacent to waterways where food, water, and open sight lines are abundant. Removing goose food sources encourages the animals to reside offsite. Geese are attracted to young grass shoots found on lawns. Allowing grasses to grow taller will make the grass less attractive.

Goose habitat can be reduced through buffer restoration along the banks of adjacent waterways. A minimum of 12-inch vegetative cover with some shrubs and taller plantings is recommended. This type of landscape provides habitat for geese predators and will encourage the geese to reside offsite.

A minimum grass height of 12 inches adjacent to waterways and in areas where geese congregate can act as a deterrent. Landscaping measures to plant shrubs along the waterline and/or allow the current vegetation to grow along the top of banks also discourage geese. These measures are consistent with the findings in the Integrated Natural Resources Management Plan (INRMP) for the nearby NAS Oceana installation, which stated that installation and NAVFAC offices should coordinate “to identify additional areas to enhance or establish riparian buffers. Establish reduced mowing and no mowing zones along selected ditches and wetlands”.

The plan will be continuously reviewed and updated as needed. Future plan additions, if needed, may include installation of a perimeter fence of sufficient height to deter geese from transitioning to land. The use of mesh netting along banks may discourage geese from congregating on land. Replanting Kentucky bluegrass with tall fescue replaces a preferred food source with a less preferred food source. Taller trees located along the river banks stop the geese from flying onto land. Trees should be prioritized around lawn areas and mowed stormwater basins. Planting more trees would also align with findings in the NAS Oceana INRMP, which stated that the area “would benefit from an increase in the number and variety of trees and shrubs”. Further, the report identified a joint Earth Day-Arbor Day as a good opportunity to plant these trees.

Although less recommended, geese populations can be actively reduced through the use of hazing methods to scare them offsite. The Natural Resources Conservation Law Enforcement Officer and other personnel may use vehicles, sirens, and/or pyrotechnics. Scarecrows in the form of fox or dog silhouettes can also deter geese from congregating. Scarecrows must be relocated on a normal basis to maintain effectiveness.

Due to higher cost, it is not recommended to contract out goose management to a dog deterrent company, pest services company, or the United States Department of Agriculture (USDA).

7 Methods to Assess the TMDL Action Plan

This section describes the methods to assess this TMDL Action Plan for its effectiveness in reducing the pollutants identified in the TMDL Report. Outfall screening and annual review of the Local TMDL Action Plan are discussed below.

7.1 Outfall Screening

Sampling of outfalls to assess bacterial loading reduction was considered but rejected due to the magnitude of uncontrollable sources of bacteria and the difficulty in distinguishing the loading from controllable and uncontrollable sources of bacteria. Instead, as outlined in the VADEQ Draft Local TMDL Action Plan Guidance found in **Appendix A**, "Evaluation metrics other than monitoring may be used to determine compliance with the TMDL(s)." These measureable goals, metrics, and milestones are listed in **Appendix B**.

7.2 Annual Review of Action Plan

A review of this Local TMDL Action Plan will be conducted annually. The review will evaluate the following aspects of the plan:

- Compliance;
- Appropriateness of the identified BMPs/management techniques; and
- Progress toward achieving the measurable goals.

Following this review, the Plan will be updated as needed, including any changes to BMPs/management techniques, to ensure Portsmouth Annex is addressing bacterial reduction appropriately.

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APPENDIX A

VADEQ Local TMDL Action Plan Guidance

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COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

Subject: Guidance Memo No. XXX,

To:

From: Melanie D. Davenport, Director

Date: April XX, 2015

Copies:

Summary: This guidance document provides staff and permittees with background information and procedures for developing and implementing local TMDL Action Plans as required in the Special Condition of the 2013-2018 General Permit for Discharges of Stormwater from Small (Phase II) MS4s, the reissued Phase I MS4 permits, and any Individual Phase II permits that are issued.

Contact Information:

Disclaimer:
This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, establishment of a wasteload allocation, or establishment of a permit limit. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

DEFINTIONS – For the purposes of this guidance document, the following definitions shall apply:

Best Management Practices ("BMPs") – Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, including both structural and nonstructural practices to prevent or reduce the pollution of surface waters and groundwater systems.

Load Allocation ("LA") - The portion of the loading capacity attributed to (1) the existing nonpoint sources of pollution and (2) natural background sources.

Newly Designated MS4 permittees – MS4 permittees receiving initial permit coverage under the July 1, 2013 General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems.

Pollutant(s) of Concern ("POC") – The pollutant(s) impairing a water body for which one or more TMDL(s) has been developed.

TMDL Implementation Plan – A document guided by an approved TMDL(s) that at a minimum provides details of the corrective actions to address the load allocation of one or more TMDLs. The plan includes measureable goals needed to achieve pollutant(s) source load reductions; outlines a schedule to attain water quality standards along with costs, benefits, and environmental impacts to reduce pollutant(s) and remediate impaired waterbodies.

Total Maximum Daily Load ("TMDL") – The sum of the individual wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, natural background loading and a margin of safety.

Wasteload Allocation ("WLA") - The portion of a receiving waters' pollutant loading capacity that is allocated to existing or future point sources of pollution, such as an MS4.

For terms not defined above, please refer to the 9VAC25-890-1, 9VAC25-870-10, or 9VAC25-31-10 of the Virginia Administrative Code.

BACKGROUND

Since 1998 DEQ has developed Total Maximum Daily Loads ("TMDL"), with public input, to restore and maintain the water quality of impaired waterbodies. Section 303(d) of the Clean Water Act requires that wasteload allocations be implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. As point sources, MS4s are assigned individual or aggregate WLAs in TMDLs for receiving streams or watersheds to which the MS4 discharges. Municipalities may also be assigned an LA for those areas outside of the regulated MS4 Service Area that are sources of the POC. TMDLs may quantify both LA and WLA loads from the Census designated urbanized area. Permittees are not required to incorporate approaches for addressing those LAs into their Action Plans. Load allocations are often addressed through TMDL Implementation Plans (IPs) which characterize the suite of corrective actions needed to reduce nonpoint source pollutant loads. This guidance document only addresses the requirements to address WLAs to meet the special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL" ("Special Condition for Local TMDLs").

The Special Condition for Local TMDLs in the 2013 General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (VAR04) ("GP") and the eleven Phase I Individual MS4 permits, as they are reissued, require permittees to develop Action Plans that address all POC(s) for which the permittee has been assigned a WLA under an approved TMDL. The Local TMDL Action Plans should identify BMPs and other management strategies that the permittee will implement to meet the TMDL WLA and achieve compliance with the Special Condition. Local TMDL Action Plans can be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLA(s). Implementation of the TMDL Action Plans is tracked via the permittee's Annual Reports.

PERMIT REQUIREMENTS

With the exception of newly designated permittees, the Phase II Small MS4 GP requires that:

1. Action Plans for local TMDLs approved before July 1, 2008 must be completed by July 1, 2015 and submitted with the Annual Report due October 1, 2015.

2. Action Plans for local TMDLs approved between July 1, 2008 and June 30, 2013 must be completed by July 1, 2016 and submitted with the annual report due October 1, 2016.

Newly designated MS4 permittees should have included a schedule for developing local TMDL Action Plans as part of the MS4 Program Plan and registration statement submitted to obtain initial coverage under the 2013 GP and should follow that approved schedule. Likewise, Phase I permittees must follow the schedule in their individual permit. In accordance with Section I.B.7 of the GP, permittees must include an estimated date by which they will achieve the assigned WLAs as part of the reapplication package.

The Phase II Small MS4 local TMDL Action Plans and updates become effective and enforceable 90 days after the date received by the Department unless specifically denied in writing. DEQ may request additional information in the review process, as needed. In the Action Plan permittees are responsible for establishing schedules and milestones to meet the assigned WLA(s). The approved Action Plan schedule will supersede any implied or explicit completion date or schedule provided in the local TMDL or Implementation Plan. Permittees are strongly encouraged to work closely with the DEQ regional TMDL and MS4 staff throughout the development of the Action Plan(s).

APPLICABLE WLAs

Prior to Action Plan development, permittees will need to determine the local TMDLs in which the MS4 has been assigned a WLA. Permittees may search for approved local TMDLs by city and/or county on the TMDL Reports page of DEQ's website. Permittees may verify whether they are subject to a local TMDL by using the Virginia Environmental Geographic Information System (VEGIS) to determine the waterbodies to which the MS4 discharges. This information should be refined and/or corrected as the permittee completes the mapping efforts required under GP Section II.B.3. General instructions for using VEGIS are located on the Department's VEGIS website.

Detailed information regarding the portion of each watershed that drains to an MS4 system may not be available during local TMDL development and WLA assignment, so a conservative, land-use based approach is often used. It is important to note that the actual areas within a local TMDL watershed that are subject to a MS4 WLA are those areas that are specifically regulated under the MS4 permit. TMDL studies do not attempt or intend to define the MS4 regulatory area. Rather, the areas used to develop loadings associated with the MS4 permits in local TMDLs (e.g. impervious developed or Census designated urbanized areas) are only surrogates for establishing WLAs and estimating a reasonable pollutant loading that is expected to be contributed by these permitted sources.

The Department encourages permittees to participate in both the local TMDL and Implementation Plan development processes, which may provide insight into BMP applicability and strategies to meet water quality standards. If an Implementation Plan has been developed for a TMDL, permittees may examine the Implementation Plan for appropriate non-point source BMPs for the POC and other strategies for reducing pollutants. While an Implementation Plan may provide strategies for permittees to consider, permittees are not required to follow the strategies listed in an Implementation Plan to address their WLA(s).

Aggregate WLAs

In some circumstances multiple permittees may be assigned one WLA, or an aggregate WLA, for their discharges to the impaired waterbody. Aggregate WLAs are intended to address a watershed wide pollutant without discrete MS4 boundaries. Aggregated WLAs may be developed when permittees are closely interconnected, there is not sufficient information or detail to disaggregate the WLA, or the scale of the TMDL is too great to delineate individual WLAs. MS4 permittees are encouraged to work together to create a collaborative watershed strategy to meet these WLAs.

Forthcoming WLAs for Existing TMDLs

Newly designated Phase II and existing Phase II MS4 permittees with expanded urbanized areas as the result of the 2010 Census may drain to impaired waters for which a local TMDL has been developed. These permittees may not currently have a WLA assigned to them under these TMDLs.

Existing Permittees with Expanded Area
Existing permittees who were previously assigned a WLA and whose urbanized area expanded as a result of the 2010 Census are required to meet the WLA(s) assigned prior to the identification of an expanded urbanized area. As WLAs are revised and/or finalized by DEQ to incorporate the expanded urbanized area, permittees will be required to address those POC reductions in future permit cycles.

New permittees
New permittees that discharge to impaired waterbodies with one or more approved local TMDL(s) may not have been assigned WLA(s) yet. The Department recommends permittees begin planning for future WLAs by considering land use based reductions as discussed above.

ACTION PLAN CONTENT

The proposed strategies and the end date by which permittees will demonstrate compliance with their assigned WLA(s) will be determined by the permittee; however, the Action Plan should also include justification for these choices. Permittees should address the following in their Action Plan(s):

1. The name(s) of the Final TMDL report(s);
2. The pollutant(s) causing the impairment(s);
3. The WLA(s) assigned to the MS4 as aggregate or individual WLAs;
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;
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;
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;
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;
8. A schedule of interim milestones and implementation of the items in 5, 6, and 7;
9. Methods to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs; and
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).

Approaches to meeting WLAs

Action Plans should be developed in accordance with information and data in the TMDL. However, it is not necessary for a permittee to employ the same models and tools used to develop the TMDL in development and evaluation of the Action Plan. For example, watershed-based TMDLs often use Hydrological Simulation Program-Fortran (HSPF) to model the hydrology and pollutant fate and transport. The permittee may use other tools and models that may be better suited to their specific circumstance to develop a control strategy and evaluate alternatives. Permittees should consult with DEQ regional TMDL staff if they have questions regarding the methodology and data used in development of the MS4 TMDL WLAs.

Permittees may employ both structural and non-structural BMPs to address WLAs. There are a number of other resources permittees may reference to identify BMPs that may be implemented to address local WLAs. Reports are available through the Center for Watershed Protection and the Water Environment Research Foundation (WERF) that provide information on BMPs that can be used to address non-nutrient TMDLs. Existing Implementation Plans may also be valuable resources for permittees for information concerning relevant BMPs, BMP reduction efficiencies, cost and benefits, and strategies to address POC reductions necessary to meet the WLAs. Demonstration of adequate progress may be achieved through tracking, monitoring, and/or reporting of BMP implementation, and/or other strategies as approved by DEQ as part of the TMDL Action Plan.

Nutrient and Sediment TMDLs
Permittees may refer to the Chesapeake Bay TMDL Action Plan Guidance (GM14-2012) for strategies and information on how to calculate reductions from BMPs in watersheds with local nutrient and sediment TMDLs. It should be noted that the Action Plans for local TMDLs **do not** need to follow the requirements for the Chesapeake Bay TMDL Action Plan.

Pathogenic Pollutant TMDLs
For pathogenic pollutants (i.e. Enterococci, fecal coliform, and E. coli), any illicit discharges must be addressed by the permittee regardless of the assignment of a WLA. Existing programmatic practices, ordinances, and outreach currently in place under the MS4 program may be sufficient to address anthropogenic sources of bacteria. For these TMDLs, permittees are encouraged to consider practices such as public outreach and education to influence behaviors. This may include signage and supplies to encourage the collection and removal of pet waste at areas of high concentration, such as dog parks; residential outreach through fliers or pamphlets included with utility bills; and other education programs. Permittees may wish to reference the Environmental and Water Resource Institute's 2014 Pathogens in Urban Stormwater Report for techniques that can be used to address these TMDLs.

Polychlorinated Biphenyl (PCB) TMDLs
The recommended method to address these contaminants is through a pollutant minimization approach. Permittees may consider tracing back through the system and identifying past and current high risk land uses, followed by confirmation monitoring of soil and/or stormwater runoff when appropriate to address PCB sources. Upon discovery of a source of PCBs, a collaborative effort with DEQ may be necessary to address the site.

