Winter 2021

DoD Chesapeake Bay Program Journal

Edited by the DoD Chesapeake Bay Program Team

PROTECTING THE CHESAPEAKE BAY FOR MILITARY READINESS, FOR OUR COMMUNITY, FOR FUTURE GENERATIONS

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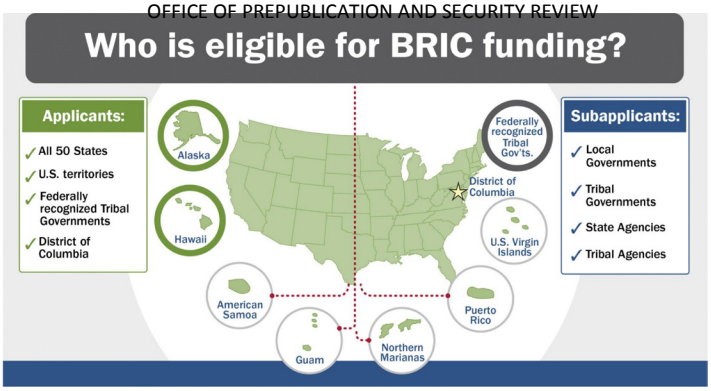
Finding New Funding Opportunities

By the Department of Defense (DoD) Chesapeake Bay Program (CBP) Team

The United States faced an expensive, record-breaking year for climate-related disasaters in 2020. Federal agencies were not exempt from the impacts of hurricanes, wildfires, and extreme heat that threatened the lives of individuals and the operations of critical services. To address the specifc threat of climate-related flooding, DoD installations have partnered with adjoining communities to develop Compatible Use Studies (CUPs), formerly called Joint Land Use Studies, to address flooding and its effect on military readiness. However, implementing the CUP recommendations requires funding, which can be a challenge for installations and their community partners. In August, the Federal Emergency Management Agency (FEMA) announced an increase in federal funds to address the effects of climate change. The new Building Resilient Infrastructure and Communities (BRIC) Program makes federal funds available to U.S. states and territories, Indian tribal governments, and local communities for pre-disaster mitigation efforts. While DoD is not eligible to receive funds directly, installations can explore potential opportunities to partner with the eligible applicants and subapplicants listed in the figure for projects, like those in CUPs, that build military and community resilience.

FEMA aims to promote investment in proactive projects implemented by state and local governments, rather than costly and reactive federal disaster response. Therefore, the program is designed to prioritize public infrastructure projects, projects that mitigate risks to critical assets, and projects that promote nature-based solutions. Proposed projects will be scored using 14 technical and qualitative criteria, including innovation, adapation for future conditions, and leveraging partnerships. Of the $500 million available from BRIC in 2020, states (and their subapplicants) may receive up to $600,000 per application, and applicants to the National Competition for Mitigation Projects may receive up to $50 million per project.

Though DoD is not eligible for BRIC funding, local communities can apply as a "subapplicant" to the state. Projects recommended in CUPs may meet the criteria for BRIC funding, providing a potential solution to the challenge of finding matching community funds for project implementation. Therefore, installations that have developed CUPs with neighboring communities are encouraged to reach out to their local contacts to discuss this funding opportunity. The Fiscal Year (FY) 2021 grant application period is expected to open in September. For more information about the program, visit the FEMA BRIC webpage (**www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities**).



GRAPHIC BY FEMA

DoD installations can partner with a state applicant or local community subapplicant

IN THIS ISSUE

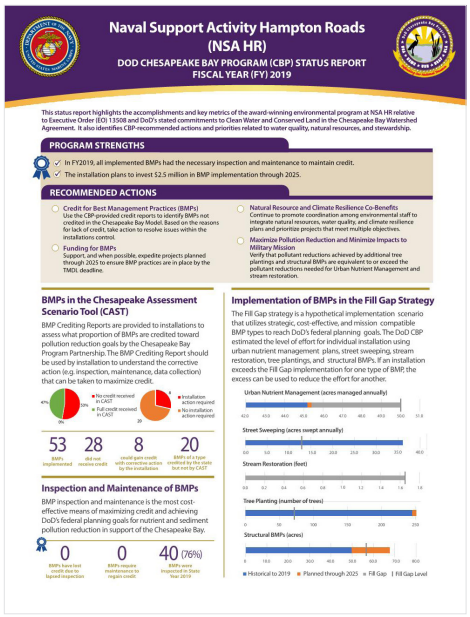
Commanders' Corner: Featuring Installation Status Reports

