

Appendix E. Department of Defense Input: Maryland Phase III Watershed Implementation Plan

1.0

Location and Description of the Federal Land or Facility

1.1 Facility Name

The following Department of Defense (DoD) installations are located within the jurisdictional boundaries of Maryland in the Chesapeake Bay Watershed:

- 99th RSC (MD)
- Aberdeen Proving Ground
- Adelphi Laboratory Center¹
- Army Reserve National Guard (MD)
- Fort George G. Meade
- Fort Detrick²
- Joint Base Andrews³
- NAS Patuxent River⁴
- Naval Research Laboratory⁵
- NSA Annapolis⁶
- NSA Bethesda
- NSA Washington - NSF Carderock
- NSA Washington – Suitland
- NSA South Potomac - Indian Head

¹ Includes Blossom Point Research Facility and Naval Research Laboratory (NRL) at Blossom Point

² Includes Forest Glen Annex

³ Includes Brandywine Receiver/Defense Reutilization and Marketing Office and Davidsonville Transmitter Sites

⁴ Includes Naval Recreation Center Solomons, Webster Field Annex, and Bloodsworth Island Range

⁵ Includes Chesapeake Bay Detachment and Pomonkey, Blossom Point Training Facility located on Adelphi Laboratory Center

⁶ Includes North Severn, the U.S. Naval Academy, Dairy Farm, Brandywine Defense Reutilization and Marketing Office, and the Davidsonville Receiver Site

1.2 Property Boundaries

GIS property boundary information for each of the installations can be found in the Chesapeake Assessment and Scenario Tool (CAST) located at the following link under the Spatial Data heading: <http://cast.chesapeakebay.net/Documentation/BMPsModelsGeography>.

1.3 Land Cover

The land cover on DoD installations within the Chesapeake Bay watershed is comprised of developed and natural acres. Table E-1 summarizes the acres of various load source groups extracted from CAST for DoD lands. Although CAST does not include the acres of active construction sites on DoD installations, these activities are part of the land cover condition. Once the construction activities are completed, both the developed and natural load source groups will be updated based on the land use changes. As of December 2018, there were 103 active construction permits on DoD installations. There are six point sources (i.e. wastewater treatment plants) owned and operated by DoD installations in Maryland. In addition, there are three DoD facilities with land that is leased to farmers or ranchers for agricultural use. NAS Patuxent River out-leases approximately 462 crop acres; NAS Patuxent River-Webster Field out-leases 136 crop acres; and the NSA Annapolis Dairy Farm out-leases 857 pasture and crop acres.

Table E-1: DoD Land Cover Acreages per Load Source Group: CAST Compare Scenarios between 2010 No Action and 2017 Progress V9		
Jurisdiction: Maryland	2010 Partnership No Action Scenario	2017 Partnership Progress Scenario V9
Developed	21,567.4	22,002.5
<u>Developed Impervious</u>	<u>8,054.4</u>	<u>8,248.0</u>
CSS Buildings and Other	2.6	2.6
CSS Roads	0.0	0.0
CSS Tree Canopy over Impervious	0.1	0.1
MS4 Buildings and Other	18.1	18.4
MS4 Roads	81.9	82.3
MS4 Tree Canopy over Impervious	5.9	6.0
Non-Regulated Buildings and Other	5,855.9	5,993.3
Non-Regulated Roads	1,694.2	1,736.0
Non-Regulated Tree Canopy over Impervious	395.7	409.3
<u>Developed Pervious</u>	<u>13,513.0</u>	<u>13,754.5</u>
CSS Tree Canopy over Turf Grass	1.7	1.7
CSS Turf Grass	0.7	0.7
MS4 Tree Canopy over Turf Grass	15.1	15.3
MS4 Turf Grass	68.5	68.7
Non-Regulated Tree Canopy over Turf Grass	1,644.5	1,698.1
Non-Regulated Turf Grass	11,782.5	11,970.0
<u>Developed Construction</u>	<u>0.0</u>	<u>0.0</u>
CSS Construction	0.0	0.0
Regulated Construction	0.0	0.0
Natural	50,825.3	50,389.8
CSS Forest	1.4	1.4
CSS Mixed Open	0.6	0.6

Harvested Forest	0.0	0.0
Headwater or Isolated Wetland	2,614.8	2,592.4
Mixed Open	10,419.5	10,286.5
Non-tidal Floodplain Wetland	1,452.1	1,437.0
True Forest	33,084.3	32,846.7
Water	3,252.7	3,225.1
Total	72,392.7	72,392.2

1.4 Area

In total, DoD installations cover 102,485 acres within Maryland. See Table E-2 for a breakdown by Installation.

Installation	Total Area	Impervious Area	Pervious Area
99th RSC (MD)	277.6	155.8	121.9
Aberdeen Proving Ground	71,568.3	2,024.9	69,543.4
Adelphi Laboratory Center	207.0	51.8	155.3
Blossum Point Research Facility (includes NRL)	1,579.5	35.8	1,543.7
Army Reserve National Guard (MD)	940.7	165.1	775.6
Fort Detrick	1,212.0	334.0	878.0
Forest Glen Annex	124.8	46.4	78.4
Fort George G. Meade	5,107.0	869.0	4,238.0
Joint Base Andrews	4,404.0	1,302.0	3,059.0
Brandywine Receiver Site and Defense Reutilization and Marketing Office	1,687.0	11.8	1,667.3
Davidsonville Transmitter Site	895.0	6.5	888.5
NAS Patuxent River	3,326.0	1,259.7	2,066.3
NAS Patuxent River - Solomon's Island	241.0	63.0	178.0
NAS Patuxent River - Webster Outlying Field	454.0	119.2	334.8
NAS Patuxent River - Bloodworth Island Range	5,379.0	0.0	5,379.0
Naval Research Laboratory (CBD, Pomonkey, BPTF)	160.0	8.0	152.0
NSA Annapolis	1,170.0	251.2	918.8
NSA Bethesda	243.0	93.0	150.0
NSA Washington - NSF Carderock	156.7	67.7	89.0
NSA Washington – Suitland	39.0	18.9	20.1

NSA South Potomac - Indian Head	3,314.0	373.0	2,941.0
Total	102,485.6	7,256.7	95,178.0

1.5 Land Use Types

DoD installations are composed of military, industrial, administrative, recreational, residential and open space land uses. NAS Patuxent River and the NSA Annapolis Dairy farm also have agricultural land uses.