COMPLIANCE

To demonstrate compliance with the Special Condition for Local TMDLs, permittees must submit TMDL Action Plans that include all of the items listed in Section I.B in accordance with the schedule described in the permit. Permittees are responsible for meeting the schedule and milestones set in the approved Action Plan. If a permittee determines that elements of the approved Action Plan are insufficient to meet the WLA, a modification request should be submitted to DEQ as soon as the permittee determines that the plan needs to be updated. Modifications to the approved Action Plan may be made in accordance with GP Section II.F.1. The Department may also request that the Action Plan be modified to include

additional and/or alternative strategies to address the POC. The Department encourages permittees subject to aggregate WLA(s) to take a collaborative approach to addressing those WLAs.

The permittee must make adequate progress in meeting the WLA in accordance with the approved Action Plan(s). Permittees are encouraged to discuss any concerns regarding demonstration of adequate progress with DEQ's MS4 permitting staff.

MODIFICATIONS

Permittees may make modifications to the approved TMDL Action Plan(s) as new opportunities become available or proposed projects/strategies are deemed infeasible or ineffective. TMDL Action Plan modification may be requested by the permittee at any time during the implementation of the Action Plan(s) by contacting the DEQ regional MS4 staff.

PRIORITIZATION

MS4 permittees may be assigned multiple TMDL WLAs. Permittees may prioritize TMDL Action Plan implementation using best professional judgment, including knowledge of the local watersheds, the local infrastructure, and insight into local water quality planning efforts to determine the number and types of BMPs that will be necessary to meet the requirements of the local TMDLs. The permittee should include as part of the Action Plan a section that establishes the justification for the prioritization and the proposed implementation schedule. If appropriate, permittees may address multiple TMDLs within a single Action Plan, although all applicable TMDL WLA's must be addressed in accordance with the schedule described above.

APPENDIX B

Measurable Goals, Metrics, and Milestones

Management Practices
N40080-11-D-0499; WE38
Project Title: Portsmouth Annex Local TMDL Action Plan

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
1	Illicit Discharge and Detection	Develop and implement written procedures to detect, identify, and eliminate illicit discharges in accordance with Section II of 4VAC50-60-1240.	Finalize draft procedures to detect, identify and eliminate illicit discharges. These procedures will likely be identified as Standard Operating Procedures (SOP). Implement these final procedures.	Document the number of outfalls screened, the screening results, and other pertinent details. Document each investigation into a suspected illicit discharge. All reporting shall be in accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Media Manager	By December 2016, finalize the draft procedures to detect, identify and eliminate illicit discharges. Begin implementation of these procedures by July 2017.
2	Wildlife Controls	Enact Wildlife Control Program to control wildlife populations, if necessary.	Approve program to control wildlife populations at installation. Determine if changes to the program are required.	Document the findings regarding the review of the wildlife control program. Identify any required changes.	Phase II Water Program Media Manager	By December 2016, determine if any changes are required to the wildlife control program. By July 2017, update and implement the program.
3	Evaluation and Assessment	Annually evaluate and assess these management practices to evaluate their effectiveness and ensure their applicability.	Conduct annual inspections of the sites to assess compliance with dumpster requirements.	Document the number of dumpsters with open lids.	Phase II Water Program Media Manager	By July 2018, assess the effectiveness of the application of the dumpster stickers.
4	Trash Management	Protect storm drains from illicit discharges and dumpster leachate.	Analyze illicit discharge reports to identify storm drains with potential to receive trash or runoff with bacteria loading potential including catch basin 288. Install dumpster stickers to all dumpsters owned and operated by NAVFAC.	Retain a list of high-priority storm drains and a copy of the illicit discharge summary report. Retain list of NAVFAC owned and operated dumpsters.	Phase II Water Program Media Manager	By December 2016 determine bacteria potential at drainage structures receiving dry weather flows. By July 2017, identify NAVFAC owned dumpsters and install stickers. By July 2018, implement plan to separate trash facilities from storm drains and to remove any bacteria-laden dry weather flows from the drainage network.
5	ECATTS Training	Conduct training through the ECATTS or the web-based Environmental Compliance Assessment, Training, and Tracking System. Ensure that bacterial contamination is discussed.	Annually review and update as needed the ECATTS stormwater training modules.	Record and report the number of people trained on each stormwater training module presented through ECATTS.	Phase II Water Program Media Manager and Installation Water Program Media Manager	Conduct and evaluate training annually.
6	Stormwater Education Brochures	Distribute the tri-fold brochures for general stormwater, construction sediment and erosion control, and pet waste. Develop brochure for feeding wildlife.	On a semi-annual basis distribute stormwater educational brochures and/or place brochures at highly frequented areas like food courts.	Retain a copy of each brochure and record the date, location, and number of brochures distributed.	Phase II Water Program Media Manager	Distribute brochures at least semi-annually and/or place at highly frequented areas.
7	Newspaper Articles and Ads	Place articles and/or ads related to bacterial contamination in NSA Portsmouth's newspaper and/or the Plan of the Week emails.	On a semi-annual basis, include at least one article/ad in NSA Portsmouth publications addressing bacterial contamination in stormwater.	Retain a copy of all articles/ads published and record the dates of publication.	Phase II Water Program Media Manager	Public article/ad semi-annually.
8	External Website	Maintain a website that the general public can access that includes information about stormwater education.	Maintain the website and update content as needed.	Document the number of hits that the website has per year and the average amount of time each user spends on the website.	Phase II Water Program Media Manager	By December 2016, develop a website that provides information regarding stormwater pollution. Review and update the site at least annually.

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
9	Storm Drain Marking Program	Place storm drain markers on inlets to the MS4 reminding the public that flows that drain into the system go directly to streams and waterways.	Evaluate and target areas for storm drain marking efforts. Conduct annual storm drain marking efforts.	Record location, date, number of storm drains marked, and if applicable the number of volunteer participants for each storm drain marking event.	Phase II Water Program Media Manager	By July 2017, determine which inlets at NSA Portsmouth still need markers. In each following year, mark at least 20% of the remaining inlets.
10	Local Activity Participation	Participate during the Annual Clean the Bay Day and Earth Day Events held at NSA Portsmouth. Outreach information will be distributed during these events.	Participate in the Clean the Bay Day and Earth Day Events.	For Clean the Bay Day, record the number of volunteers utilized and an estimate of the volume of litter collected. For both events, document the amount of outreach materials distributed.	Phase II Water Program Media Manager	Participate in the Clean the Bay Day and Earth Day Events annually.
11	Promote, Publicize, and Facilitate Public Reporting	Use reporting mechanisms such as hotlines, email, and website links to allow the public to report suspected illicit discharges.	Generate a hotline phone number, an email address, and/or a website link for public reporting of suspected illicit discharges. Publicize this information through public outreach.	Record the details (date, problem location, etc.) and number of the reports received using each reporting mechanism. Document follow-up actions.	Phase II Water Program Media Manager	By December 2016, have a hotline phone number, an email address, and/or a website link available. By July 2017, publicize this information through public outreach.
12	Approval of Erosion and Sediment Control Plan	Ensure that all Erosion and Sediment Control Plans are approved prior to commencement of land disturbing activity.	Ensure that all regulated project have Erosion and Sediment Control Plans approved.	Retain copies of all approved plans. Document the number of plans approved annually.	Phase II Water Program Media Manager	Continuously ensure that erosion and sediment control plans are submitted and approved.
13	VSMP Regulation and Construction Permit Instruction	Maintain and enforce the regulations under the VSMP and the VSMP Construction Permit Instruction.	Convert the VSMP Construction Permit Instruction to an SOP and enforce accordingly. Enforce all regulations under the VSMP.	Retain copies of all approved permits, inspection procedures, and enforcement actions. Document the number each item.	Phase II Water Program Media Manager	Continuously ensure that the regulations under the VSMP and Construction Permit Instruction are being followed.
14	Structural Best Management Practices (BMPs)	Install structural BMPs like bioretention areas, infiltration trenches, wet ponds, etc.	Install structural BMPs as required by the MS4 permit and the Chesapeake Bay TMDL.	Document the number of BMPs installed.	Phase II Water Program Media Manager	The schedule will depend on the number of structural BMPs that need to be installed to address the Chesapeake Bay TMDL.
15	Stormwater Pollution Prevention Plan (SWPPP)	Develop and implement SWPPPs in accordance with Section II of 4.VAC50-60-1240.	In permit year 1, identify the high-priority facilities. In permit years 2 through 4, develop a general SWPPP for these facilities. In permit year 5, implement this SWPPP at each high priority facility and updated as necessary.	Retain a list of high-priority facilities and a copy of the SWPPP.	Phase II Water Program Media Manager	By July 2018, implement plan to address the various municipal activities at the permitted installation
16	Roof Drain Disconnection	Develop plan to disconnect roof drains directly connected to the storm drain network over pervious surfaces.	In permit year 1, identify the directly connected roof drains. In permit years 2 through 4, determine potential bacteria loading for these roof drains.	Retain a list of directly connected roof drains. Document number of birds spotted on rooftop.	Phase II Water Program Media Manager	By July 2018, implement plan to disconnect roof drains with high bacteria load potential.

APPENDIX C

Field Photo Log

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Michael Baker
INTERNATIONAL

MEMORANDUM

TO:	Dialis Figueroa-Arriaga, NAVFAC Mid-Atlantic Angie Gent, NAVFAC Midlant Dave Cotnoir, NAVFAC Midlant
FROM:	Christine Yott, Michael Baker James Kelly, Michael Baker Elizabeth Krousel, Michael Baker Julia Fine, Michael Baker
DATE:	April 8, 2016
PROJECT NAME:	2015 Non-Chesapeake Bay TMDL Action Plans for Hampton Roads Installations
CONTRACT & DO #:	N62470-10-D-3000; Delivery Order # WE38
BAKER PROJECT #:	148899
SUBJECT:	**Summary of Research Additional Field Work for Scott Center Annex and Portsmouth Annex Local Total Maximum Daily Load (TMDL) Action Plans**

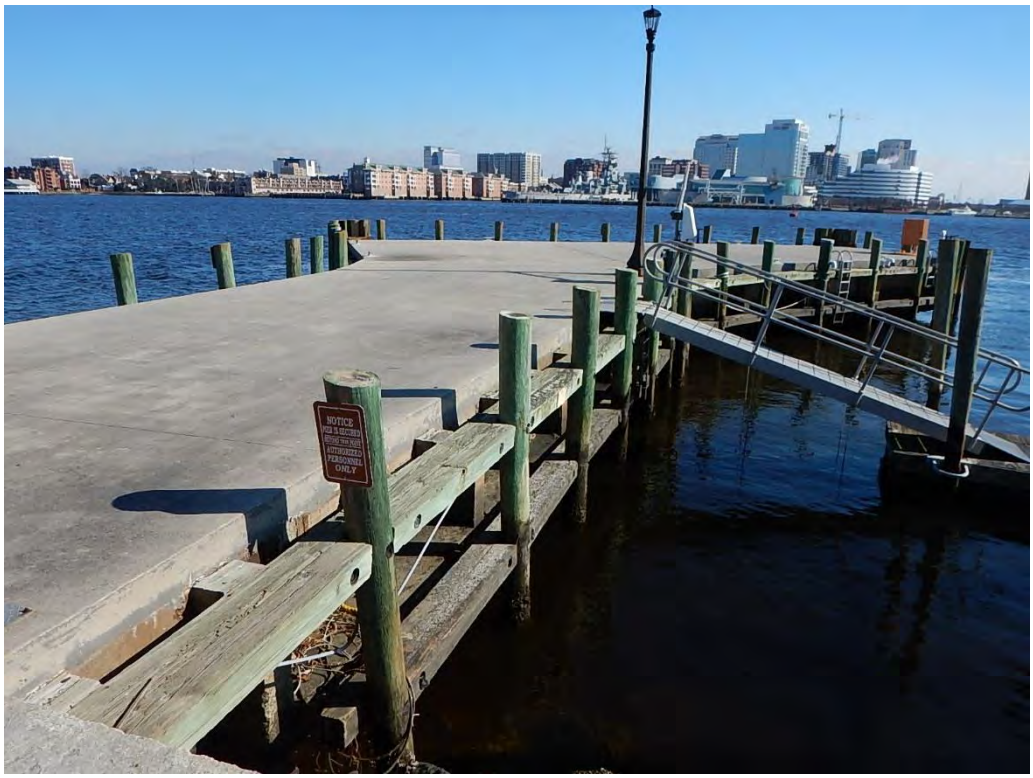
Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex) and Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex) operate under Navy Consolidated MS4 Permit No. VAR040114 (MS4 Permit). These installations have been identified as a potential source of pollution subject to regulation under the Special Condition of Local TMDLs section of the MS4 Permit. The Special Condition for Local TMDLs requires permittees to develop Action Plans that address all pollutants of concern for which the permittee has been assigned a waste load allocation (WLA) under an approved TMDL. Scott Center Annex and Portsmouth Annex have been assigned WLAs for *enterococci* associated their receiving streams.

Michael Baker International, Inc. (Michael Baker) conducted two field visits to Scott Center Annex and Portsmouth Annex to investigate potential sources of bacteria. The wildlife at each installation was investigated by looking for areas where geese and other birds congregate near water sources, food sources, and on rooftops. Michael Baker staff also investigated areas containing trash cans and dumpsters and verified that the lids were closed and covered as well as any illicit discharge survey findings. Sources of non-stormwater runoff that could aid in transport of bacteria as well as mobile sources, including porta-potties or recreational vehicle parking areas, were also investigated.

During the first visit on January 21, 2016, Michael Baker staff noted and documented via photos any wildlife present at both Scott Center Annex and Portsmouth Annex. Geese were observed at Scott Center Annex in the vicinity of Building 1717 and seagulls were observed in the parking lot of Building 1487. Also, sea gulls were observed on the shore at Portsmouth Annex.

The second field visit was conducted on April 1, 2016 in response to a comment received during the March 24 review meeting. During this visit, Michael Baker identified dumpster lids that had been left open; however, no illicit sanitary flow connections were found at either installation.