By Stephanie MacDurmon, Brown and Caldwell

The concept for an Installation Status Report was born at the 2019 Commanders' Conference from a suggestion made by Ann Swanson of the Chesapeake Bay Commission to Rear Admiral Charles Rock, Commander Navy Region Mid-Atlantic. The idea was to develop a document that would compile data from the DoD CBP into a short, meaningful summary of an installation's environmental program status on key metrics related to the restoration of the Chesapeake Bay. With Admiral Rock's and Service Lead support, the DoD CBP developed a pilot program with five installations to refine the concept and assess its effectiveness.

The pilot program, which includes representatives from multiple Services and states, will be completed in early 2021. Defense Supply Center Richmond, Joint Base Andrews, Marine Corps Base Quantico, Naval Support Activity Hampton Roads, and Washington Navy Yard participated in the pilot. For each installation, the DoD CBP compiled information across the following categories:

- Best Management Practices (BMPs) in the Chesapeake Assessment Scenario Tool
- Inspection and Maintenance of BMPs
- Implementation of BMPs in the Fill Gap Strategy
- Funding for BMPs
- Funding for All Chesapeake Bay-related Projects
- BMPs with Natural Resource and Climate Resilience Co-Benefits
- Citizen Stewardship
- Program Strengths and Recommended Actions


Naval Support Activity Hampton Roads (NSA HR)

DOD CHESAPEAKE BAY PROGRAM (CBP) STATUS REPORT FISCAL YEAR (FY) 2019

This status report highlights the accomplishments and key metrics of the award-winning environmental program at NSA HR relative to Executive Order (EO) 13508 and DoD's stated commitments to Clean Water and Conserved Land in the Chesapeake Bay Watershed Agreement. It also identifies CBP-recommended actions and priorities related to water quality, natural resources, and stewardship.

PROGRAM STRENGTHS

- In FY2019, all implemented BMPs had the necessary inspection and maintenance to maintain credit.
- The installation plans to invest $2.5 million in BMP implementation through 2025.

RECOMMENDED ACTIONS

- Credit for Best Management Practices (BMPs): Use the CBP-provided credit reports to identify BMPs not credited in the Chesapeake Bay Model. Based on the reasons for lack of credit, take action to resolve issues within the installations control.
- Funding for BMPs: Support, and when possible, expedite projects planned through 2025 to ensure BMP practices are in place by the TMDL deadline.
- Natural Resource and Climate Resilience Co-Benefits: Continue to promote coordination among environmental staff to integrate natural resources, water quality, and climate resilience plans and prioritize projects that meet multiple objectives.
- Maximize Pollution Reduction and Minimize Impacts to Military Mission: Verify that pollutant reductions achieved by additional tree plantings and structural BMPs are equivalent to or exceed the pollutant reductions needed for Urban Nutrient Management and stream restoration.

BMPs in the Chesapeake Assessment Scenario Tool (CAST)

BMP Crediting Reports are provided to installations to assess what proportion of BMPs are credited toward pollution reduction goals by the Chesapeake Bay Program Partnership. The BMP Crediting Report should be used by installation to understand the corrective action (e.g. inspection, maintenance, data collection) that can be taken to maximize credit.

53 BMPs implemented | 28 did not receive credit | 8 could gain credit with corrective action by the installation | 20 BMPs of a type credited by the state but not by CAST

Inspection and Maintenance of BMPs

BMP inspection and maintenance is the most cost-effective means of maximizing credit and achieving DoD's federal planning goals for nutrient and sediment pollution reduction in support of the Chesapeake Bay.