1.6 Nature of Activities

DoD installations in Maryland are engaged in a variety of activities including military training, weapon testing, ceremonial activities, research and development, environmental compliance and natural resources protection, enhancement, and restoration.

2.0 Description and Estimation of Current Releases of Nitrogen, Phosphorus and Sediment from those Federal Lands or Facilities (Point and Non-Point Sources) and an Estimate of Anticipated Growth Through 2025

Each year, the DoD collects stormwater Best Management Practice (BMP) records from installations. Those records are then consolidated and reported to all of the Chesapeake Bay Jurisdictions, including Maryland. From there, the records are entered into a State record and assigned State unique ID. Jurisdictions then report their entire progress from all partners which is then compiled in the National Environmental Information Exchange Network (NEIEN). After passing through NEIEN, the stormwater BMP data is uploaded into CAST with a State unique ID numbers. The State unique ID number allows DoD to track crediting through the various stages of reporting. Stormwater BMP crediting is an important step in understanding current releases of total nitrogen (TN), total phosphorus (TP), and total suspended solids/sediment (TSS) because it allows DoD to determine if the Partnership's annual progress scenario properly characterizes our implementation and nutrient and sediment load reductions.

BMP implementation data based on the 2017 Partnership scenario indicated that 87% of the 1,455 BMP records reported by installations are fully credited in the Bay model and to DoD; another 2% BMPs were partially credited; and 11% received no credit. Using preliminary data from the 2018 Partnership Scenario, both the developed and natural loads for DoD have increased slightly from the Partnership's 2017 Progress Scenario. It is not clear as to why this has occurred and DoD will be evaluating if BMP crediting is one of those causes. Because there were some discrepancies in the model as it related to DoD crediting, DoD developed an alternate 2018 Progress Scenario that characterizes our current TN, TP and TSS loads based on installation BMP implementation.







DoD also developed two additional scenarios to assist in understanding the change in TN, TP and TSS loads for the developed and natural load source groups only. The first, which DoD refers to as the 2010 DoD Baseline included BMPs implemented between July 1, 1984 and June 30, 2009 at the State-Chesapeake Bay Watershed only area (State CBWS-only) scale. This scenario helps to determine the loads at the end of the 2009 Progress year. The second scenario, called the 2018 DoD Progress Scenario, included all BMPs implemented between July 1, 1984 and June 30, 2017 at the State CBWS-only scale. This scenario quantifies DoD TN, TP, and TSS loads at the end of the 2018 Progress year. Tables E-3 through E-5 provide the DoD MD-CBWS only TN, TP, and TSS loads at the Edge of Stream (EOS) and Edge of Tide (EOT) in pounds per year and the 2010 Baseline scenario.

Table E-3: DoD TN Loads (in lbs/year)				
Jurisdiction	2010 Baseline (EOS)	2018 DoD Progress (EOS)	2010 Baseline (EOT)	2018 DoD Progress (EOT)
Maryland	348,161	351,583	395,694	396,311

Table E-4: DoD TP Loads (in lbs/year)				
Jurisdiction	2010 Baseline (EOS)	2018 DoD Progress (EOS)	2010 Baseline (EOT)	2018 DoD Progress (EOT)
Maryland	39,900	38,045	108,947	106,529

Table E-5: DoD TSS Loads (in lbs/year)				
Jurisdiction	2010 Baseline (EOS)	2018 DoD Progress (EOS)	2010 Baseline (EOT)	2018 DoD Progress (EOT)
Maryland	66,102,062	66,679,373	411,939,341	406,519,417

Developing the 2010 DoD Baseline and 2018 Progress TN, TP, and TSS loads allowed DoD to determine the changes in TN, TP, and TSS loads (i.e. reductions/load increases) at the EOS and EOT in pounds per year between 2010 and 2018 on DoD installations in Maryland (Table E-6). Between 2010 and 2018, loads increased for TN at the EOS and EOT and TSS increased at the EOS; TP loads decreased at both the EOS and EOT and TSS decreased at the EOT.

Table E-6: DoD Change in Load (in lbs/year EOS and EOT) between 2010 and 2018			
Jurisdiction: Maryland	TN	TP	TSS
EOS	 (3,423)	 1,855	 (577,311)
EOT	 (617)	 2,418	 5,419,924

DoD owns and operates six wastewater treatment plants in Maryland that discharge to the Chesapeake Bay; four are significant/major plants located at Aberdeen Proving Ground, Fort Detrick, NSF Indian Head and NSA Annapolis. The two non-significant/minor plants are located at NAS Patuxent River-Webster Field and Naval Research Lab-Chesapeake Beach. The load source is not tracked by EPA in the model for DoD or any other federal agency owned wastewater treatment plant and therefore reductions are not credited to DoD. However, point source data is provided by EPA and DoD is able to track our reductions from wastewater treatment plants. Since 1984, DoD has reduced TN, TP and TSS loads from wastewater treatment plants in Maryland by 84%, 97%, and 70%, respectively. The reductions also demonstrate the significant investments that were made by DoD to address these loads via enhanced nutrient removal technologies. Figure 1 provides the watershed-wide total load TN, TP and TSS reductions for all DoD owned WWTPs.