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **1**	
Building/Area Location **East of Building 1**	
Comments **Wildlife: Seagulls on shore**	
Photograph **2**	
Building/Area Location **North shoreline**	
Comments **Wildlife: Habitat where wildlife may gather**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **3**	
Building/Area Location **Open athletic field (west)**	
Comments **Wildlife: Habitat where wildlife may gather**	
Photograph **4**	
Building/Area Location **Pier on northeast corner**	
Comments **Wildlife: Habitat where wildlife may gather**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **5**	
Dumpster ID **215861**	
Building No. **107**	
Comments **Waste Industries Label; Closed**	
Photograph **6**	
Dumpster ID **205520**	
Building No. **1**	
Comments **Waste Industries Label; Closed**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **7**	
Dumpster ID **498**	
Building No. **300 Building 2 Main Hospital**	
Comments **Waste Industries Label; Closed**	
Photograph **8**	
Dumpster ID **156431**	
Building No. **300 Building 2 Main Hospital**	
Comments **Waste Industries Label; Closed**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **9**	
Dumpster ID **157229**	
Building No. **300** **Building 2** **Main Hospital**	
Comments **Waste Industries Label; Closed**	
Photograph **10**	
Dumpster ID **151307 & 205232**	
Building No. **20**	
Comments **Waste Industries Label; Closed**	

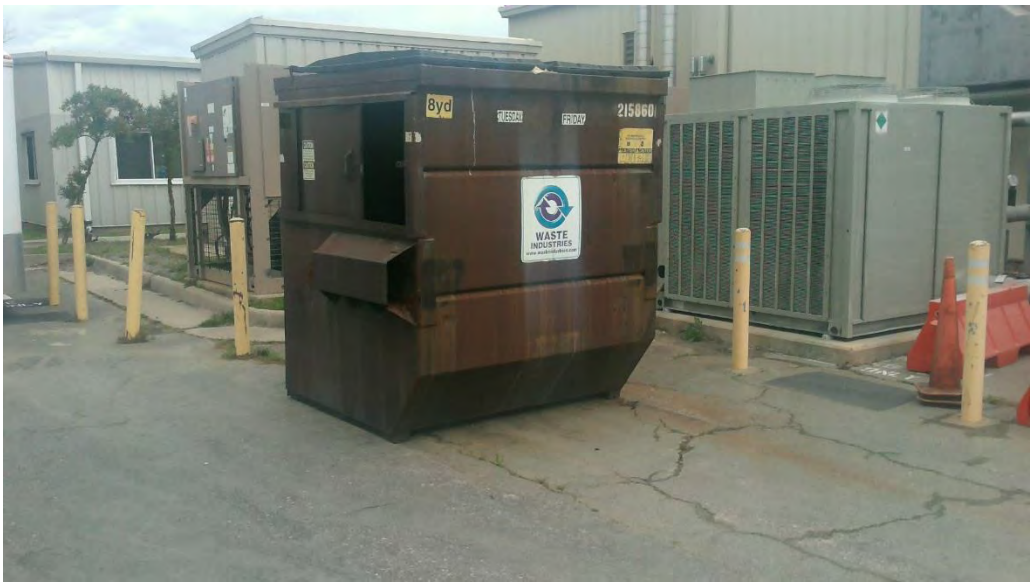
PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **11**	
Dumpster ID **238729-5**	
Building No. **250**	
Comments **Waste Industries Label; Open**	
Photograph **12**	
Dumpster ID **BR45-1046**	
Building No. **250**	
Comments **Waste Industries Label; Closed**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **13**	
Dumpster ID **158622**	
Building No. **249**	
Comments **Waste Industries Label; No Cover**	
Photograph **14**	
Dumpster ID **230816**	
Building No. **256 NEX**	
Comments **Waste Industries Label; Closed**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **15**	
Dumpster ID **BR45-CI & 231621**	
Building No. **256 NEX**	
Comments **Waste Industries Label; Closed**	
Photograph **16**	
Dumpster ID **BR45-1832**	
Building No. **288**	
Comments **Waste Industries Label; Closed**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **17**	
Dumpster ID **215957 & 215959**	
Building No. **272**	
Comments **Waste Industries Label; Closed**	
Photograph **18**	
Dumpster ID **238729-12**	
Building No. **272**	
Comments **Waste Industries Label; No Cover**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **19**	
Dumpster ID **HR3333**	
Building No. **104**	
Comments **Waste Management Label; No Cover**	
Photograph **20**	
Dumpster ID **209348**	
Building No. **271**	
Comments **Waste Industries Label; No Cover**	

PHOTOGRAPHIC RECORD	
Portsmouth Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **21**	
Dumpster ID **211991**	
Building No. **271**	
Comments **Waste Industries Label; Closed**	
Photograph **22**	
Dumpster ID **215860**	
Building No. **274**	
Comments **Waste Industries Label; Closed**	

Final

Local TMDL Action Plan

SCOTT CENTER ANNEX

Contract #:

N40080-11-D-0499: WE38

April 2016

Prepared for:

NAVFAC Mid-Atlantic
9742 Maryland Avenue
Norfolk, VA 23511

Prepared by:

Michael Baker International
3601 Eisenhower Avenue
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Local TMDL Action Plan for Impaired Waters at Scott Center Annex
Contract No. N40080-11-D-0499: WE38

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LIST OF ACRONYMS

BMP	Best Management Practice
BST	Bacterial Source Tracking
CNO	Chief of Naval Operations
CNRMA	Commander, Navy Region Mid-Atlantic
COMNAVREG	Commander, Navy Region
CWA	Clean Water Act
DON	Department of Navy
E&S	Erosion and Sediment
ECATTS	Environmental Compliance Assessment Training and Tracking System
EISA	Energy Independence and Security Act
EPA	Environmental Protection Agency (United States)
ESC	Erosion and Sediment Control
HUC	Hydrologic Unit Code
INRMP	Integrated Natural Resources Management Plan
LA	Load Allocation
LID	Low Impact Development
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
mg	Milligram
mg/L	Milligrams/Liter
MIDLANT	Mid-Atlantic
mL	Milliliter
MOS	Margin of Safety
MS4	Municipal Separate Storm Sewer System
MWR	Morale, Welfare, and Recreation
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NPDES	National Pollutant Discharge Elimination System
NSA	Naval Support Activity
POC	Pollutant of Concern
Portsmouth Annex	NSA Hampton Roads Portsmouth Annex

Scott Center Annex	Norfolk Naval Shipyard Scott Center Annex
SOP	Standard Operating Procedure
TMDL	Total Maximum Daily Load
USC	United States Code
USDA	United States Department of Agriculture
UV	Ultraviolet
VAC	Virginia Administrative Code
VADCR	Virginia Department of Conservation and Recreation
VADEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VESCP	Virginia Erosion and Sediment Control Program
VSMP	Virginia Stormwater Management Program
WLA	Waste Load Allocation

Executive Summary

This Local Total Maximum Daily Load (TMDL) Action Plan presents Commander, Navy Region Mid-Atlantic's (CNRMA) plan to meet requirements found in Section I.B of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). General Permit Number VAR040114, issued on 1 July 2013, is a consolidated or regional five-year permit that encompasses eight installations in the Hampton Roads, Virginia area.

The permit requires that MS4s that have been allocated a waste load in an approved TMDL maintain an updated MS4 Program Plan that includes a specific TMDL Action Plan for the associated pollutant(s). CNRMA has three installations with associated approved TMDLs. The installations and their associated pollutants of concern (POCs) include:

- Naval Air Station (NAS) Oceana – Fecal Coliform
- Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex) – *Enterococci*
- Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex) – *Enterococci*

This Local TMDL Action Plan for Scott Center Annex was developed in response to the report *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed,* hereafter referred to as the TMDL Report. Local TMDL Action Plans for Portsmouth Annex and NAS Oceana can be found under separate covers.

This Local TMDL Action Plan provides background information regarding the significant sources of bacteria, including wildlife, humans, and pets. It also addresses management practices that Scott Center Annex is currently employing or will employ to address the bacteria TMDL. Finally, the plan provides the methods that will be used to assess the plan's effectiveness, including annual review of the plan.

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1 Introduction

This Local Total Maximum Daily Load (TMDL) Action Plan presents the Commander, Navy Region Mid-Atlantic's (CNRMA) plan to meet requirements found in Section I.B of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). General Permit Number VAR040114 is a consolidated or regional five-year permit that encompasses eight naval installations, including Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex).

The Special Condition for Local TMDLs in the permit requires permittees to develop Action Plans that address all pollutants of concern (POCs) for which the permittee has been assigned a waste load allocation (WLA) under an approved TMDL. The permit also states that the Local TMDL Action Plan should identify best management practices (BMPs) and other management strategies that the permittee will implement to meet the WLAs and achieve compliance with the Special Condition. The permit allows the Local TMDL Action Plan to be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach, provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLAs. The implementation of the Local TMDL Action Plan should be documented in the permittee's annual reports.

1.1 Background Information

States are required by the Clean Water Act (CWA) to identify waters that do not meet or are not expected to meet water quality standards even after technology-based or other required controls are in place. These waterbodies are considered water quality-limited and require TMDLs. Since 1998, Virginia Department of Environmental Quality (VADEQ) has developed TMDLs, with public input, to restore and maintain the water quality of impaired waterbodies.

Section 303(d) of the CWA requires that WLAs be implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. As point sources, MS4s are assigned individual or aggregate WLAs in TMDLs for receiving streams or watersheds to which the MS4 discharges.

Municipalities may also be assigned load allocations (LAs) for areas outside of the regulated MS4 Service Area that are sources of the POCs. The permit does not require permittees to incorporate approaches for addressing LAs into their Action Plans. LAs are often addressed through TMDL Implementation Plans, which are developed through VADEQ and characterize the suite of corrective actions needed to reduce nonpoint source pollutant loads.

1.2 Installation Description

Scott Center Annex, in the City of Portsmouth, is approximately 51 acres in size and is bordered by Paradise Creek (which flows into the Elizabeth River) to the south. Scott Center Annex is in the southeastern corner of the Commonwealth of Virginia, in a region that is commonly referred to as "Hampton Roads." This area generally includes the cities of Newport News, Hampton, Norfolk, Portsmouth, Virginia Beach, Chesapeake, and Suffolk, and has a population of over 1.5 million. Refer to **Figure 1-1** for a general location map.

This facility contains an auto hobby shop, bachelor housing, bowling alley, commissary, conference center, exchange, carwash, Morale Welfare and Recreation (MWR) office, school liaison office, outdoor activities rental, package store, gas station, swimming pool, and closed landfill. A regional medical prescription refill center is also on the premises.

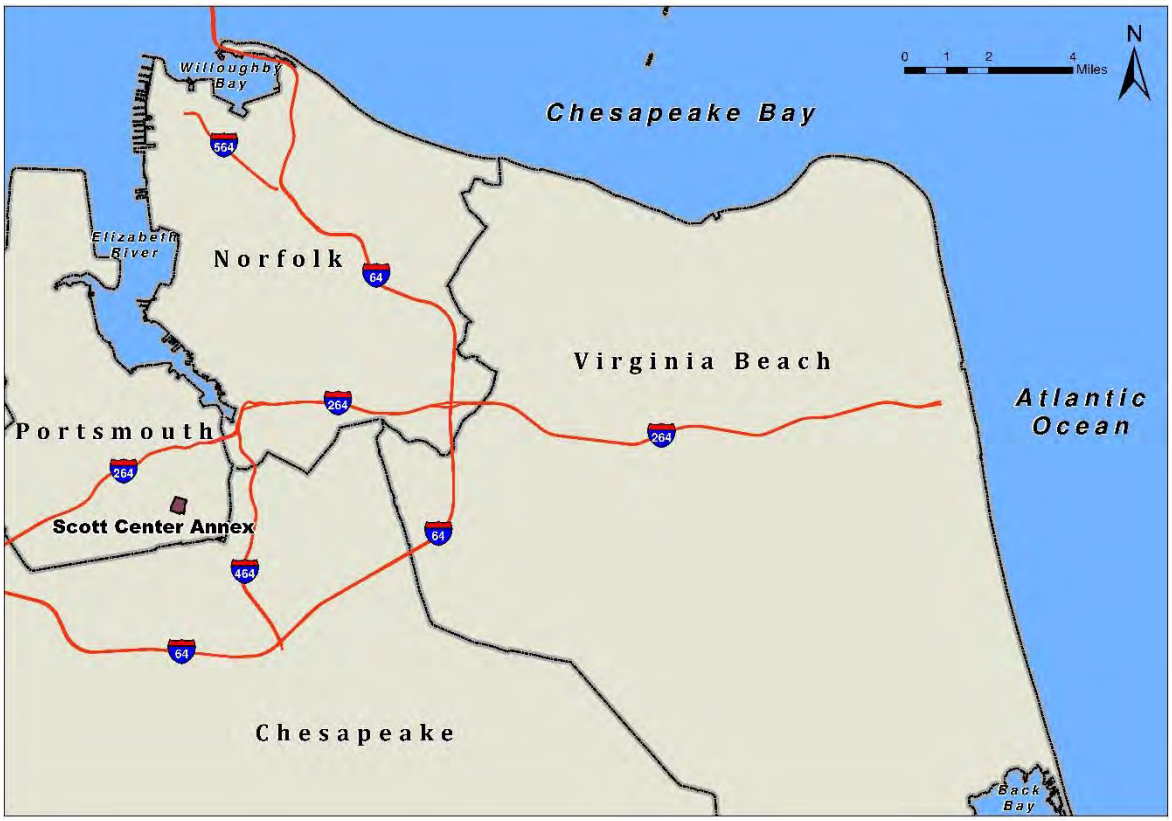

Figure 1-1 Scott Center Annex Location Map

1.3 Authorization, Scope, and Purpose

The MS4 permit requires CNRMA to develop Local TMDL Action Plans for installations with WLAs. Three installations have been identified that are subject to this requirement:

- Naval Air Station (NAS) Oceana
- Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex)
- Scott Center Annex

The Local TMDL Action Plan for Scott Center Annex was developed in response to the report *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed*, hereafter referred to as the TMDL Report. Local TMDL Action Plans for Portsmouth Annex and NAS Oceana can be found under separate covers.

The purpose of this Local TMDL Action Plan is to outline Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic's plan for Scott Center Annex to address the WLA, including identifying BMPs and other interim milestone activities to be implemented during the permit, as well as methods to assess the plan's effectiveness.

1.4 Fundamental Concepts and Definitions

The definitions of TMDL and related terminology, as well as the concept for TMDL computation, are provided in this section.