0 BMPs have lost credit due to lapsed inspection | 0 BMPs require maintenance to regain credit | 40 (76%) BMPs were inspected in State Year 2019

Implementation of BMPs in the Fill Gap Strategy

The Fill Gap strategy is a hypothetical implementation scenario that utilizes strategic, cost-effective, and mission compatible BMP types to reach DoD's federal planning goals. The DoD CBP estimated the level of effort for individual installation using urban nutrient management plans, street sweeping, stream restoration, tree plantings, and structural BMPs. If an installation exceeds the Fill Gap implementation for one type of BMP the excess can be used to reduce the effort for another.

Urban Nutrient Management (acres managed annually)

Street Sweeping (acres swept annually)

Stream Restoration (feet)

Tree Planting (number of trees)

Structural BMPs (acres)

Historical to 2019 | Planned through 2025 | Fill Gap | Fill Gap Level

The two-page status report includes seven informational sections with key metrics, as well as a summary table with program strengths and recommendations to identify important conclusions up front.

Within each section are key performance metrics intended to help installation environmental staff understand the current status of their program's response to the Chesapeake Bay Total Maximum Daily Load (TMDL), the planned projects and BMPs that have been reported to the DoD CBP, and, when possible, how that effort stacks up against the effort required by the end of 2025. These metrics were selected to represent progress related to DoD's regulatory drivers for stormwater improvement and Chesapeake Bay watershed restoration, such as the Clean Water Act and Executive Order (EO) 13508.

The status reports are intended to be a tool for internal review by the installation and, when appropriate, for communication with other installation or Service leadership, public partners, or stakeholders. Installation environmental program staff are encouraged to discuss the results of the program status reports with their Commanding Officer and senior leadership and to provide their assessment of their program's strengths and areas for improvement. Then, Commanding Officers can work with the appropriate staff to assess if there are actionable next steps from their status report. Some questions to consider include the following:

- What improvements are needed? What resources are necessary to "fill the gap"? If there is a regulatory driver, how can that be leveraged to secure the necessary staff, funding, or additional resources?
- How can the installation status report be used to justify action? Who else within the installation, or up the chain of command, should receive a copy?
- What parts of the installation status report may be used to communicate with partners or community stakeholders about the installation's Chesapeake Bay program?

The DoD CBP welcomes feedback from the Chesapeake Bay Action Team (CBAT) on the content, format, and usefulness of the pilot installation status reports. Installations interested in having a status report developed for their installation are encouraged to contact the DoD CBP to document their interest in the program and identify potential report uses for consideration if the program is expanded in the future.

REPI Challenge Winners

By Lauren Strader and Stephanie MacDurmon, Brown and Caldwell

Established to preserve and enhance military operations, the Readiness and Environmental Protection Integration (REPI) Program brings together military services, conservation organizations, and state and local governments to prevent encroachment that may limit or interfere with military operations. Partners share the cost to acquire land or easements to support the military mission, preserve natural land and/or wildlife habitat, enhance installation resilience, and ensure compatible land uses.

Within the broader REPI Program, the REPI Challenge recognizes innovative REPI projects that achieve the program's primary objectives while also:

- Developing projects that conserve land at a greater scale
- Achieving mission-related benefits not provided by typical REPI projects
- Testing new ways to finance land protection
- Leveraging unconventional sources of funding and market-based approaches

This year's REPI Challenge awarded $17 million in program funds to implement seven projects that will limit incompatible development and enhance installation resilience. Two of the award recipients, Naval Air Station (NAS) Patuxent River and Naval Weapons Station (NWS) Yorktown, are located in the Chesapeake Bay watershed. This article highlights these installations' proposals, as well as how their projects will benefit the installations' missions and the natural habitats of the Chesapeake Bay and contribute to DoD's environmental commitments, including EO13508 and the Chesapeake Bay TMDL.