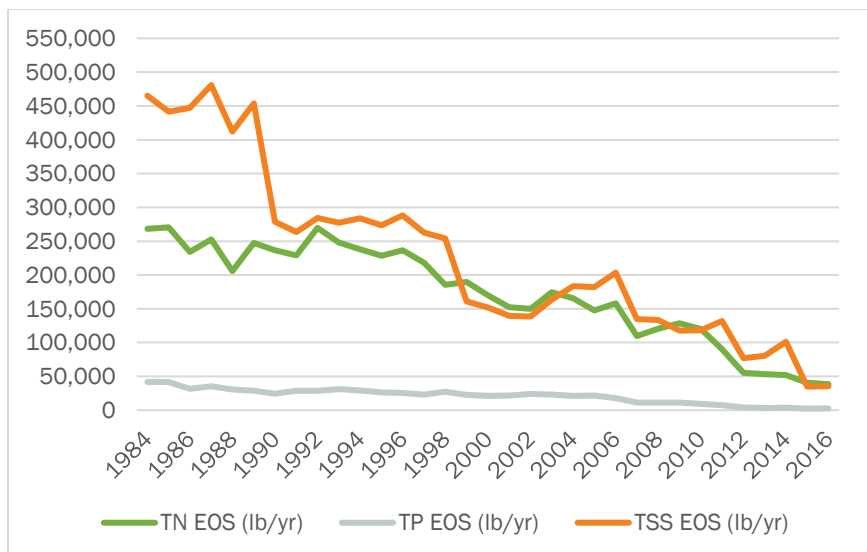


Figure 14: Total Loads from DoD WWTPs at EOS from 1984 to 2016 in Maryland, Virginia, and Pennsylvania

While it is difficult for DoD installations to predict future mission requirements, estimates of anticipated growth through year 2025 were reported by installations during the FY18 CBP datacall and are represented in Table E-7 below. Based on installation input, 334 acres of new development and 78 acres of re-development were reported in 2018 and 156 acres of new development and 287 acres of redevelopment are expected through 2025. However, it should be noted that if DoD mission needs change, future construction estimates may be changed within Maryland. Nevertheless, based on DoD policies, programs, and strategies identified in Section 4, redevelopment will not result in any additional runoff or pollutant loading to the Chesapeake Bay.

Table E-7: DoD Estimates of Anticipated Growth Through 2025 (acres) in Maryland				
Installation	2018 New Development	2018 Redevelopment	New Development Through 2025	Redevelopment Through 2025
99th RSC (MD)	15.0	0.0	0.0	0.0
Aberdeen Proving Ground	141.3	27.3	68.1	172.8
Adelphi Laboratory Center	1.5	0.0	0.0	1.0
Army Reserve National Guard (MD)	25.0	0.0	0.0	0.0
Fort Detrick	72.8	2.4	25.0	10.0
Fort George G. Meade	30.0	4.0	29.1	29.1
Joint Base Andrews	0.0	25.0	25.0	25.0
NAS Patuxent River	40.0	0.2	0.0	0.0
NAS Patuxent River - Solomon's Island	0.0	0.0	0.0	0.0
NAS Patuxent River - Webster Outlying Field	0.0	0.2	0.0	0.0
NAS Patuxent River - Bloodsworth Island Range	0.0	0.0	0.0	0.0
Naval Research Laboratory (CBD, Pomonkey, BPTF) ²	0.0	2.0	0.0	4.0
NSA Annapolis	7.2	6.0	1.0	16.0
NSA Bethesda	0.0	9.0	5.0	9.0

NSA Washington - NSF Carderock	0.0	0.0	0.0	0.0
NSA Washington – Suitland	1.3	0.5	3.0	20.0
NSA South Potomac - Indian Head	0.0	1.5	0.0	0.0
Total	334.0	78.1	156.2	286.9

3.0 Verified Records of the Existing BMPs that have been Implemented and Maintained through 2017

Installations are responsible for ensuring stormwater best management practices are inspected and maintained according to design standards and permit requirements. In Maryland, installations with MS4 permits are required to develop a BMP inventory with fields for inspection and maintenance requirements that demonstrate that BMPs are inspected during the first year of operation and then at least every three years after that. Maintenance requirements differ based on the type of BMP, but is typically performed via contract based on available funding for hydrodynamic structures or when inspections note BMP failure.

Each year, the DoD collects BMP records from installations. Those records are then consolidated and reported to the jurisdiction by the DoD Chesapeake Bay Program (DoD CBP).

As part of DoD's overall reporting framework, which strives to improve the data quality reported by installations, DoD integrated verification into their FY2018 Annual BMP data call. DoD flagged specific BMPs within the historical record on (1) their inspection and maintenance status and (2) if a BMP was not installed or had not been inspected in the past five years. Installations were expected to update BMP information with inspection dates, inspection status, and maintenance performed.

In 2019, DoD will be developing a BMP crediting report that highlights those BMPs that lost credit due to missing inspection and/or maintenance information. The report will be used to communicate with the installations and leadership the long term consequences that translates into annual nutrient and sediment reductions that DoD cannot get credit for as a result of not providing the required maintenance information or not performing the appropriate maintenance. DoD's intent is to ensure long term credit in the model and acknowledges the importance of proper BMP operations and maintenance. Throughout 2019, DoD will be evaluating the best methods to ensure long term funding of BMP maintenance.