- **Allocation** – the portion of a receiving water's loading capacity attributed to one of its existing or future pollution sources (nonpoint or point) or to natural background sources.
- **Bacteria** – single-celled microorganisms. Bacteria of the coliform group are considered the primary indicators of fecal contamination and are often used to assess water quality. Examples include fecal coliform, *E. coli*, or *enterococci*.
- **Bacterial source tracking (BST)** – a collection of scientific methods used to determine sources of fecal contamination from human, livestock, or wildlife origins in environmental samples.
- **Best management practices (BMPs)** – methods, measures, or practices determined to constitute reasonable and cost-effective means for a landowner to meet certain, generally nonpoint source, pollution control needs. BMPs include structural and nonstructural controls and operation and maintenance procedures.
- **Load allocation (LA)** – the portion of a receiving water's loading capacity attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. LAs are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading.

- **Margin of safety (MOS)** – a required component of the TMDL that accounts for the uncertainty about the relationship between pollutant loads and the quality of the receiving water body. The MOS is normally incorporated into the conservative assumptions used to develop TMDLs (generally within the calculations or models) and approved by the U.S. Environmental Protection Agency (EPA), either individually or in state-EPA agreements. If the MOS needs to be larger, which is allowed through the conservative assumptions, additional MOSs can be added as a separate component of the TMDL.
- **Total Maximum Daily Load (TMDL)** – a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that load among the various sources of that pollutant. Pollutant sources are characterized as either point sources, which receive a WLA, or nonpoint sources, which receive an LA.
- **Waste load allocation (WLA)** – the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

TMDLs can be calculated as the sum of the individual WLAs for point sources, LAs for nonpoint sources and natural background, and the MOS. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures that relate to a state's water quality standard. The equation for TMDL calculation is presented as:

$$\mathbf{TMDL} = \mathbf{WLAs} + \mathbf{LAs} + \mathbf{MOS}$$

1.5 Report Organization

Pursuant to VADEQ draft guidance (**Appendix A**), the Local TMDL Action Plan for Scott Center Annex is organized into eight primary sections:

- **Section 1** – Introduction (including background information; installation description; authorization, scope, and purpose; fundamental concepts and definitions; and report organization)
- **Section 2** – Watershed Characterization (including receiving waters and land cover)
- **Section 3** – Reference Plans and Reports (including TMDL Report, TMDL Implementation Plans, and Bacterial Sources at Scott Center Annex)
- **Section 4** – Significant Sources of Bacteria (including wildlife contributors and human and pet contributors)
- **Section 5** – Legal Authorities
- **Section 6** – Management Practices (including bacteria criteria and treatment, MS4 permit management techniques, and other management techniques)

- **Section 7** – Methods to Assess the TMDL Action Plan (including outfall screening and annual review of action plan)
- **Section 8** – References (providing a list of references used in the development of this plan)

The report also includes the following Appendices:

- **Appendix A** – VADEQ Local TMDL Action Plan Guidance
- **Appendix B** – Measurable Goals, Metrics, and Milestones
- **Appendix C** – Field Photo Log

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2 Watershed Characterization

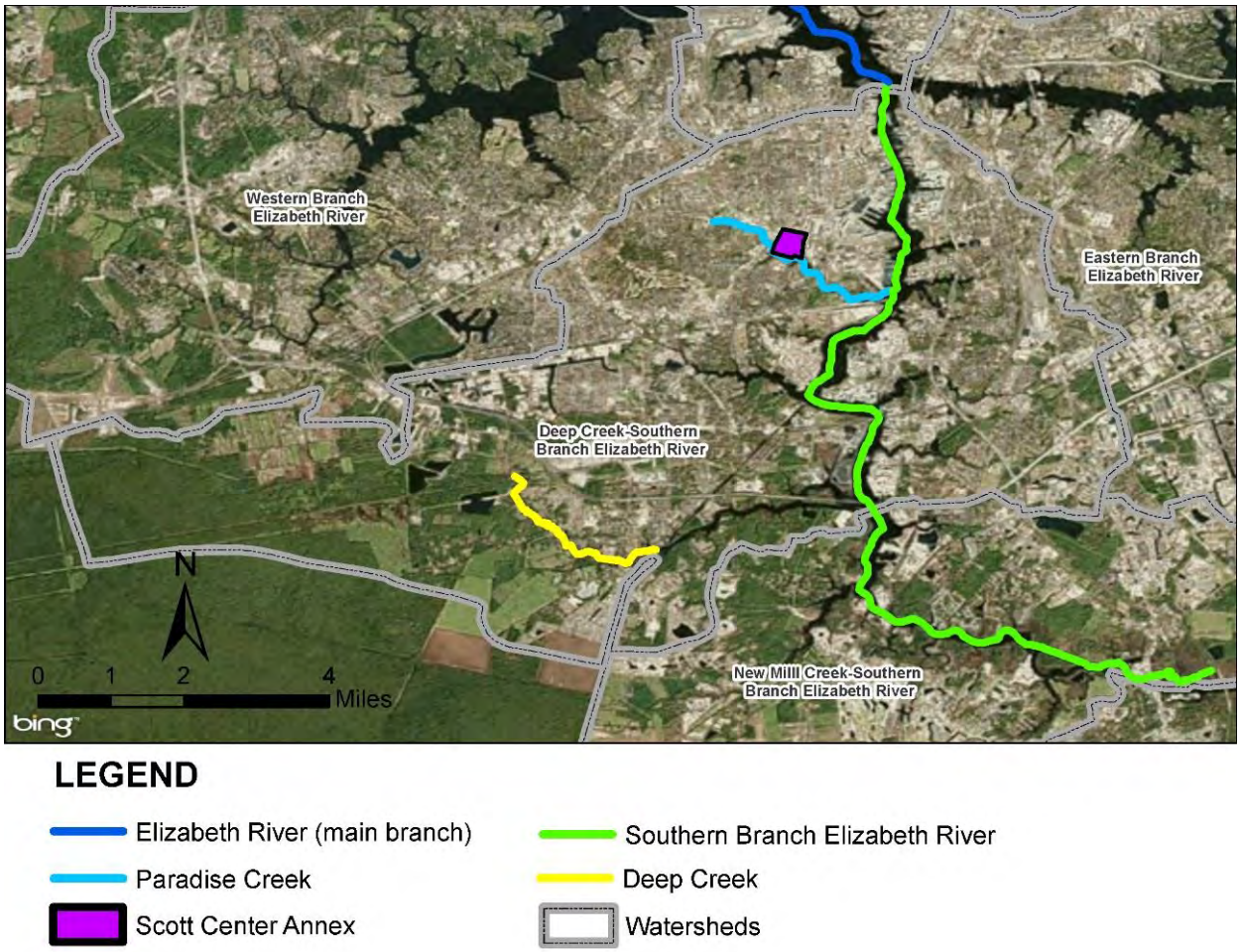
This section addresses the major characteristics of the Scott Center Annex watersheds, including adjacent receiving waters and local land cover, to provide hydrological and geological background information.

2.1 Receiving Waters

At the regional level, Scott Center Annex is located within the Hampton Roads Basin (hydrologic unit code [HUC] 02080208). At a more detailed local level, Scott Center Annex drains to the south via Paradise Creek to the southern branch of the Elizabeth River. Paradise Creek has a drainage area of 1,716 acres. Scott Center Annex has a drainage area of 51 acres, which represents 3.0 percent of the Paradise Creek watershed area. This watershed is part of the 28,839-acre Deep Creek-Southern Branch Elizabeth River watershed (HUC 020802080203). **Figure 2-1** illustrates the receiving waters of Scott Center Annex and its adjacent watersheds.

The storm sewer system at Scott Center Annex runs mainly to the south and discharges directly into Paradise Creek. A small portion of the site discharges through Outfall #7, which flows via the City of Portsmouth drainage network of pipes and swales into the Southern Branch of the Elizabeth River. **Figure 2-2** illustrates the storm drain network and receiving waters of Scott Center Annex.

The locks at Great Bridge separate the Southern Branch of the Elizabeth River from the Albemarle and Chesapeake Canal, which connects to the North Landing River and Back Bay. Thus, the water flows into the Chesapeake Bay to the north.



LEGEND

- Elizabeth River (main branch)
- Paradise Creek
- Scott Center Annex
- Southern Branch Elizabeth River
- Deep Creek
- Watersheds

Figure 2-1 Receiving Waters of Scott Center Annex and Adjacent Watersheds

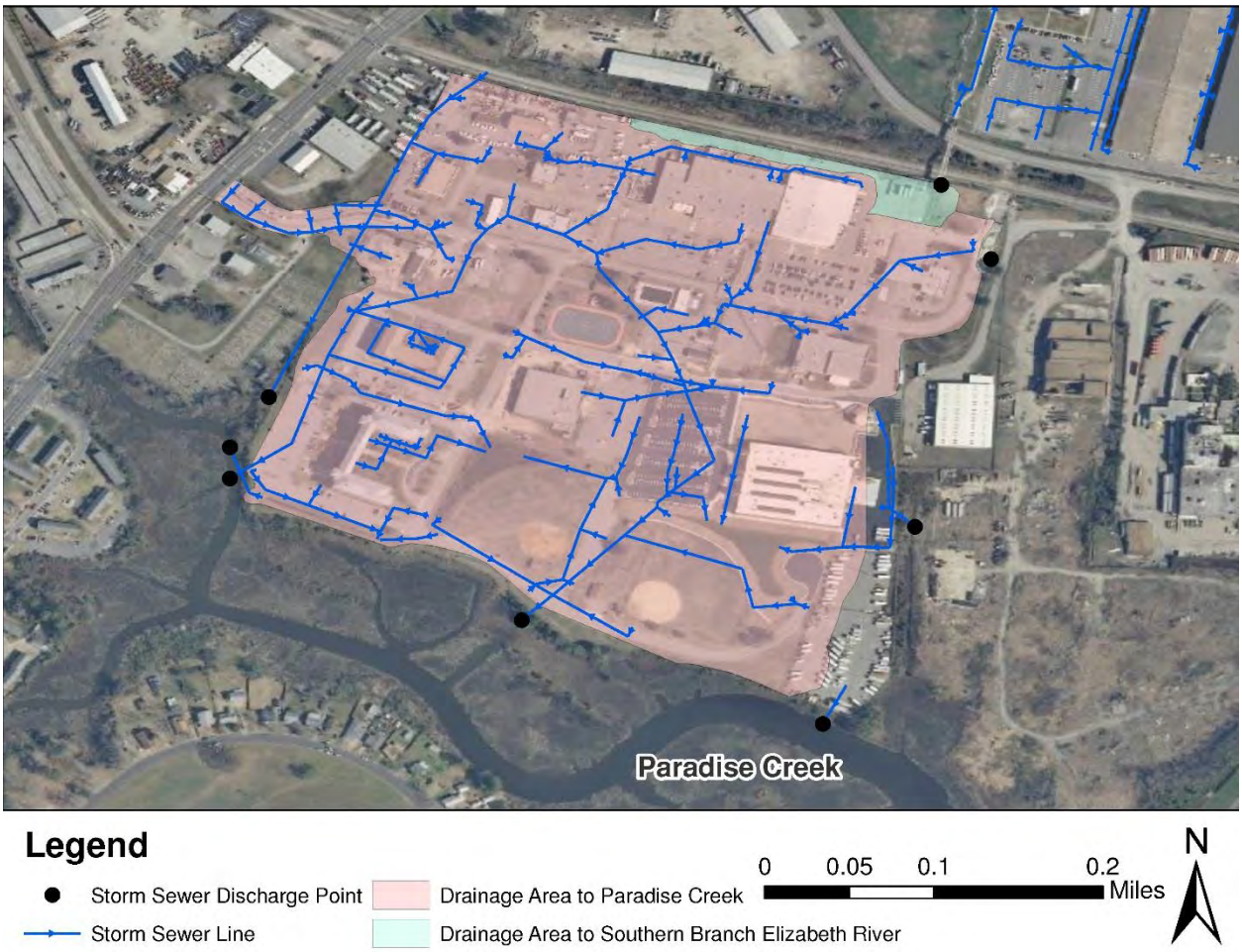


Figure 2-2 Storm Drain Network and Receiving Waters of Scott Center Annex

2.2 Land Cover

Land cover information is critical to assessing ecosystem status and health, modeling nutrient and pesticide runoff, understanding spatial patterns of biodiversity, performing land use planning, deriving landscape pattern metrics, and developing land management policies. The different land uses within and surrounding Scott Center Annex were investigated to identify potential pollutant sources.

The land cover types and distributions using GIS data provided by NAVFAC at and surrounding Scott Center Annex are displayed in **Figure 2-3**. It can be observed that nearly the entire installation has been identified as developed areas. Areas of high- or medium-intensity development are correlated with the parking lots and buildings. A small portion of Paradise Creek is within the boundary of Scott Center Annex, and directly adjacent to Paradise Creek, along the southern border of Scott Center Annex, are emergent herbaceous wetlands. A spatial analysis computed the following percentages of land types within the boundaries of Scott Center Annex:

- 88.0% – Developed Areas,
- 10.6% –Wetland Areas, and
- 1.4% – Open Water Area.