NAS Patuxent River and the Atlantic Test Ranges (ATR)

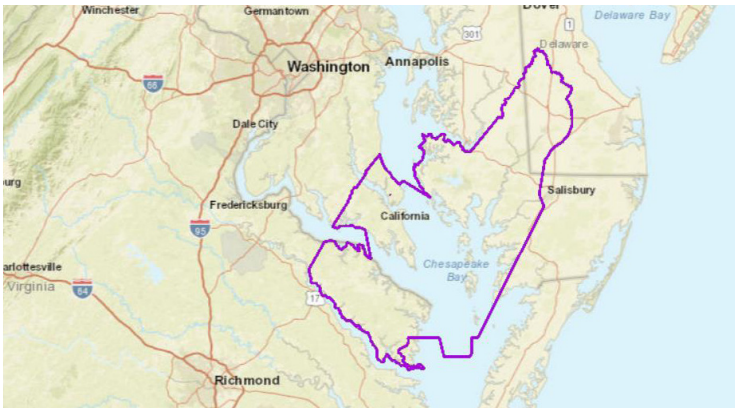
NAS Patuxent River and the ATR conduct over 150,000 testing and research flights each year within a 1.5 million-acre Special Use Air space over Maryland Delaware, Virginia, and the Chesapeake Bay. The research performed at NAS Patuxent River and the ATR is critical to the development and testing of manned and unmanned aircraft. In recognition of the area's military operations and ecological significance, NAS Patuxent River and the ATR, along with numerous partners, have conserved over 11,000 acres through REPI since 2010.

In November, it was announced that NAS Patuxent River and the ATR were awarded a $3 million grant through the 2020 REPI Challenge to purchase 4,000 additional acres of land easements along Maryland's Eastern Shore, which is home to 75% of Maryland's remaining tidal wetlands. This project is part of a partnership with The Nature Conservancy (who will work with partners to secure an additional $5 million for the project) and aims to establish a resilient and connected marsh migration corridor that will prevent incompatible development beneath the ATR's Special Use Airspace. By preserving ecologically significant marsh habitat, the project will also protect water quality in the Chesapeake Bay watershed and increase the resilience of local communities to coastal hazards, including extreme storm events.

The purchased easements are located within the Middle Chesapeake Sentinel Landscape (MCSL), which was established to protect land that supports wildlife, agricultural productivity, and the U.S. Navy's mission. Since 2015, over 43,000 acres of forests, wetlands, and farmland have been protected within the MCSL. The grant awarded through the REPI Challenge Program will further the conservation and mission-related goals of the MCSL.

PHOTO COURTESY OF DEPARTMENT OF THE NAVY.

The ATR manages the 2,300 square miles of restricted special use airspace for highly specialized naval aviation testing and training. More than 40 models of aircraft reside at the installation.



A map of the MCSL, which includes parts of Maryland, Delaware, and Virginia. Map generated from the REPI Interactive Map.

NWS Yorktown

Located in the Hampton Roads, Virginia region of the Chesapeake Bay watershed, NWS Yorktown is a weapons and ammunition storage and loading facility for the U.S. Atlantic Fleet. The natural features, including wetlands and shoreline, that protect NWS Yorktown and nearby land owned by the National Park Service have significantly degraded. One notable area is the Penniman Spit, located on the south shore of the York River, which is shown in the aerial imagery to the right. The spit has eroded significantly, causing a loss of valuable habitat and protection from storm surge and wave action.

The degradation of areas like Penniman Spit is not only harmful to the natural environment but also threatens installation operations and maintenance with the potential for increased wave action and resulting shoreline erosion. Therefore, restoring and protecting Penniman Spit is critical for improving installation resilience.

Through an Office of the Secretary of Defense Cooperative Agreement with the National Fish and Wildlife Foundation and in partnership with the Virginia Institute of Marine Science, $1 million was awarded for a project at NWS Yorktown. The project's goal is to restore and stabilize 900 feet of shoreline and 3.5 acres of near-shore land at NWS Yorktown by integrating elements of a hybrid living shoreline that will be resilient to climate change. The shoreline will also stimulate recovery and expansion of a salt marsh community, enhance oyster restoration efforts in the York River, create shallow-water habitat that support wildlife, and protect the marine ecosystem behind Penniman Spit. In addition to protecting critical military assets from erosion, this restoration effort also supports the DoD's Chesapeake Bay restoration goals and commitments outlined in the Chesapeake Bay Watershed Agreement, EO13508, and the NWS Yorktown Integrated Natural Resources Management Plan (INRMP).