4.0 Description of Existing Programs, Policies, and Strategies (with examples) Used to Drive BMP Implementation

There are several existing policies and programs that, since their promulgation, have provided the necessary drivers for DoD to fund projects and ultimately drive stormwater BMP implementation. The following provides those existing policies internal and external to DoD.

4.1 Compliance with the Clean Water Act (CWA): Twelve DoD installations are covered by the MS4 General Permit for State and Federal Agencies and submitted their Notice of Intent to Maryland in October 2018. As part of permit compliance, installations develop stormwater management programs that improve water quality and control the discharge of pollutants through six minimum control measures. In relation to the Chesapeake Bay TMDL and the necessary reductions of TN, TP and TSS, the Maryland MS4 General Permit for State and Federal Agencies establishes new requirements for impervious area restoration for 20% of existing developed lands that have little or no stormwater management. Installations covered by the MS4 permit developed restoration planning strategies and implementation schedules to improve local water quality and restoration of the Chesapeake Bay. In addition, several DoD installations without MS4 permits are covered by permits that regulate stormwater discharges associated with industrial activities. Those

General Industrial permits also include conditions that require installations to perform restoration of impervious surfaces. Therefore, most if not all installations within Maryland are completing restoration activities for reducing nutrients and sediment loads delivered to the Chesapeake Bay.

- 4.2 Compliance with Maryland's Stormwater Management regulations:** Installations or contractors performing the construction activities obtain construction general permits to manage stormwater associated with the construction activity with a planned total disturbance of 5,000 square feet or more. Compliance with those permits includes erosion and sediment control, stormwater management plans, water quality standards/TMDLs, self-monitoring/inspections/maintenance and record keeping.
- 4.3 2014 Chesapeake Bay Watershed Agreement:** DoD was one of the first federal agencies to become formally involved in the Chesapeake Bay restoration effort in 1984, and in 1990 we further strengthened our participation and role by linking DoD environmental initiatives to the EPA's Chesapeake Bay Program. The latest Chesapeake Bay Watershed Agreement, signed in 2014, identifies specific Goals and Outcomes for the restoration of the Chesapeake Bay. As an engaged partner towards Clean Water, DoD committed to the 2017/2025 WIP Outcome as a participating agency. In addition, the DoD monitors, assesses, and reports on installation efforts that enhance abundant life, conserve lands, and engage communities.
- 4.4 Local Area Planning Goals/Federal Agency Planning Goals:** By definition, local planning goals "are not finer scale wasteload and load allocations in the Bay TMDL, but when added together are expected to equal the relevant State-basin TMDL allocation caps³⁵." DoD received TN, TP, and TSS federal facility targets/local area planning goals in 2015 for all installations located in Maryland for the urban stormwater developed sector only. The development of the federal facility targets was consistent with the strategies outlined in Maryland's Phase I and Phase II WIP that entails a 20% retrofit of developed urban land that has little or no stormwater management.

Because the DoD planning, programming, budgeting, and execution (PPBE) process can be long and cumbersome, early indications of future requirements can help secure future funding. Identification of local planning goals that are applied equitably across all entities in the watershed assists DoD, other federal agencies, local governments, and businesses in planning for actual, future requirements. Having local planning goals identified is a good first step in the PPBE cycle since DoD requires actual requirements to assure funding to meet our obligations. Using the local area planning goals process that is consistent with the permit conditions established for MS4s continues to align with DoD's funding policies.

Therefore, the planning goal/federal facility target represents an equitable portion of DoD's reduction requirements and supports Maryland in meeting their Phase III WIP Planning Target. It is important to understand that in terms of regulatory compliance, DoD must ultimately be treated in the same manner (i.e. load calculations and pollutant target reductions) and to the same extent (i.e. implementation schedule) as any other entity. Therefore, DoD continues to follow a strategic approach that emphasizes compliance with CWA and other permit requirements along with reduction of nutrient and sediment from non-permitted sources as funds are made available.

- 4.5 2009 Executive Order (EO) 13508 / 2010 EO 13508 Strategy:** In accordance with EO 13508, the federal government should lead the effort to restore and protect the Chesapeake Bay. DoD continues to demonstrate our commitment to this effort in accordance with the EO and accompanying strategy. Since their release, the DoD has conducted installation-wide BMP

³⁵ Protocol for Setting Targets, Planning BMPs and Reporting Progress for Federal Facilities and Lands (2015)

inventories or conducted surveys or BMP Opportunity Assessments to determine potential locations for additional stormwater retrofits on developed land that have little to no stormwater management. These assessments identify ways to strengthen and manage stormwater including structural and non-structural BMPs, erosion control, and infrastructure maintenance and repair opportunities.