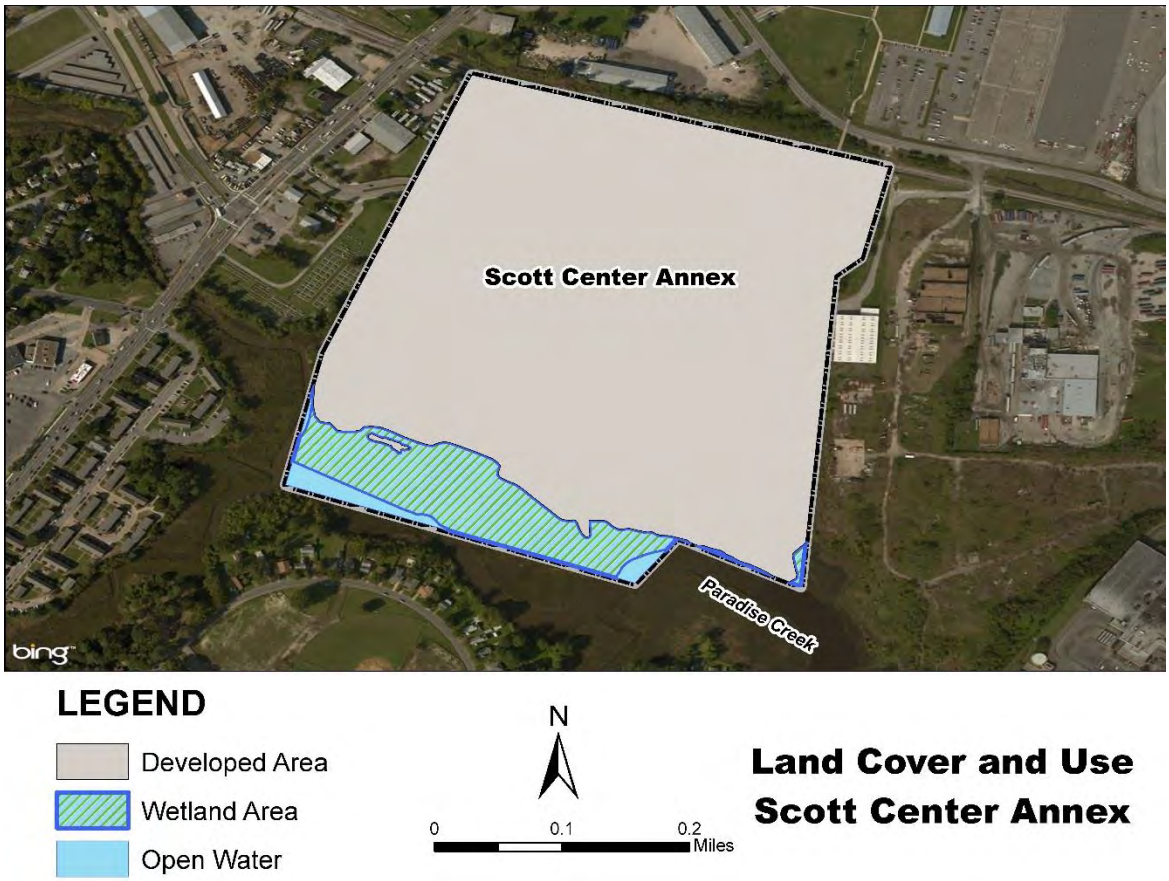


Figure 2-3 Land Cover Types at Scott Center Annex

3 Reference Plans and Reports

This section provides a brief review of the current TMDL Report, TMDL Implementation Plans, and bacterial sources at Scott Center Annex.

Section 303(d) of the CWA and the EPA's Water Quality Planning and Management Regulation (40 CFR Part 130) require states to develop TMDLs for water bodies that exceed water quality standards. Once the TMDL has been developed, a TMDL report is prepared and distributed for public comment and then submitted to the EPA for approval. Following this process, an Implementation Plan should be developed to describe actions (i.e., BMPs) to address the TMDL. The goal of a TMDL Implementation Plan is to restore water quality in impaired watersheds. No implementation plan was developed for the Elizabeth River so this information will be included in the TMDL Action Plan. To gauge progress toward this goal, VADEQ tracks the implementation of BMPs and continues to monitor water quality in the impaired watersheds.

3.1 TMDL Report

The applicable TMDL Report that affects the receiving waters at Scott Center Annex is entitled *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed*. As one of the main forms of nonpoint source pollution, bacteria are commonly found in the rivers, streams, and estuaries of the Chesapeake Bay and impair the water quality. VADEQ has identified the Upper Mainstem, Lower Eastern Branch, Lower Southern Branch, and Lower and Upper Western Branch of the Elizabeth River, as well as Broad Creek, Indian River, Paradise Creek, and Upper Lafayette River, as impaired with regard to bacteria.

The TMDL Report was developed by The Louis Berger Group, Inc. for VADEQ in April 2010. This TMDL Report included a water quality assessment using the samples collected at VADEQ in-stream monitoring stations. A summary of the bacteria sampling data for the Upper Mainstem, Lower Eastern Branch, Lower Southern Branch, and Western Branch of the Elizabeth River; Broad Creek; Indian River; Paradise Creek; and Lafayette River is provided in **Table 3-1**.

The collected data were analyzed for frequency of violations, patterns in *enterococci* source identification, and seasonal impacts. Results of the analyses are presented in the BST process to identify the contributions from sources including human, pets, livestock, and wildlife. An assessment of nonpoint sources was performed with consideration of private residential sewage treatment facilities, pets, livestock, and wildlife. The simplified tidal prism bacteria model program was used as the modeling framework to simulate existing conditions, to perform TMDL allocations in tidal areas, and to link the sources to the endpoints.

Table 3-1 Summary of Enterococci Bacteria Sampling for the Streams near Scott Center Annex (count/100 mL)

STREAM NAME	STATION ID	SAMPLED DATES/COUNTS	MIN[1]	MAX[1]	MEAN	EXCEEDANCES[2] # / %
Mainstem	2-ELI006.02	2/02-6/09 (80)	10	520	58	10 (13%)
	2-ELI004.79	8/02-6/09 (79)	10	550	38	4 (5%)
	2-ELI002.00	7/02-6/09 (75)	10	100	26	0 (0%)
Lower Southern Branch	2-SBE001.53	8/02-6/09 (78)	10	1,800	141	18 (23%)
Paradise Creek	2-PAR001.77	10/03-6/09 (67)	180	2,000	986	67 (100%)
	2-PAR000.77	10/03-6/09 (66)	25	2,000	544	49 (74%)
	2-PAR000.12	10/03-6/09 (65)	25	2,000	269	25 (38%)

[1] *Enterococci* detection range is between 10 and 2,000 count values per 100 milliliters (mL). Therefore, recorded count values of 2,000 could be greater than 2,000 and count values of 10 could be less than 10.

[2] Requirements of at least two measurements per months for calculating geometric mean for *enterococci* were not met. Single Sample Maximum *enterococci* bacteria of 104 count/100 mL

The bacterial allocations calculated from the TMDL development process are summarized in **Table 3-2** for those TMDLs applicable to Scott Center Annex. The table provides the amount of *enterococci* that is allotted to each MS4 that discharges to those particular streams. The TMDLs are broken up into WLAs (the portion of bacteria coming from permitted discharge sources including nonpoint sources under MS4 permits) and LAs (the portion of bacteria coming from non-permitted or nonpoint sources in the watershed).

Table 3-2 TMDL Allocations for the Elizabeth River Watershed (count/day)

TMDL WATERSHED	TMDL STANDARD	CURRENT LOAD	ALLOWABLE LOAD	REQUIRED REDUCTION
TMDL #1 Lower Eastern Branch, Lower Southern Branch, Upper Mainstem, Broad Creek, Indian River	*Enterococci*	2.80E+15	1.42E+14	94.9%
TMDL #4 Paradise Creek	*Enterococci*	1.21E+13	5.79E+11	95.2%

According to the TMDL Report, bacterial sources within TMDL #4 area include wildlife, pets, failed septic systems, and sanitary sewer overflows. The results of the TMDL #4 model are shown in **Figure 3-1**. Further, the TMDL Report cites bacteria sources for TMDL #1 as livestock, wildlife, pets, failed septic systems, and sanitary sewer overflows. The results of the TMDL #1 model are shown in **Figure 3-2**. TMDL allocations for MS4 permit holders near Scott Center Annex are displayed in **Table 3-3**.

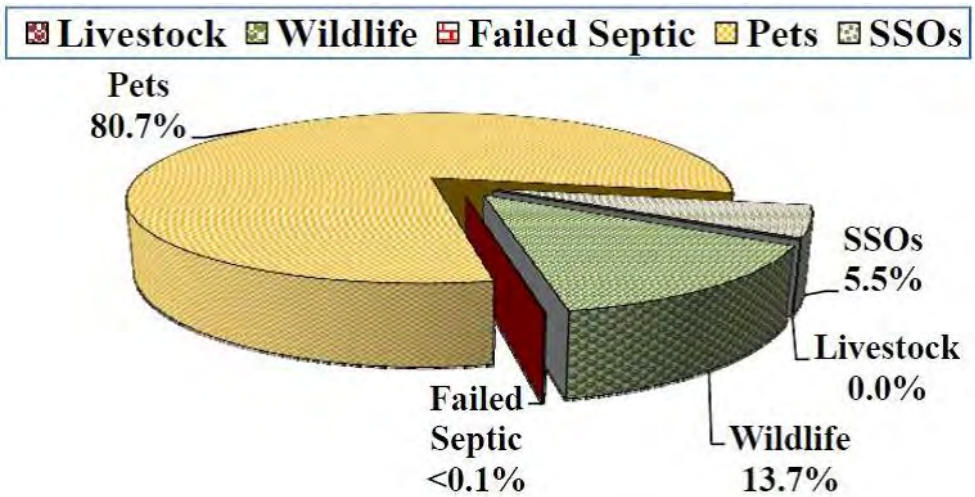


Figure 3-1 Bacterial Contribution by Source for TMDL #4

Source: Bacteria TMDL Development for the Elizabeth River Watershed

Figure 3-2 Bacterial Contribution by Source for TMDL #1

Source: Bacteria TMDL Development for the Elizabeth River Watershed

Table 3-3 TMDL Allocations for MS4 Permit holders near Scott Center Annex (count/day)

MS4 PERMIT HOLDER	TMDL STANDARD	WLA	LA	MOS	TMDL
Paradise Creek					
City of Portsmouth (Phase 1), MS4 VA0088668	*Enterococci*	4.79E+11	7.45E+10	Implicit	5.79E+11
City of Chesapeake (Phase 1), MS4 VA0088625		5.34E+09			
Scott Center Annex, MS4 Phase II VAR040114		1.91E+10			

Source: Bacteria TMDL Development for the Elizabeth River Watershed

3.2 TMDL Implementation Plans

Currently, no TMDL Implementation Plan has been developed for the Elizabeth River or Paradise Creek. A significant portion of the Elizabeth River watershed area covered by the TMDL is permitted under an MS4 permit. Scott Center Annex is covered under the Navy's regional MS4 permit, Number VAR040114. Information from the MS4 permit was used in the development of this Local TMDL Action Plan.

3.3 Bacterial Sources at Scott Center Annex

A site visit inventory of the identified bacterial sources at Scott Center Annex was conducted on January 21, 2016. Data was also obtained from discussions with the Navy regarding activities on their facility. The inventories showed no livestock, marinas, pets, septic systems, or combined sewers within the boundaries of Scott Center Annex. Reductions for wildlife are applied when the reduction of more controllable loads (human, livestock, and pets) does not achieve the water quality standard. Scott Center Annex does have wildlife and is held to bacterial reductions from wildlife.

4 Significant Sources of Bacteria

This section describes the possible existing sources that contribute to the bacterial pollution of the waterbodies adjacent to Scott Center Annex and their relative contributions to the waterbodies. Contributions from livestock are not included, as no livestock are present at Scott Center Annex.

4.1 Wildlife Contributors

Multiple species of wildlife inhabit Scott Center Annex and nearby watersheds. Wildlife populations for various species play an important role in the amount of fecal waste that impacts water quality.

In the TMDL Report, wildlife population estimates were developed through consultation with wildlife biologists from the Virginia Department of Game and Inland Fisheries (VDGIF), citizens of the watershed, source sampling, and site visits. The population estimates were derived using documented population densities after habitat boundaries were established. The estimates listed the population densities of deer, geese, ducks, muskrats, raccoons, and nutria, with the corresponding waste load produced by the wildlife. The wildlife populations in the TMDL Watersheds are summarized in **Table 4-1**.

Table 4-1 Wildlife Populations from TMDL Report

IMPAIRED WATERSHED	DEER	GEESE	DUCKS	MUSKRATS	RACCOONS	NUTRIA
TMDL #1 Upper Mainstem Lower Southern Branch Lower Eastern Branch Broad Creek Indian River	2,056	1,819	164	945	3,164	3,134
TMDL #4 Paradise Creek	24	37	3	23	29	43

During a field visit on January 21, 2016, four geese were counted at Scott Center Annex. This accounts for approximately 11 percent of the total goose population within Paradise Creek. No evidence of deer, ducks, or rodents was observed during the field visit. Management alternatives to mitigate the bacterial load from wildlife are discussed in **Section 6.3** of this report.

4.2 Human and Pet Contributors

Human activities and pet waste are both major contributors to bacterial contamination that should be taken into account when addressing a TMDL. A major source of bacteria from human activities in many areas is failing or malfunctioning septic systems that leak high concentrations of pollutants. A septic failure occurs when a drain field has inadequate drainage. This causes effluent to flow directly to the soil surface, from which it is consequently washed into waterbodies

during runoff events. However, based on available information, there are no septic systems at Scott Center Annex; instead, it has a sanitary system for the entire installation. Leaks and illicit connections from sanitary systems have also been documented in studies as a cause of bacterial contamination. While Scott Center Annex has performed surveys in compliance with its municipal stormwater permit and has not found any evidence of illicit sanitary connections, leaks in the sanitary system may still be a possibility.

Another documented human source of bacteria is poor trash management, specifically including leaking dumpsters and garbage cans from sites such as restaurants and construction sites. A study performed in the San Diego River Watershed found that approximately 20 percent of all dumpster or grease traps inspected had evidence of liquid leaks (Weston, 2009). The liquid leaking from these containers had high concentrations of bacteria (Urban Water Resources Research Council, 2014). Scott Center Annex manages these sources of bacteria by requiring that dumpsters be covered and grease bins be contained per the *Good Housekeeping Policies and Procedures for Municipal Operations* (procedure requirement per Minimum Control Measure [MCM] #6). Scott Center Annex has designated locations for garbage dumpsters, and most dumpsters are in enclosed areas. See **Appendix B** for more information and measurable goals, metrics, and milestones. See **Appendix C** for a field photo log that includes the dumpsters at Scott Center Annex.

Pets are another source of bacteria. Due to their popularity relative to other pet species, the TMDL Report only considered dogs and cats when discussing this source. When pet waste is improperly disposed of or left on the ground, stormwater runoff can wash the waste, or bacteria from the waste, into nearby waterbodies, causing water degradation. Decaying pet waste consumes oxygen and sometimes releases ammonia. Low oxygen levels and ammonia can damage the health of fish and other aquatic life. Pet waste carries bacteria, viruses, and parasites that can threaten the health of humans and wildlife. Pet waste also contains nutrients that promote weed and algae growth resulting from eutrophication. The estimated pet populations of the impaired watersheds near Scott Center Annex were reported in the TMDL Report as found in **Table 4-2**.

Table 4-2 Pet Populations from TMDL Report for Elizabeth River

Impaired Watershed	Dogs	Cats
TMDL #1 Upper Mainstem, Lower Southern Branch, Lower Eastern Branch, Broad Creek, Indian River	45,245	49,412
TMDL #4 Paradise Creek	77,433	84,564

Compared with that of dogs, the volume of waste loads from cats is much lower, since they are mainly kept indoors. In accordance with a January 2002 Chief of Naval Operations (CNO) Policy Letter on Preventing Feral Cat and Dog Populations on Navy Property, stray cats and dogs are humanely removed. Since Scott Center Annex has no pets living on base, there is no anticipated contribution from pets or stray animals.