Ongoing development and changes in environmental conditions have the potential to negatively impact DoD's ability to achieve its mission. REPI projects, like those highlighted in this article, are an opportunity to support the nation's long-term military readiness while also providing benefits for local natural resources and ecosystems. In the Chesapeake Bay, these secondary benefits also support DoD's commitments to water quality improvement and conserved land through EO13508 and the Chesapeake Bay Watershed Agreement. For more information about the REPI Challenge winners, please review the 2020 REPI Challenge Fact Sheet (**https://www.repi.mil/Portals/44/Documents/REPI_Challenge/2020_REPIChallenge_FactSheet_FINAL.pdf**).

For more information about the goals of the REPI Program or to learn more about how to join the program, please visit **https://www.repi.mil/Resources/Primers/**.

MAP GENERATED IN GOOGLE EARTH

Penniman Spit is located on the south shore of the York River at NWS Yorktown.

Example of shoreline changes at Penniman Spit on the York River. Maps from Hardaway, Jr, C.S., Milligan, D.A., & Wilcox, C.A. (2017). Shoreline Studies Program shoreline evolution database 1937-2009. Retrieved from http://www.vims.edu.

Getting Creative with Outreach During COVID

By Lauren Strader and Stephanie MacDurmon, Brown and Caldwell; additional content provided by U.S. Fleet Forces Command Stewards of the Sea Outreach Program

EO13508 calls for federal agencies to be leaders in the restoration of the Chesapeake Bay by expanding citizen stewardship and engagement. Additionally, many federal properties, including DoD installations, are required to meet regulatory compliance measures documented in their National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permits, which can include public outreach, education, participation, and involvement related to efforts to improve local water quality conditions. In the past, these requirements were typically achieved through in-person events. However, with the spread of COVID-19 in 2020, DoD has had to find creative ways to engage the public safely and effectively. While some events are indefinitely on hold, the DoD still has opportunities for effective outreach using virtual platforms or by implementing additional safety precautions and social distancing when gathering in person.

Going Virtual

Some installations hosted virtual educational events that shared strategies the public can implement at home to improve water quality. For example, Aberdeen Proving Ground conducted an informative presentation titled *Storm Water Pollution Prevention - What We Can Do in Our Daily Lives to Keep Our Waterways Clean* via conference call. Other installations, like the National Security Agency at Fort George G. Meade and Naval Support Facility Indian Head, chose to keep the public informed through regular blog posts and updates to social media accounts. With in-person events canceled where staff would typically distribute educational materials, Naval Station Norfolk (NSN) chose to distribute its educational brochures electronically to base housing offices and other affected tenants. The brochures included information about preventing illegal dumping, picking up after your pets, and proper disposal practices for hazardous waste. NSN also promoted at-home stewardship by contributing content for Science, Technology, Engineering, and Mathematic (STEM) SciFest All Access, a virtual field trip opportunity from the USA Science and Engineering Festival, which included a science-themed scavenger hunt for students, families, and educators.

BROCHURE PROVIDED BY MARK SAUER, NSN.

NSN distributed informational materials to installation tenants via e-mail due to canceled in-person events.