- 4.6 Unified Facilities Criteria (UFC) 3-210-10:** The UFC provides technical criteria, technical requirements, and references for the planning, design and construction, renovation, repair, maintenance and operation, and equipment installation in new and existing facilities in support of DoD policy goals, including compliance with stormwater requirements under Section 438 of the Energy Independence and Security Act (EISA) enacted in December 2007 and the Deputy Under Secretary of Defense DoD policy on implementation of stormwater requirements under EISA Section 438.
- 4.7 Section 438 of the Energy Independence and Security Act (EISA) of 2007:** EISA Section 438 addresses stormwater runoff requirements for federal development projects. EISA Section 438 requires that the sponsor of any development or redevelopment project involving a federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to 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. The Deputy Under Secretary of Defense (Installations and Environment) Memorandum of 19 January 2010 directs DoD components to implement EISA 438 using Low Impact Development (LID) techniques. Individual Services may have more stringent implementation and applicability requirements relating to LID.
- 4.8 Implementation of the Navy's Low Impact Development Policy:** Navy installations continue to implement the LID Policy for Stormwater Management. Low Impact Development (LID) minimizes the impact of development by mimicking pre-development runoff hydrology. It uses site planning and Integrated Management Practices (IMPs) to store, infiltrate, evaporate, and detain runoff to restore pre-development infiltration rates. Practicing LID helps DoD installations by recharging groundwater supply, reducing runoff volume and the potential for flooding, improving water quality by reducing pollutant loads, and reducing the impacts from pollution on aquatic habitat and wildlife. The DoD Unified Facilities Criteria (UFC 3-210-10) provides for planning, design, construction, sustainment, restoration, and modernization criteria consistent with LID.
- 4.9 EO 13834 Efficient Federal Operations:** Under Executive Order 13834, federal agencies are directed to prioritize actions that reduce waste, cut costs, enhance the resilience of federal infrastructure and operations, and enable more effective accomplishment of its mission. In implementing policy, federal agencies must meet several goals, which are based on statutory requirements, in a cost-effective manner including reduce potable and non-potable water consumption and comply with stormwater management requirements. As federal agencies work toward meeting the full range of sustainability goals, the Chesapeake Bay watershed will benefit. DoD continues to develop an annual Sustainability Report and Implementation Plan, which includes implementation status, operational issues, and strategies to advance its mission through resilient infrastructure and business practices that improve performance and affordability.
- 4.10 Army Policy for Sustainable Design and Development (SSD):** The Army Sustainable Design and Development Policy builds on the Army's long-standing energy efficiency and sustainability practices with the goal of increasing the resiliency of its facilities and installations, enhance mission effectiveness, reduce the Army's environmental footprint, and achieve levels of energy independence that enhance continuity of mission-essential operations. The policy applies to all

infrastructure planning, design, sustainment, restoration, modernization, and construction on Army installations. Accordingly, the Army will plan, design, build, maintain and operate facilities to achieve the highest-performing sustainable design that is life-cycle cost-effective. Construction activities will be planned programmed, budgeted, designed, built, maintained, and operated to comply with Energy Policy Act of 2005, EISA 2007, and EO 13834 and conform to the Guiding Principles for Federal Sustainable Buildings as detailed in the Policy. The following Policy requirements address water quality issues in the WIP:

- ◆ **Siting and Site Development:** Compact development, in-fill, minimal building footprints and spacing, and greater residential densities will be applied to achieve optimal densities. These practices will also help minimize or reduce impervious surface area and the potential for resulting polluting runoff.
- ◆ **Stormwater Management.** Site development for all projects of 5,000 square feet or greater shall retain the pre-development site hydrology in accordance with EISA 2007 Section 438 and UFC 3-210-10. These projects must be planned, designed, and constructed to manage any increase in storm water runoff (i.e., the difference between pre- and post-project runoff) within the limit of disturbance. Projects will maximize the use of existing site topography including soils, flora, slope, and hydrology to minimize site disturbance including clearing and soil grubbing activities. Documentation of the project's compliance with EISA 438 will be maintained in the project file and will be reported via the chain of command for annual SSPP reporting.
- ◆ **Water Use:** The overall goal is to identify and implement water reuse strategies to use water efficiently including the use of alternative water sources (e.g. rainwater, reclaimed water, greywater, etc.). All projects will use water-efficient landscape strategies that achieve a minimum of 50% water reduction. To further reduce outdoor water use, native plant species and dry-scape architectural alternatives will also be considered. Irrigation will not be used except where specifically required by Army policy or during the initial plant establishment phase. Projects that require irrigation will use alternative water in place of potable water.
- ◆ **Planning, Design and Construction:** All new construction vertical projects and comprehensive building renovations meeting the thresholds in UFC 1-200-02 Table 1-1 will be certified at the Leadership in Energy and Environmental Design (LEED) for Building Design and construction Silver level at a minimum.

4.11 Leadership in Energy and Environmental Design (LEED): LEED is an internationally recognized green building certification system developed by the U.S. Green Building Council. It promotes a whole building sustainability approach through energy savings, water efficiency, materials management, and air emissions. With regard to stormwater management, LEED addresses stormwater quality and quantity and increased water efficiency. For DoD, new construction vertical projects and comprehensive building renovations that meet specific thresholds must be certified at the LEED for Building Design and Construction (LEED-BD+C) Silver level at a minimum.

4.12 Sikes Act: DoD installations with significant natural resources are required by the Sikes Act to develop and implement Integrated Natural Resource Management Plans (INRMPs). They integrate military mission requirements, environmental and master planning documents, cultural resources, and outdoor recreation to ensure both military operations and natural resources conservation are included and consistent with stewardship and legal requirements. INRMPs require installations to look holistically at natural resources on a landscape or ecosystem basis. They are living documents that provide direction for daily natural resources management activities and they provide a foundation for sustaining military readiness. They describe how to manage natural resources, allow for multipurpose uses of those resources, and define public access—all while ensuring no net loss

in the capability of an installation to support its military testing and training mission. Although variations exist among the different Military Services, a basic INRMP includes:

- ◆ A description of the installation, its history, and its current mission;
- ◆ Management goals and associated timeframes;
- ◆ Projects to be implemented and estimated costs;
- ◆ A discussion of how the military mission and training requirements are supported while protecting the environment;
- ◆ Natural resources’ biological needs and legal requirements;
- ◆ The role of the installation’s natural resources in the context of the surrounding ecosystem; and
- ◆ Input from the U.S. Fish & Wildlife Service (USFWS), State fish and wildlife agency, and the general public.