5 Legal Authorities

This section includes a review of the existing legal authorities, including the regulations applicable to reducing bacteria.

Because CNRMA is not a municipality, it does not have the authority to issue ordinances; however, CNRMA does have authority over its tenants through their host-tenant agreements. In addition, all development and redevelopment inside the installation and annex boundaries must meet local, state, and Federal requirements for erosion and sediment control and stormwater management. This includes, but is not limited to, the Virginia Erosion and Sediment Control Program Regulations, Virginia Pollutant Discharge Elimination System Permit, the Navy Low Impact Development (LID) policy, and Energy Independence and Security Act (EISA) Section 438.

Also, CNRMA's MS4 Permit under the NPDES program has specific requirements regarding the implementation of different MCMs to reduce pollutants (including bacteria) from entering the storm sewer system. For example, MCM #3 addresses illicit discharge detection and elimination, which includes having written procedures to detect, identify, and address unauthorized non-stormwater discharges. See CNRMA's MS4 Program Plan under separate cover for additional information.

At this time, no new or modifications to existing policies are expected.

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6 Management Practices

This section addresses management practices that are currently being or will be implemented to reduce bacteria at Scott Center Annex. See **Appendix B** for a full list of management practices with corresponding measurable goals, metrics, and milestones, each with corresponding schedule.

6.1 Bacteria Criteria and Treatment

Bacteria Criteria

The first U.S. standards for drinking water, established in 1914, were based on coliform evaluations. Monitoring for coliform bacteria was designed to prevent outbreaks of enteric diseases, rather than to detect the presence of specific pathogens. A subset of this group, fecal coliform, is commonly used as the indicator bacteria to detect and estimate the level of contamination of water. Currently, coliform bacterial concentrations are determined using methods provided in *Standard Methods for the Examination of Water and Wastewater*.

Effective February 1, 2010, VADEQ specified an updated bacteria standard in 9 Virginia Administrative Code (VAC) 25-260-170.A:

> *Enterococci bacteria shall not exceed a monthly geometric mean of 35 CFU/100 mL in transition and saltwater…Geometric means shall be calculated using all data collected during any calendar month with a minimum of four weekly samples… If there are insufficient data to calculate monthly geometric means in transition and saltwater, no more than 10% of the total samples in the assessment period shall exceed enterococci 104 CFU/100 mL.*

Bacteria Treatment Options

Numerous practices can be implemented with the goal of achieving bacterial control. Possible treatment options are listed and briefly described below.

1. Chlorination treatment involves the injection of a chlorine solution (sodium hypochlorite) or dry powder (calcium hypochlorite) into the water to kill bacteria and germs. This treatment can introduce residual chlorine—approximately 0.3 to 0.5 milligrams (mg)/L—into the water.
2. Ozone, like chlorine, is a strong oxidant that can be injected into water to kill bacteria. Ozonation can remove bacteria quickly and efficiently, but it is not popular due to the high costs for equipment installation and system maintenance.
3. Ultraviolet (UV) lamps are effective devices to control bacteria without adding any chemicals to the water. However, UV devices are expensive, lose intensity over time, and require frequent replacement. UV treatment is not recommended for areas of high flows or areas where wildlife may introduce additional bacteria downstream of the treatment.

These practices are commonly used as disinfection treatments to remove bacteria from drinking water and treated wastewater. Because of the significant costs associated with these techniques, they are less feasible for the cost-effective treatment of bacteria in large-scale applications, like treating stormwater. Therefore, this report recommends implementing the MS4 permit and other management practices discussed in **Sections 6.2** and **6.3**.

6.2 MS4 Permit Management Techniques

Most of the naval installations in the Hampton Roads region are currently covered under the CNRMA's Consolidated Phase II MS4 permit coverage, Permit Number VAR040114. The receiving waterbodies of Paradise Creek are also covered by Phase I MS4 Permit Number VA0088668 for the stormwater drainage systems owned by the City of Portsmouth. Section II.A of the Phase II permit states that the "permittee" must develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) to protect water quality and to satisfy the appropriate water quality requirements of the CWA and the State Water Control Law.

The following sections outline bacterial control management techniques that are currently being implemented or that are proposed to be implemented as a result of requirements in CNRMA's MS4 permit. **Table 6-1** presents the current management documentation associated with CNRMA's MS4 permit. Copies of these documents and/or instructions are available in the Regional MS4 Program Plan.

Table 6-1 Management Documentation for TMDLs

MANAGEMENT CATEGORY	DOCUMENT AND/OR INSTRUCTIONS
Illicit Discharge Detection and Elimination	Commander, Navy Region (COMNAVREG) Mid-Atlantic (MIDLANT) Illegal Discharge and Dumping Instruction (Draft)
Erosion and Sediment Control	COMNAVREG MIDLANT Erosion and Sediment (E&S) Control Instruction (Draft) Standard Operating Procedures (SOPs) for capital improvements to submit to the state have been finalized
Stormwater Management	COMNAVREG MIDLANT VSMP Construction Permit Instruction (Draft)
	COMNAVREG MIDLANT Post Construction Stormwater Runoff Management Instruction (Draft) SOPs for E&S and Stormwater for capital improvements to submit to the state have been finalized
	EISA Sect 438 & the Department of Navy (DON) Low Impact Development Policy

Structural BMPs

Currently, limited data is available regarding the treatment of bacteria in structural BMPs, such as infiltration trenches, vegetated buffers, and bioretention cells. Data presented in the International Stormwater Database, conference proceeds, and elsewhere suggests variability. The available data suggests that conventional structural stormwater controls using passive treatment, including soils and vegetation, are unlikely to be able to consistently reduce bacterial concentrations in runoff to primary contact recreation standards (Urban Water Resources Research Council, 2014). The natural materials found in traditional structural BMPs are inefficient at retaining and removing bacteria. However, studies have shown favorable performance in retaining and removing bacteria through mechanisms such as natural inactivation, predation, inert filtration, sedimentation, sorption, and chemical inactivation. Additionally, design of these practices can be altered to improve the removal of bacteria.

In their Chesapeake Bay TMDL Action Plan, CNRMA outlined a plan for the implementation of numerous structural BMPs to address the POCs in the Chesapeake Bay TMDL (total nitrogen, total phosphorus, and total suspended solids). Additional details, including the functional characteristics, cost expectations, and design specifications for these structural BMPs, is provided. The content of this Local TMDL Action Plan is focused on other management options and programs at Scott Center Annex that are practical for addressing bacteria in Paradise Creek.

Public Education and Outreach Programs

The Public Education and Outreach Plan is outlined in CNRMA's MS4 Program Plan. Important tools for reducing bacterial pollution from human-based contributions (pet waste, stormwater runoff, agricultural practices, and illicit discharges) include distributing brochures and articles in the Navy's regional newspaper, "The Flagship."

A series of public education tri-fold brochures have been developed (with one needing minor updates) as part of the stormwater pollution prevention program. Applicable topics include:

- General Stormwater;
- Construction Sediment and Erosion Control – VSMP;
- Pet Waste; and
- Household Hazardous Waste.

Each brochure includes general information about the issues, guidance about what the public can do to help, contact information, and sources of additional data. The brochures are distributed during training/events/functions where members of the target audience will be present. The brochures are also on display and available in high-traffic areas at the installations covered under the MS4 permit.

Articles and/or advertisements concerning stormwater pollution prevention related to bacteria have been developed and are issued in "The Flagship" or the emailed "Plan of the Week".

Public education and outreach activities will be reviewed and updated to address wildlife, including the dangers of feeding geese and other wildlife. Providing food for geese and other wildlife encourages them to congregate onsite. Geese and other wildlife are an important source of bacterial contamination.

Public Involvement and Participation

The Public Involvement and Participation Plan is outlined in CNRMA's MS4 Program Plan. Important tools for reducing bacterial pollution from human-based contributions include marking storm drains and providing information at local activities.

The Navy will continue the storm drain marking program, which places markers on inlets to the MS4, to remind the public that materials that flow into the storm drain end up in local waterways. These storm drain markers were developed specifically for the Navy to include the Navy logo and are fabricated in metal for durability.

The Navy continues to participate in at least four local activities annually across the permitted naval installations. Every effort will be made to hold the four activities at four different installations (including Scott Center Annex). Outreach information is distributed at these events. When a booth is involved at an event, a banner with the Navy's stormwater pollution prevention logo is used.

Illicit Discharge and Detection Program

Draft instructions related to illegal dumping and discharges have been developed by CNRMA. The draft instructions require that periodic inspections occur to detect illicit connections and discharges. It is anticipated that these instructions will be converted to SOPs. The procedures will be updated to include the following details pertaining to dry weather field screening methodologies for outfalls:

- A prioritized schedule based on the age of infrastructure, land use, historical data, dumping, or cross connections;
- A requirement that a minimum of 50 outfalls at the eight installations covered by the Regional Program Plan will be screened annually;
- Methodologies to collect general information;
- Illicit discharges suspected of being sanitary sewage or significantly contaminated will be investigated first, which may delay investigations of other illicit discharges;
- Methodologies to determine the source of all illicit discharges;
- Mechanisms to eliminate the identified sources of illicit discharges;
- Methods for conducting follow-up investigations; and
- A mechanism to track all investigations.

These dry weather screening methodologies will identify illegally connected sanitary sewer systems or leaks from these systems or illicit dumping. As a result, any bacterial contamination resulting from illicit discharges will be identified and corrected.

A complete screening of the facility occurred in September 2014, and the results are documented in an Illicit Discharge Summary Report for Scott Center Annex. The screening identified a need for storm drain maintenance throughout the installation. Many inlets and manholes were noted to contain standing water, sediment, trash, debris, and/or vegetation. The screening also identified the following potential concerns and dry weather flows:

- Dumpster on southwest corner of parking lot outside of Building 1487 is directly upstream of nearby storm drain inlets. The potential for leachate entering the nearby inlet will be reduced if this dumpster is relocated farther away from the inlet or separated from the inlet by a pervious surface. See Trash Management BMP in **Appendix B** for more information.
- Air conditioner on northeast corner of Building 350 is contributing condensate to nearby storm drain inlets. Air conditioner condensate is considered an allowable discharge. This flow has a low potential for bacteria and is a relatively insignificant bacterial source, compared to direct loads including wildlife contributions.

Note that these dry weather flows are not from sanitary sources. In addition, the Navy has implemented the *Hampton Roads Naval Installation Spill Reporting and Documentation Standard Operating Procedures*, which outline reporting and documentation actions that must be taken in response to a spill/release of oil, sewage, or hazardous or non-hazardous substance (solid or liquid).

During construction activities, temporary portable toilets may be brought onsite. Portable toilets should be hydraulically distant from storm drains or placed on permeable surfaces. As discussed in **Section 4.2**, human waste can be a significant source for bacterial contamination.

A hotline phone number, an email address, and/or a website link for public reporting of illicit discharges will be implemented. Currently, the NAVFAC Mid-Atlantic Environmental Administrator's telephone number is listed on the previously described outreach brochures. When a report is received, an inspection will be conducted in response to the comment. If an illicit discharge is found, a follow-up investigation will be completed in accordance with the written procedures.

<u>Construction Site Runoff Control</u>

Since bacteria can cling to small sediments, erosion prevention measures should also serve to reduce bacterial loading. Erosion and sedimentation control measures may indirectly reduce the bacterial loading to waterbodies. Virginia Department of Conservation and Recreation's (VADCR's) State Erosion and Sediment Control (ESC) Program was created to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources.

CNRMA has two sets of draft instructions related to construction site runoff control. The first, entitled *COMNAVREG MIDLANT Virginia Stormwater Management Program Construction Permit Instruction*, establishes a procedure for obtaining coverage under the VSMP General Permit for Stormwater Discharges from Construction Activities at installations and annexes and applies to projects with a disturbance of one acre or greater. The second set of instructions, entitled *COMNAVREG MIDLANT Erosion and Sediment Control Instruction*, establishes minimum standards for the effective control of soil erosion, sediment deposition, and non-

agricultural runoff from land-disturbing activities at installations. It applies to projects with a disturbance of 10,000 square feet or greater.

CNRMA currently follows the regulations under the Virginia Erosion and Sediment Control Program (VESCP), and regulated land-disturbing activities will not be authorized to begin until an erosion and sediment control plan, or an agreement in lieu of a plan, is approved.

Training

Training continues to be conducted for both Military Base Employees and NAVFAC Construction Contractors using the web-based Environmental Compliance Assessment, Training and Tracking System (ECATTS). Several stormwater training modules have been developed, including Principals of Erosion and Sedimentation, Erosion and Sediment Control Practices, Vegetative Stabilization, Stormwater Runoff, Stormwater BMPs, Construction Site Pollution Prevention, and Sediment and Stormwater Plans. The training modules are reviewed annually and updated as needed.

Good Housekeeping Policies and Procedures

CNRMA has a comprehensive list of Good Housekeeping Policies and Procedures for Municipal Operations as part of their MS4 Program Plan, including:

- Daily Operations Procedures (vehicle and associated equipment washing; vehicle fueling; storage areas; vehicle and equipment storage areas; recycle facilities and storage; road, street, and parking lot maintenance; landscaping; construction activities; and storm drain/utility line maintenance)
- Equipment Maintenance Procedures (vehicle maintenance and storage)
- Pesticide, Herbicide, and Fertilizer Procedures (application; storage; transport; disposal; and nutrient management plans)
- Miscellaneous (inspections; general spill and discharge response procedures; general dewatering; training; and contractor requirements/oversight)

The importance of providing covers over dumpsters and/or ensuring that the lids are closed and the containers have watertight lids is emphasized in these policies and procedures. Dumpster stickers are recommended to be installed on all dumpsters owned and operated by NAVFAC informing users to keep the lid closed. Dumpsters located hydraulically near to the storm drain network should be investigated to determine if a more desirable location is feasible. More desirable locations are farther away from the nearest storm drain or are separated from the storm drain by a pervious surface. See **Appendix C** for a field photo log that includes the dumpsters at Scott Center Annex.

6.3 Other Management Techniques

Other miscellaneous management techniques for bacteria, described below, address sampling programs and wildlife controls.