The U.S. Fleet Forces Command (USFF) Stewards of the Sea (SoTS) team is conducting an organization-wide effort to adapt its robust public outreach and education program to ensure it can continue to safely reach audiences. Planning for the SoTS 2020 outreach season at USFF began like previous years: scheduling outreach events, coordinating travel plans, and identifying staff to operate the exhibits during events. The outlook for the year was promising with a focus on educating regulators and the public with Navy environmental messaging. When the pandemic hit, planned in-person events were canceled or moved to a digital format. Live virtual and online media became the primary focus of SoTS outreach efforts. The Navy Office of Community Outreach also pivoted to virtual events for the 2020 outreach season, which allowed SoTS to share existing videos and materials during Virtual Navy Weeks. Using USFF public affairs staff for scripting, videotaping, and editing, SoTS produced educational videos for specific events such as the NAS Oceana STEM Day and Tri Cities (Bristol, TN) Navy Week. To allow the videos to be used at multiple events, both now and in the near future, the team focused on creating videos that do not discuss specific outreach events (e.g., Fleet Week New York) or the time of the year. USFF videos can be viewed on their YouTube page at **www.youtube.com/usnavystewardsofthesea**

PHOTO BY MIKE JONES, USFF.

SoTS conducted virtual outreach to keep the public engaged and informed during COVID-19.

PHOTO BY DONNA HAYNES, JBLE-E.

Volunteers set up a ghoulish display for cars to drive past at the JBLE-E Trunk-or-Treat event.

Safe Social Distancing

In addition to virtual offerings, some installations found ways to host socially distanced, in-person events. Joint Base Langley-Eustis Eustis (JBLE-E) coordinated a drive through Trunk-or-Treat event where families received treat bags of candy that included stormwater management and recycling informational materials. A total of 592 cars drove through the event, and 1500 "treat bags" were distributed. The event contributed to the installation's public education and outreach program for its MS4 permit and provided a safe and successful method to build citizen awareness around stormwater issues.

Some outreach teams at USFF still participate in live virtual events. For Navy Week Tulsa, one subject matter expert (SME) participated in a live virtual interview and question and answer session with the Oklahoma Aquarium. This was an excellent opportunity to reach new segments of the USFF SoTS program target audience. As the pandemic continues, SMEs continue to give virtual presentations to key stakeholders through professional networks, exchanges, and conferences. Presentation opportunities include whale watching groups, rotary clubs, and wildlife organizations. Throughout 2020, the USFF SOTs outreach team has had to think creatively, prioritize ideas that maximize the return on investment, and try new things to meet the mission. This approach has led to identifying best practices for conducting virtual interviews, and learning the multi-media capabilities and limitations within the team and for events.

Unfortunately, the future of hosting traditional in-person stewardship events is uncertain as the 2021 calendar year begins. However, the COVID-19 outbreak has provided DoD with a unique opportunity to find new and creative ways to engage the public, maintain compliance, and even reach a wider audience. These experiences have shown how these programs can adapt and provided new options and strategies that installations can continue to utilize now and in the future. If your installation has additional ideas, please share them during upcoming CBAT meetings.

STAYING SUCCESSFUL THROUGH COVID-19 AND BEYOND: USFF SOTS LESSONS LEARNED

- ☑ Increase digital resources by posting important materials in an easy-to-find online location
- ☑ Make and distribute short duration videos on a variety of environmental topics.
- ☑ Have technical personnel on standby to conduct multi-media interviews.
- ☑ Identify opportunities to participate in multi-media events.
- ☑ Develop virtual public meeting options to support environmental compliance projects.
- ☑ Remain flexible to changes that occur within media broadcasting.
- ☑ To keep skills sharp, keep SMEs engaged in virtual educational events and other networking opportunities
- ☑ Establish and honor safety protocols for any in-person meeting

One Solution to BMP Maintenance for MS4 Installations

By Mark Sauer, NSN, edited by Jessica Rowe, Brown and Caldwell

Stormwater pollution is caused by nutrients, sediment, and other materials that wash into storm drains, which often discharge directly into local waterways. To reduce the pollution released to those waterways, NPDES MS4 permits require minimum control measures (MCMs). The Post-Construction Runoff Control MCM calls for the implementation of a post-construction stormwater management program, including the inspection and management of stormwater BMPs. In addition, some NPDES MS4 permits also include special conditions that require nutrient and sediment load reductions for the Chesapeake Bay TMDL, and TMDL credit can expire if BMPs are not inspected and maintained on a specified schedule. Despite these regulatory drivers, many DoD installations struggle with inspecting and maintaining BMPs once they are constructed. At a large installation like NSN, inspection and maintenance of over 140 structural BMP can be a daunting task for the installation environmental and public works staff.