To address installation requirements and regional issues, INRMPs involve appropriate stakeholders, thereby providing for more efficient and effective management of natural resources on a landscape-scale basis, all while ensuring that military readiness is sustained.

INRMPs propose projects to address natural resources, but many of those projects also provide a water quality co-benefit (wetland restoration, tree planting, riparian buffer enhancement, etc.). Projects with water quality co-benefits will be considered for meeting additional TN, TP and TSS reductions and tracked and reported to the jurisdictions for BMP credit in the Bay Model.

5.0 Inventory of National Pollution Discharge Elimination (NPDES) Permits

Table E-8 provides a summary of the types of NPDES permits located on DoD Installations in Maryland that discharge to the Chesapeake Bay:

Table E-8: Type of NPDES Permit Coverage located on DoD Installations in Maryland				
Installation	MS4	Industrial	WWTP	Construction (2018)
99th RSC (MD)	Y	Y	N	Y
Aberdeen Proving Ground	Y	Y	Y	Y
Adelphi Laboratory Center	Y	N	N	Y
Army Reserve National Guard (MD)	Y	N	N	Y
Fort Detrick	Y	Y	Y	Y
Fort George G. Meade	Y	Y	Y	Y
Joint Base Andrews	Y	Y	N	Y
NAS Patuxent River	Y	Y	N	Y
NAS Patuxent River - Solomon's Island	N	Y	N	N
NAS Patuxent River - Webster Outlying Field	N	Y	Y	Y
NAS Patuxent River - Bloodsworth Island Range	N	N	N	N
Naval Research Laboratory (CBD, Pomonkey, BPTF)	N	Y	Y	Y
NSA Annapolis	Y	Y	Y	Y
NSA Bethesda	Y	N	N	Y

NSA Washington - NSF Carderock	Y	Y	N	Y
NSA Washington – Suitland	N	N	N	N
NSA South Potomac - Indian Head	Y	Y	Y	Y

6.0 Description of Facility’s Stormwater Management Program including, but not limited to, Municipal Separate Storm Sewer System (MS4) Permit Requirements, if applicable

As mentioned in Section 5, twelve installations within Maryland are covered by an MS4 permit. DoD complies with regulations governing stormwater management as required by the CWA. In relation to the Chesapeake Bay TMDL and the necessary reductions of TN, TP and TSS, MS4s and Industrial stormwater permittees are required to develop a restoration plan that identifies areas for impervious area restoration for 20% of existing developed lands that have little or no stormwater management.

7.0 Planned Pollutant Reductions from Point and Non-Point Sources Associated with Federal Lands and Facilities that meet the Federal Facility’s Share of a Local Planning Goals (as agreed to with the jurisdiction) and Address any Anticipated Growth

In 2019, the DoD funded a follow on analysis that included input from installations and what they estimated for planned implementation through 2025. The following information is provided to demonstrate the TN and TP loads expected through 2025 and a comparison to the DoD Federal Agency Planning Goals/Federal Facility Targets issued by Maryland in Tables E-9 and E-10. The reductions also incorporate recent verification measures that ensure inspections and maintenance are being performed. Some BMPs within the 2018 DoD Progress scenario did not pass verification protocols and were not included in the scenarios to calculate reductions through 2025.

Table E-9: DoD TN Load Reductions (in lbs/year EOT) between 2018 and 2025

DoD 2018 Progress and 2025 Planned Implementation Scenarios

Jurisdiction	DoD Federal Planning Goal	2025 Planned Implementation Scenario	Remaining Reductions
Maryland	324,611	348,209	23,598

Table E-10: DoD TP Load Reductions (in lbs/year EOT) between 2018 and 2025

DoD 2018 Progress and 2025 Planned Implementation Scenarios

Jurisdiction	DoD Federal Planning Goal	2025 Planned Implementation Scenario	Remaining Reductions
Maryland	37,827	36,649	-1,178 ³⁶

DoD estimates of anticipated growth through year 2025 were reported by installations during the FY18 CBP datacall and are represented in Table 7 (see Section 3.0). Based on installation input, 334 acres of new development and 78 acres of re-development were reported in 2018 and 156 acres of new development and 287 acres of redevelopment are expected through 2025. Based on DoD policies,

³⁶ Negative values represent that the goal will be met with the additional implementation that is expected through 2025 Planned Implementation

programs, and strategies discussed in Section 4 the development and redevelopment projects will not result in any additional runoff or pollutant loading to the Chesapeake Bay.

8.0 BMP Implementation Scenarios to Reduce Nitrogen, Phosphorus and Sediment to Reach the New Facility-Specific Targets, Consistent with the [Clean Water Act] CWA

As mentioned above, the 2025 Planning Implementation is a result of data collected by DoD from the installations on estimated BMPs to be installed. DoD developed scenarios in CAST and shared them on June 14, 2019. Those scenarios included the estimated implementation plus implementation that would be necessary to fill the gaps between future progress and the DoD Federal Agency Planning Goal. The fill gap scenario is a hypothetical scenario based on best professional judgement.

Tables E-11 and E-12 provide the DoD TN and TP load reductions between 2018 and 2025; including the fill gap scenario loads and remaining reductions. Remaining reductions in green parenthesis are negative values that indicate the 2025 implementation plan meets the DoD Federal Planning Goal.