Sampling Programs

Sampling of outfalls to assess bacterial loading reduction was considered but rejected due to the magnitude of uncontrollable sources of bacteria and the difficulty in distinguishing the loading from controllable and uncontrollable sources of bacteria. Instead, as outlined in the VADEQ Draft Local TMDL Action Plan Guidance found in **Appendix A**, "Evaluation metrics other than monitoring may be used to determine compliance with the TMDL(s)." These measureable goals, metrics, and milestones are listed in **Appendix B**.

Wildlife Contribution Controls

As described in **Section 4.1**, wildlife is a significant contributor to bacterial contamination at Scott Center Annex.

To attain water quality requirements at the installation, it is imperative to minimize the bird populations. In accordance with the TMDL Report, "However, neither the Commonwealth of Virginia, nor EPA are proposing the elimination of wildlife to allow for the attainment of water quality standards."

Geese and water fowl can be passively discouraged from congregating at the facility by changing the habitat so it does not appeal to them. All attractive anthropogenic sources, including large mowed areas, cleared stream buffers, and Kentucky bluegrass plantings, should be removed to the maximum extent possible.

Geese congregate on lawns adjacent to waterways where food, water, and open sight lines are abundant. Removing goose food sources encourages the animals to reside offsite. Geese are attracted to young grass shoots found on lawns. Allowing grasses to grow taller will make the grass less attractive.

Goose habitat can be reduced through buffer restoration along the banks of adjacent waterways. A minimum of 12-inch vegetative cover, with some shrubs and taller plantings, is recommended. This type of landscape provides habitat for predators of geese and will encourage the geese to reside offsite.

A minimum grass height of 12 inches adjacent to waterways and in areas where geese congregate can act as a deterrent. Landscaping measures to plant shrubs along the waterline and/or to allow the current vegetation to grow along the top of banks also discourage geese. These measures are consistent with the findings in the Integrated Natural Resources Management Plan (INRMP) for the nearby NAS Oceana installation, which stated that installation and NAVFAC offices should coordinate "to identify additional areas to enhance or establish riparian buffers. Establish reduced-mowing and no-mowing zones along selected ditches and wetlands."

The plan will be continuously reviewed and updated as needed. Future plan additions, if needed, may include installation of a perimeter fence of sufficient height to deter geese from transitioning to land. The use of mesh netting along banks may discourage geese from congregating on land. Replanting Kentucky bluegrass with tall fescue replaces a preferred food source with a less preferred food source. Taller trees located along the river banks stop the geese from flying onto land. The priorities for tree placement should be around lawn areas, including ball fields and mowed stormwater basins. Planting more trees would also align with findings in the NAS Oceana INRMP, which states that the area "would benefit from an increase in the number and variety of trees and shrubs." Further, the report identified a joint Earth Day-Arbor Day as a good opportunity to plant these trees.

Although less recommended, goose populations can be actively reduced through the use of hazing methods to scare them offsite. The Natural Resources Conservation Law Enforcement Officer and other personnel may use vehicles, sirens, and/or pyrotechnics. Scarecrows in the form of fox or dog silhouettes can also deter geese from congregating. Scarecrows must be relocated on a regular basis to maintain effectiveness.

Due to higher cost, it is not recommended to contract out goose management to a dog deterrent company, a pest services company, or the United States Department of Agriculture (USDA).

7 Methods to Assess the TMDL Action Plan

This section describes the methods to assess this TMDL Action Plan for its effectiveness in reducing the pollutants identified in the TMDL Report. Outfall screening and annual review of the Local TMDL Action Plan are discussed below.

7.1 Outfall Screening

Sampling of outfalls to assess bacterial loading reduction was considered but rejected, due to the magnitude of uncontrollable sources of bacteria and the difficulty in distinguishing the loading from controllable and uncontrollable sources of bacteria. Instead, as outlined in the VADEQ Draft Local TMDL Action Plan Guidance found in **Appendix A**, "Evaluation metrics other than monitoring may be used to determine compliance with the TMDL(s)." These measureable goals, metrics, and milestones are listed in **Appendix B**.

7.2 Annual Review of Action Plan

A review of this Local TMDL Action Plan will be conducted annually. The review will evaluate the following aspects of the plan:

- Compliance;
- Appropriateness of the identified BMPs/management techniques; and
- Progress toward achieving the measurable goals.

Following this review, the Plan will be updated as needed, including any changes to BMPs/management techniques, to ensure Scott Center Annex is addressing bacterial reduction appropriately.

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APPENDIX A

VADEQ Local TMDL Action Plan Guidance

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COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

Subject: Guidance Memo No. XXX,

To:

From: Melanie D. Davenport, Director

Date: April XX, 2015

Copies:

Summary: This guidance document provides staff and permittees with background information and procedures for developing and implementing local TMDL Action Plans as required in the Special Condition of the 2013-2018 General Permit for Discharges of Stormwater from Small (Phase II) MS4s, the reissued Phase I MS4 permits, and any Individual Phase II permits that are issued.

Contact Information:

Disclaimer:
This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, establishment of a wasteload allocation, or establishment of a permit limit. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

DEFINTIONS – For the purposes of this guidance document, the following definitions shall apply:

Best Management Practices ("BMPs") – Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, including both structural and nonstructural practices to prevent or reduce the pollution of surface waters and groundwater systems.

Load Allocation ("LA") - The portion of the loading capacity attributed to (1) the existing nonpoint sources of pollution and (2) natural background sources.

Newly Designated MS4 permittees – MS4 permittees receiving initial permit coverage under the July 1, 2013 General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems.

Pollutant(s) of Concern ("POC") – The pollutant(s) impairing a water body for which one or more TMDL(s) has been developed.

TMDL Implementation Plan – A document guided by an approved TMDL(s) that at a minimum provides details of the corrective actions to address the load allocation of one or more TMDLs. The plan includes measureable goals needed to achieve pollutant(s) source load reductions; outlines a schedule to attain water quality standards along with costs, benefits, and environmental impacts to reduce pollutant(s) and remediate impaired waterbodies.

Total Maximum Daily Load ("TMDL") – The sum of the individual wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, natural background loading and a margin of safety.

Wasteload Allocation ("WLA") - The portion of a receiving waters' pollutant loading capacity that is allocated to existing or future point sources of pollution, such as an MS4.

For terms not defined above, please refer to the 9VAC25-890-1, 9VAC25-870-10, or 9VAC25-31-10 of the Virginia Administrative Code.

BACKGROUND

Since 1998 DEQ has developed Total Maximum Daily Loads ("TMDL"), with public input, to restore and maintain the water quality of impaired waterbodies. Section 303(d) of the Clean Water Act requires that wasteload allocations be implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. As point sources, MS4s are assigned individual or aggregate WLAs in TMDLs for receiving streams or watersheds to which the MS4 discharges. Municipalities may also be assigned an LA for those areas outside of the regulated MS4 Service Area that are sources of the POC. TMDLs may quantify both LA and WLA loads from the Census designated urbanized area. Permittees are not required to incorporate approaches for addressing those LAs into their Action Plans. Load allocations are often addressed through TMDL Implementation Plans (IPs) which characterize the suite of corrective actions needed to reduce nonpoint source pollutant loads. This guidance document only addresses the requirements to address WLAs to meet the special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL" ("Special Condition for Local TMDLs").

The Special Condition for Local TMDLs in the 2013 General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (VAR04) ("GP") and the eleven Phase I Individual MS4 permits, as they are reissued, require permittees to develop Action Plans that address all POC(s) for which the permittee has been assigned a WLA under an approved TMDL. The Local TMDL Action Plans should identify BMPs and other management strategies that the permittee will implement to meet the TMDL WLA and achieve compliance with the Special Condition. Local TMDL Action Plans can be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLA(s). Implementation of the TMDL Action Plans is tracked via the permittee's Annual Reports.

PERMIT REQUIREMENTS

With the exception of newly designated permittees, the Phase II Small MS4 GP requires that:

1. Action Plans for local TMDLs approved before July 1, 2008 must be completed by July 1, 2015 and submitted with the Annual Report due October 1, 2015.

2. Action Plans for local TMDLs approved between July 1, 2008 and June 30, 2013 must be completed by July 1, 2016 and submitted with the annual report due October 1, 2016.

Newly designated MS4 permittees should have included a schedule for developing local TMDL Action Plans as part of the MS4 Program Plan and registration statement submitted to obtain initial coverage under the 2013 GP and should follow that approved schedule. Likewise, Phase I permittees must follow the schedule in their individual permit. In accordance with Section I.B.7 of the GP, permittees must include an estimated date by which they will achieve the assigned WLAs as part of the reapplication package.

The Phase II Small MS4 local TMDL Action Plans and updates become effective and enforceable 90 days after the date received by the Department unless specifically denied in writing. DEQ may request additional information in the review process, as needed. In the Action Plan permittees are responsible for establishing schedules and milestones to meet the assigned WLA(s). The approved Action Plan schedule will supersede any implied or explicit completion date or schedule provided in the local TMDL or Implementation Plan. Permittees are strongly encouraged to work closely with the DEQ regional TMDL and MS4 staff throughout the development of the Action Plan(s).

APPLICABLE WLAs

Prior to Action Plan development, permittees will need to determine the local TMDLs in which the MS4 has been assigned a WLA. Permittees may search for approved local TMDLs by city and/or county on the TMDL Reports page of DEQ's website. Permittees may verify whether they are subject to a local TMDL by using the Virginia Environmental Geographic Information System (VEGIS) to determine the waterbodies to which the MS4 discharges. This information should be refined and/or corrected as the permittee completes the mapping efforts required under GP Section II.B.3. General instructions for using VEGIS are located on the Department's VEGIS website.

Detailed information regarding the portion of each watershed that drains to an MS4 system may not be available during local TMDL development and WLA assignment, so a conservative, land-use based approach is often used. It is important to note that the actual areas within a local TMDL watershed that are subject to a MS4 WLA are those areas that are specifically regulated under the MS4 permit. TMDL studies do not attempt or intend to define the MS4 regulatory area. Rather, the areas used to develop loadings associated with the MS4 permits in local TMDLs (e.g. impervious developed or Census designated urbanized areas) are only surrogates for establishing WLAs and estimating a reasonable pollutant loading that is expected to be contributed by these permitted sources.

The Department encourages permittees to participate in both the local TMDL and Implementation Plan development processes, which may provide insight into BMP applicability and strategies to meet water quality standards. If an Implementation Plan has been developed for a TMDL, permittees may examine the Implementation Plan for appropriate non-point source BMPs for the POC and other strategies for reducing pollutants. While an Implementation Plan may provide strategies for permittees to consider, permittees are not required to follow the strategies listed in an Implementation Plan to address their WLA(s).

Aggregate WLAs

In some circumstances multiple permittees may be assigned one WLA, or an aggregate WLA, for their discharges to the impaired waterbody. Aggregate WLAs are intended to address a watershed wide pollutant without discrete MS4 boundaries. Aggregated WLAs may be developed when permittees are closely interconnected, there is not sufficient information or detail to disaggregate the WLA, or the scale of the TMDL is too great to delineate individual WLAs. MS4 permittees are encouraged to work together to create a collaborative watershed strategy to meet these WLAs.

Forthcoming WLAs for Existing TMDLs

Newly designated Phase II and existing Phase II MS4 permittees with expanded urbanized areas as the result of the 2010 Census may drain to impaired waters for which a local TMDL has been developed. These permittees may not currently have a WLA assigned to them under these TMDLs.

Existing Permittees with Expanded Area
Existing permittees who were previously assigned a WLA and whose urbanized area expanded as a result of the 2010 Census are required to meet the WLA(s) assigned prior to the identification of an expanded urbanized area. As WLAs are revised and/or finalized by DEQ to incorporate the expanded urbanized area, permittees will be required to address those POC reductions in future permit cycles.

New permittees
New permittees that discharge to impaired waterbodies with one or more approved local TMDL(s) may not have been assigned WLA(s) yet. The Department recommends permittees begin planning for future WLAs by considering land use based reductions as discussed above.

ACTION PLAN CONTENT

The proposed strategies and the end date by which permittees will demonstrate compliance with their assigned WLA(s) will be determined by the permittee; however, the Action Plan should also include justification for these choices. Permittees should address the following in their Action Plan(s):

1. The name(s) of the Final TMDL report(s);
2. The pollutant(s) causing the impairment(s);
3. The WLA(s) assigned to the MS4 as aggregate or individual WLAs;
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;
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;
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;
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;
8. A schedule of interim milestones and implementation of the items in 5, 6, and 7;
9. Methods to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs; and
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).

Approaches to meeting WLAs

Action Plans should be developed in accordance with information and data in the TMDL. However, it is not necessary for a permittee to employ the same models and tools used to develop the TMDL in development and evaluation of the Action Plan. For example, watershed-based TMDLs often use Hydrological Simulation Program-Fortran (HSPF) to model the hydrology and pollutant fate and transport. The permittee may use other tools and models that may be better suited to their specific circumstance to develop a control strategy and evaluate alternatives. Permittees should consult with DEQ regional TMDL staff if they have questions regarding the methodology and data used in development of the MS4 TMDL WLAs.

Permittees may employ both structural and non-structural BMPs to address WLAs. There are a number of other resources permittees may reference to identify BMPs that may be implemented to address local WLAs. Reports are available through the Center for Watershed Protection and the Water Environment Research Foundation (WERF) that provide information on BMPs that can be used to address non-nutrient TMDLs. Existing Implementation Plans may also be valuable resources for permittees for information concerning relevant BMPs, BMP reduction efficiencies, cost and benefits, and strategies to address POC reductions necessary to meet the WLAs. Demonstration of adequate progress may be achieved through tracking, monitoring, and/or reporting of BMP implementation, and/or other strategies as approved by DEQ as part of the TMDL Action Plan.

Nutrient and Sediment TMDLs
Permittees may refer to the Chesapeake Bay TMDL Action Plan Guidance (GM14-2012) for strategies and information on how to calculate reductions from BMPs in watersheds with local nutrient and sediment TMDLs. It should be noted that the Action Plans for local TMDLs **do not** need to follow the requirements for the Chesapeake Bay TMDL Action Plan.