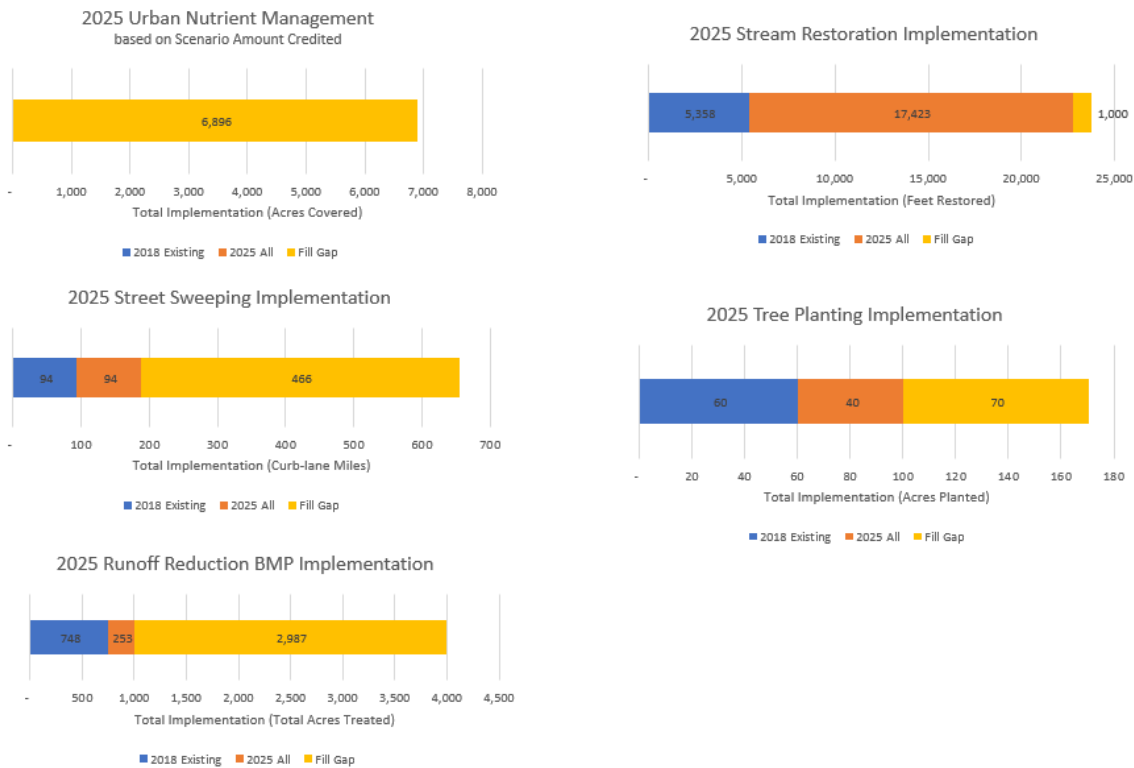
Table E-11: DoD TN Load Reductions (in lbs/year EOS) between 2018 and 2025 DoD 2018 Progress, 2025 Planned Implementation, and 2025 Fill Gap Scenarios					
Jurisdiction	DoD Federal Planning Goal	DoD 2018 Progress Scenario	2025 Planned Implementation Scenario	2025 Fill Gap Scenario	Remaining Reductions
Maryland	324,611	351,583	348,209	322,346	(2,265)

Table E-12: DoD TP Load Reductions (in lbs/year EOS) between 2018 and 2025 DoD 2018 Progress, 2025 Planned Implementation, and 2025 Fill Gap Scenarios					
Jurisdiction	DoD Federal Planning Goal	DoD 2018 Progress Scenario	2025 Planned Implementation Scenario	2025 Fill Gap Scenario	Remaining Reductions
Maryland	37,827	38,045	36,649	33,222	(4,605)

The DoD approach to fill gaps including applying:

- ◆ All previously submitted DoD implemented BMPs from SY 1985 through 2025 Credited, Expired, and Planned
- ◆ Urban nutrient management
- ◆ Street Sweeping
- ◆ Stream/shoreline restoration
- ◆ Tree Planting
- ◆ Runoff Reduction BMPs

The following graphs provide a visual representation of the current progress (existing), planned, and the fill gap implementation for Maryland.



As mentioned in prior sections, the DoD local area planning goal is a good first step in the budget process. DoD will make every effort to request and obtain the funding necessary for implementing projects, but changes in mission or budget constraints would mean a project or series of projects may not be executed as planned. The DoD may not be held responsible for failing to implement BMPs that are not required by law.

9.0 Planned Actions, Programs, Policies, and Resources Necessary Through 2025 to Reduce Nitrogen, Phosphorus, and Sediment Pollutant Loads Associated with Federal Lands and Facilities with Specific Target Dates

Achieving 2025 load targets will require the DoD to account for historical effort (progress through 2018), currently planned effort (2019 planned BMPs), and some remaining effort. Based on DoD data provided by installations in 2018 that requested implementation through 2025, the DoD Chesapeake Bay Program developed a scenario that included those planned BMPs. DoD also developed a “fill gap scenario” of BMPs that may be feasibly implemented on DoD installations based on the level of effort to reduce the remaining TN and TP loads. The scenarios are non-binding and intended for planning purposes only and presented in Section 8.

In addition to the programs already mentioned, while DoD is on track to meet 2025 goals, the following conclusions were gleaned from an initial effort conducted by DoD that generated a hypothetical 2025 scenario to meet 2025 targets that were established by EPA in 2015:

- ◆ Continuously improve DoD's historical and current BMP implementation record: ensuring all criteria are populated, providing verification information, filling general data gaps, and reporting annual BMPs such as urban nutrient management;
- ◆ Track crediting and communicate errors so that the Partnership's scenarios can be used by DoD without having to generate a separate scenario;
- ◆ Get BMPs that were removed from credit as a result of verification back in as soon as feasible;
- ◆ Have installations focus on BMPs that reduce TN where a greater effort is needed since TN is the limiting pollutant in meeting reduction goals;
- ◆ Implement run-off reduction practices. Many installations are already considering these through development and redevelopment projects;
- ◆ Consider older BMPs and identify possibilities for enhancements for added TN, TP and TSS reduction benefits;
- ◆ Consider projects listed in INRMPs that have water quality co-benefits for TN, TP and TSS load reductions such as stream/shoreline restoration or wetland creation;
- ◆ Through stewardship activities increase the number of trees planted or other land use change BMPs;
- ◆ Engage post Phase III WIP development to ensure there is an understanding of changes to the level of effort as a result of climate change inputs and updates to the Bay Model;
- ◆ Local TMDLs: Several installations within Virginia are also covered by permits that include local TMDLs that address local water quality impairments. DoD will consider nutrients and sediment when implementing stormwater pollution control devices to meet these local TMDLs that do not directly correlate with TN, TP and TSS reductions.

10.0 Description of Plans to Address Any Gaps in Achieving the Pollutant Reduction Goals

The gap to address nonregulated loads is a challenge, but many of the planned strategies help to fill those gaps. Installations have performed BMP opportunity assessments to identify new opportunities for BMPs and are looking to enhance those assessments to identify more innovative practices available for retrofit. The DoD performed an internal Midpoint Assessment and it will be used to accurately quantify the gap in Maryland. In addition to projects in the hypothetical 2025 DoD Implementation Plan with high TN removal efficiencies, the DoD will look at proposed INRMP natural resource projects with water quality co-benefits and how other DoD programs can contribute to water quality goals/requirements. Additional load reductions to address climate impacts will be incorporated when estimates of their effects are known.

11.0 Procedure for Tracking, Verifying and Annually Reporting BMPS to the Jurisdiction (Copy to EPA) in a Manner that is Consistent with the Jurisdiction's Procedures

DoD continues to lead by example through their continued methods that track, verify and report BMPs implemented on their installations. Our process integrates procedures established by the Jurisdictions, including the development of templates for all federal agencies to use. Each year, the DoD issues a support contract to facilitate the development of templates for reporting BMP implementation. The templates are developed in coordination with each of the jurisdictions and EPA to ensure the latest information for each BMP is collected and compatible with Phase 6 model data needs. Templates are then issued to the installations to provide responses. DoD reviews and then submits a consolidated DoD BMP progress dataset in the format requested by the jurisdiction by 1 October each year. Installations also provide project data that support other aspects of the Chesapeake Bay restoration and protection effort. Over several years, the DoD has evaluated those projects to see if there was a potential to receive additional nutrient and sediment reductions. If projects are identified to have those water quality co-benefits the DoD consolidates and provides a supplemental dataset to the appropriate jurisdiction by 1 November.

DoD installations follow the inspection and maintenance requirements established by Maryland. As part of the verification procedures, the DoD integrated process controls in their reporting template to highlight specific BMPs that needed inspection, status, and maintenance information for the installation to populate in order for that BMP to continue to receive nutrient and sediment reduction credit. If the verification information was not populated for that BMP it was removed from the submittal to the Jurisdiction and did not receive credit.

12.0 A description for how the Federal Facilities are going to Verify BMPs that is consistent with the CBP Partnership's Basinwide BMP Verification Framework and the Partnership Approved and Published BMP Verification Protocols

Installations are responsible for ensuring stormwater best management practices are inspected and maintained according to design standards and permit requirements. In Maryland, installations with MS4 permits are required to develop a BMP inventory with fields for inspection and maintenance requirements that demonstrate that BMPs are inspected during the first year of operation and then at least every three years after that and routinely maintained. Maintenance requirements differ based on the type of BMP, but is typically performed via contract based on available funding for hydrodynamic structures or when inspections note BMP failure.

13.0 Process for Assessing Implementation Progress and Adapting Management Actions to Continually Improve the Implementation of Practices to Reduce Nitrogen, Phosphorus, and Sediment Loads

In 2017, DoD conducted, the first of its kind among Federal departments, an evaluation of progress at the 2017 Midpoint via Phase 6 CAST using data collected annually from installations. The initiative included reviewing and developing scenarios that captured:

- ◆ What installations had already installed in the ground (i.e. historical implementation);
- ◆ Planned 2018 and 2019 implementation as part of DoD's numeric two-year water quality milestones; and
- ◆ Estimates of 2025 implementation that would be needed to fill gaps towards meeting federal facility goals that were based on the 2015 *Protocol for Setting Targets, Planning BMPs and Reporting Progress for Federal Facilities and Lands*.

This project established baseline scenarios and an overall framework and methodology in order for DoD to utilize lessons learned and support Phase III WIP development and implementation.

In 2018, DoD continued to fund this effort and requested information from installations on implementation planned through 2025. This information was used to build on the scenarios that have already been developed for DoD via CAST including the new DoD 2018 Progress Scenario, DoD 2020-2025 Planned Implementation Scenario, and 2020-2025 DoD Fill Gap Scenario that would meet new federal agency planning goals.

DoD has acknowledged and recognized the value of this effort and will prioritize to ensure funding remains in place to evaluate our progress, track two year periods and develop an appropriate level of implementation as we move towards 2025.

14.0 Challenges

DoD installations report that funding for projects needed to reduce loading is contingent upon authorization and appropriation of funds in accordance with appropriate statutes. The DoD will be competing for funding against all other federal entities and there is no guarantee that funding will be available. The DoD will make every effort to obtain necessary funding, but changes in priorities or budget constraints would mean a project or projects may not be executed as planned. As some installations are highly developed, space for new on-the-ground BMPs can be extremely limited. The DoD will look to programmatic BMPs to achieve pollutant reductions in these cases. Securing long term sustainable BMP maintenance funding to safeguard our investments is a challenge that we are working through.