Pathogenic Pollutant TMDLs
For pathogenic pollutants (i.e. Enterococci, fecal coliform, and E. coli), any illicit discharges must be addressed by the permittee regardless of the assignment of a WLA. Existing programmatic practices, ordinances, and outreach currently in place under the MS4 program may be sufficient to address anthropogenic sources of bacteria. For these TMDLs, permittees are encouraged to consider practices such as public outreach and education to influence behaviors. This may include signage and supplies to encourage the collection and removal of pet waste at areas of high concentration, such as dog parks; residential outreach through fliers or pamphlets included with utility bills; and other education programs. Permittees may wish to reference the Environmental and Water Resource Institute's 2014 Pathogens in Urban Stormwater Report for techniques that can be used to address these TMDLs.

Polychlorinated Biphenyl (PCB) TMDLs
The recommended method to address these contaminants is through a pollutant minimization approach. Permittees may consider tracing back through the system and identifying past and current high risk land uses, followed by confirmation monitoring of soil and/or stormwater runoff when appropriate to address PCB sources. Upon discovery of a source of PCBs, a collaborative effort with DEQ may be necessary to address the site.

COMPLIANCE

To demonstrate compliance with the Special Condition for Local TMDLs, permittees must submit TMDL Action Plans that include all of the items listed in Section I.B in accordance with the schedule described in the permit. Permittees are responsible for meeting the schedule and milestones set in the approved Action Plan. If a permittee determines that elements of the approved Action Plan are insufficient to meet the WLA, a modification request should be submitted to DEQ as soon as the permittee determines that the plan needs to be updated. Modifications to the approved Action Plan may be made in accordance with GP Section II.F.1. The Department may also request that the Action Plan be modified to include

additional and/or alternative strategies to address the POC. The Department encourages permittees subject to aggregate WLA(s) to take a collaborative approach to addressing those WLAs.

The permittee must make adequate progress in meeting the WLA in accordance with the approved Action Plan(s). Permittees are encouraged to discuss any concerns regarding demonstration of adequate progress with DEQ's MS4 permitting staff.

MODIFICATIONS

Permittees may make modifications to the approved TMDL Action Plan(s) as new opportunities become available or proposed projects/strategies are deemed infeasible or ineffective. TMDL Action Plan modification may be requested by the permittee at any time during the implementation of the Action Plan(s) by contacting the DEQ regional MS4 staff.

PRIORITIZATION

MS4 permittees may be assigned multiple TMDL WLAs. Permittees may prioritize TMDL Action Plan implementation using best professional judgment, including knowledge of the local watersheds, the local infrastructure, and insight into local water quality planning efforts to determine the number and types of BMPs that will be necessary to meet the requirements of the local TMDLs. The permittee should include as part of the Action Plan a section that establishes the justification for the prioritization and the proposed implementation schedule. If appropriate, permittees may address multiple TMDLs within a single Action Plan, although all applicable TMDL WLA's must be addressed in accordance with the schedule described above.

APPENDIX B

Measurable Goals, Metrics, and Milestones

Management Practices
N40080-11-D-0499; WE38
Project Title: Scott Center Annex Local TMDL Action Plan

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
1	Illicit Discharge and Detection	Develop and implement written procedures to detect, identify, and eliminate illicit discharges in accordance with Section II of 4VAC50-60-1240.	Finalize draft procedures to detect, identify and eliminate illicit discharges. These procedures will likely be identified as Standard Operating Procedures (SOP). Implement these final procedures.	Document the number of outfalls screened, the screening results, and other pertinent details. Document each investigation into a suspected illicit discharge. All reporting shall be in accordance with Section II of 4VAC50-60-1240.	Phase II Water Program Media Manager	By December 2016, finalize the draft procedures to detect, identify and eliminate illicit discharges. Begin implementation of these procedures by July 2017.
2	Wildlife Controls	Enact Wildlife Control Program to control wildlife populations, if necessary.	Approve program to control wildlife populations at installation. Determine if changes to the program are required.	Document the findings regarding the review of the wildlife control program. Identify any required changes.	Phase II Water Program Media Manager	By December 2016, determine if any changes are required to the wildlife control program. By July 2017, update and implement the program.
3	Evaluation and Assessment	Annually evaluate and assess these management practices to evaluate their effectiveness and ensure their applicability.	Conduct annual inspections of the sites to assess compliance with dumpster requirements.	Document the number of dumpsters with open lids.	Phase II Water Program Media Manager	By July 2018, assess the effectiveness of the application of the dumpster stickers.
4	Trash Management	Protect storm drains from illicit discharges and dumpster leachate.	Analyze illicit discharge reports to identify storm drains with potential to receive trash or runoff with bacteria loading potential including Inlet 46. Install dumpster stickers to all dumpsters owned and operated by NAVFAC.	Retain a list of high-priority storm drains and a copy of the illicit discharge summary report. Retain list of NAVFAC owned and operated dumpsters.	Phase II Water Program Media Manager	By December 2016 determine bacteria potential at drainage structures receiving dry weather flows. By July 2017, identify NAVFAC owned dumpsters and install stickers. By July 2018, implement plan to separate trash facilities from storm drains and to remove any bacteria-laden dry weather flows from the drainage network.
5	ECATTS Training	Conduct training through the ECATTS or the web-based Environmental Compliance Assessment, Training, and Tracking System. Ensure that bacterial contamination is discussed.	Annually review and update as needed the ECATTS stormwater training modules.	Record and report the number of people trained on each stormwater training module presented through ECATTS.	Phase II Water Program Media Manager and Installation Water Program Media Manager	Conduct and evaluate training annually.
6	Stormwater Education Brochures	Distribute the tri-fold brochures for general stormwater, construction sediment and erosion control, and pet waste. Develop brochure for feeding wildlife.	On a semi-annual basis distribute stormwater educational brochures and/or place brochures at highly frequented areas like food courts.	Retain a copy of each brochure and record the date, location, and number of brochures distributed.	Phase II Water Program Media Manager	Distribute brochures at least semi-annually and/or place at highly frequented areas.

Mgmt Practice Number	Management Practice Name	Management Practice Description	Measurable Goals	Metric	Responsible Party	Schedule (including interim milestones)
7	Newspaper Articles and Ads	Place articles and/or ads related to bacterial contamination in Scott Center Annex's newspaper and/or the Plan of the Week emails.	On a semi-annual basis, include at least one article/ad in Scott Center Annex publications addressing bacterial contamination in stormwater.	Retain a copy of all articles/ads published and record the dates of publication.	Phase II Water Program Media Manager	Public article/ad semi-annually.
8	External Website	Maintain a website that the general public can access that includes information about stormwater education.	Maintain the website and update content as needed.	Document the number of hits that the website has per year and the average amount of time each user spends on the website.	Phase II Water Program Media Manager	By December 2016, develop a website that provides information regarding stormwater pollution. Review and update the site at least annually.
9	Storm Drain Marking Program	Place storm drain markers on inlets to the MS4 reminding the public that flows that drain into the system go directly to streams and waterways.	Evaluate and target areas for storm drain marking efforts. Conduct annual storm drain marking efforts.	Record location, date, number of storm drains marked, and if applicable the number of volunteer participants for each storm drain marking event	Phase II Water Program Media Manager	By July 2017, determine which inlets at NSA Portsmouth still need markers. In each following year, mark at least 20% of the remaining inlets.
10	Local Activity Participation	Participate during the Annual Clean the Bay Day and Earth Day Events held at Scott Center Annex. Outreach information will be distributed during these events.	Participate in the Clean the Bay Day and Earth Day Events.	For Clean the Bay Day, record the number of volunteers utilized and an estimate of the volume of litter collected. For both events, document the amount of outreach materials distributed.	Phase II Water Program Media Manager	Participate in the Clean the Bay Day and Earth Day Events annually.
11	Promote, Publicize, and Facilitate Public Reporting	Use reporting mechanisms such as hotlines, email, and website links to allow the public to report suspected illicit discharges.	Generate a hotline phone number, an email address, and/or a website link for public reporting of suspected illicit discharges. Publicize this information through public outreach.	Record the details (date, problem location, etc.) and number of the reports received using each reporting mechanism. Document follow-up actions.	Phase II Water Program Media Manager	By December 2016, have a hotline phone number, an email address, and/or a website link available. By July 2017, publicize this information through public outreach.
12	Approval of Erosion and Sediment Control Plan	Ensure that all Erosion and Sediment Control Plans are approved prior to commencement of the land disturbing activity.	Ensure that all regulated project have Erosion and Sediment Control Plans approved.	Retain copies of all approved plans. Document the number of plans approved annually.	Phase II Water Program Media Manager	Continuously ensure that erosion and sediment control plans are submitted and approved.
13	VSMP Regulation and Construction Permit Instruction	Maintain and enforce the regulations under the VSMP and the VSMP Construction Permit Instruction.	Convert the VSMP Construction Permit Instruction to an SOP and enforce the instruction accordingly. Enforce all regulations under the VSMP.	Retain copies of all approved permits, inspection procedures, and enforcement actions. Document the number each item.	Phase II Water Program Media Manager	Continuously ensure that the regulations under the VSMP and Construction Permit Instruction are being followed.
14	Structural Best Management Practices (BMPs)	Install structural BMPs like bioretention areas, infiltration trenches, wet ponds, etc.	Install structural BMPs as required by the MS4 permit and the Chesapeake Bay TMDL.	Document the number of BMPs installed.	Phase II Water Program Media Manager	The schedule will depend on the number of structural BMPs that need to be installed to address the Chesapeake Bay TMDL.
15	Roof Drain Disconnection	Develop plan to disconnect roof drains directly connected to the storm drain network over pervious surfaces.	In permit year 1, identify the directly connected roof drains. In permit years 2 through 4, determine potential bacteria loading for these roof drains.	Retain a list of directly connected roof drains. Document number of birds spotted on rooftop.	Phase II Water Program Media Manager	By July 2018, implement plan to disconnect roof drains with high bacteria load potential.

APPENDIX C

Field Photo Log

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Michael Baker
INTERNATIONAL

MEMORANDUM

TO:	Dialis Figueroa-Arriaga, NAVFAC Mid-Atlantic Angie Gent, NAVFAC Midlant Dave Cotnoir, NAVFAC Midlant
FROM:	Christine Yott, Michael Baker James Kelly, Michael Baker Elizabeth Krousel, Michael Baker Julia Fine, Michael Baker
DATE:	April 8, 2016
PROJECT NAME:	2015 Non-Chesapeake Bay TMDL Action Plans for Hampton Roads Installations
CONTRACT & DO #:	N62470-10-D-3000; Delivery Order # WE38
BAKER PROJECT #:	148899
SUBJECT:	**Summary of Research Additional Field Work for Scott Center Annex and Portsmouth Annex Local Total Maximum Daily Load (TMDL) Action Plans**

Norfolk Naval Shipyard Scott Center Annex (Scott Center Annex) and Naval Support Activity (NSA) Hampton Roads Portsmouth Annex (Portsmouth Annex) operate under Navy Consolidated MS4 Permit No. VAR040114 (MS4 Permit). These installations have been identified as a potential source of pollution subject to regulation under the Special Condition of Local TMDLs section of the MS4 Permit. The Special Condition for Local TMDLs requires permittees to develop Action Plans that address all pollutants of concern for which the permittee has been assigned a waste load allocation (WLA) under an approved TMDL. Scott Center Annex and Portsmouth Annex have been assigned WLAs for *enterococci* associated their receiving streams.

Michael Baker International, Inc. (Michael Baker) conducted two field visits to Scott Center Annex and Portsmouth Annex to investigate potential sources of bacteria. The wildlife at each installation was investigated by looking for areas where geese and other birds congregate near water sources, food sources, and on rooftops. Michael Baker staff also investigated areas containing trash cans and dumpsters and verified that the lids were closed and covered as well as any illicit discharge survey findings. Sources of non-stormwater runoff that could aid in transport of bacteria as well as mobile sources, including porta-potties or recreational vehicle parking areas, were also investigated.

During the first visit on January 21, 2016, Michael Baker staff noted and documented via photos any wildlife present at both Scott Center Annex and Portsmouth Annex. Geese were observed at Scott Center Annex in the vicinity of Building 1717 and seagulls were observed in the parking lot of Building 1487. Also, sea gulls were observed on the shore at Portsmouth Annex.

The second field visit was conducted on April 1, 2016 in response to a comment received during the March 24 review meeting. During this visit, Michael Baker identified dumpster lids that had been left open; however, no illicit sanitary flow connections were found at either installation.

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **1**	
Building/Area Location **West of Building 1717**	
Comments **Wildlife: Goose**	
Photograph **2**	
Building/Area Location **West of Building 1717**	
Comments **Wildlife: Geese gathered in field adjacent to retention pond**	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **3**	
Building/Area Location **South of Building 1717**	
Comments **Wildlife: Geese in athletic field**	
Photograph **4**	
Building/Area Location **Parking lot east of Building 1487**	
Comments **Wildlife: Seagulls in parking lot**	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **5**	
Dumpster ID **8150**	
Building No. **1584**	
Comments **Dorado Label; Closed**	
Photograph **6**	
Dumpster ID **610**	
Building No. **Child Development Center (CDC)**	
Comments **Dorado Label; Closed**	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **7**	
Dumpster ID **8086 & 8015**	
Building No. **1530**	
Comments **Dorado Label; Closed**	
Photograph **8**	
Dumpster ID **8102 & 8031**	
Building No. **1579 and Picnic Shelter 2**	
Comments **Dorado Label; Closed**	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **9**	
Dumpster ID **8111**	
Building No. **Picnic Shelter 2**	
Comments **Dorado Label; Closed**	
Photograph **10**	
Dumpster ID **8035**	
Building No. **Picnic Shelter 3**	
Comments **Dorado Label; Closed**	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **11**	
Dumpster ID **8106**	
Building No. **1487**	
Comments **Dorado Label; Open**	
Photograph **12**	
Dumpster ID **8120**	
Building No. **1437**	
Comments **Dorado Label; Closed**	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph 13	
Dumpster ID 8009	
Building No. 1489 NEX	
Comments Dorado Label; Open	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph 14	
Dumpster ID Unknown	
Building No. Behind NEX	
Comments Photo taken previously for the Stormwater Management Opportunities Site Assessments under N62470-10-D-3000 ID 54212	

PHOTOGRAPHIC RECORD	
Scott Center Annex – Local TMDL Action Plan 2016 Field Photo Log	
Photograph **15**	
Dumpster ID **Unknown**	
Building No. **Behind NEX**	
Comments **Photo taken previously for the Stormwater Management Opportunities Site Assessments under N62470-10-D-3000 ID 54212**	