Responsibility for Maintaining BMPs

Most BMPs are designed and installed by contractors through military construction projects. Once the construction is completed and the project is accepted by the installation, the installation environmental group is responsible for future inspection and maintenance. If proper inspection and maintenance procedures are not implemented and documented, there are ramifications. First, the installation is no longer in compliance with the Post-Construction Runoff Control MCM of the NPDES MS4 permit. Furthermore, without BMP verification, nutrient and sediment credits would be lost, making it difficult for the installation to meet its permit pollutant reduction requirements and for DoD to meet its 2025 TMDL pollutant reduction goals. Poorly operating BMPs also may require costly maintenance or repairs and can create new problems, such as an increase in mosquito populations around standing water in a poorly drained BMP. Therefore, performing scheduled routine maintenance is a foundational concept in Facilities Sustainment.

How Can BMPs Be Maintained Efficiently and Effectively?

The obvious answer is for DoD installations to perform routine BMP maintenance, conduct annual inspections of every structural BMP on base, recommend additional maintenance or repairs for failing BMPs, implement repairs as needed, and document all activities. This level of stormwater management would keep the DoD MS4 permittee in compliance with their MS4 permit and maintain TMDL credit annually. Due to budget constraints and, until recently, a lack of Facility codes to fund maintenance for stormwater BMPs, finding a viable maintenance solution to accomplish all the listed steps represented a significant challenge.

Successful Solutions to Meet MS4 Permit Requirements

NSN successfully developed a program through contracting and collaboration with installation Environmental and Public Works staff to address the challenges in maintaining BMPs. This success serves as an example that other installations may follow as they implement a BMP maintenance program. NSN's BMP maintenance solutions include two primary strategies, which are described on the next page.

PHOTO BY NSN.

This BMP is properly mowed and maintained and in good condition.

PHOTO BY NSN.

Permeable pavers with weeds growing between the individual pavers. The space between some pavers is clogged with sediment.

Where we are now:	*Where we can be moving forward:*
MAINTENANCE IS CHALLENGING AND DAUNTING	**A VIABLE MAINTENANCE SOLUTION**
DoD installations are not sufficiently staffed, funded, nor do they have the necessary equipment and resources to perform routine maintenance activities, comprehensive inspections, or higher-level BMP maintenance and repairs	Set up a contract between the installation and a contractor to develop a BMP Inspection Program, submitting a comprehensive annual report to the installation
Both small and large installations are ill-equipped to manage this MS4 permit requirement.	Establish a contract for grounds landscaping that includes maintenance

BMPs in need of maintenance, lack of funding and staff, MS4 Permit and TMDL credit requirements not met. → **Properly maintained BMPs, partnership between DoD installations and contractor, MS4 Permit and TMDL requirements met.**

STRATEGY 1: Set up a contract between the installation and a contractor to develop a BMP Inspection Program. The contractor will submit a comprehensive BMP Inspection Report to the installation annually**.**

FUNDING SOURCE: Funding for this contract is secured under the Program Objective Memorandum (POM) process as a required compliance item. Naval Facilities Engineering Systems Command, Mid-Atlantic (NAVFACSYSCOM MIDLANT) environmental (EV) staff develop the POM exhibit and the Scope of Work for the contract with input from the installation EV staff.

ACTION: At NSN, the contractor developed inspection forms and procedures based on the MS4 permit requirements. Using those materials, the contractor conducts annual inspections of all 140 structural BMPs on site and documents the results. Using the BMP Inspection Report, NSN staff develop a prioritized list of BMPs to receive maintenance.

Inspection Results for Naval Station Norfolk					
MP ID	BMP Type	Installation Date	2019 Rating	2020 Rating	Observations
50-GR-01	Green Roofs	00/2010	UNSAT	SAT / Notes	Upgraded from UNSAT in 2019. Staff report leaks in roof. Membrane may be leaking. Unable to verify that leak is from cracked/leaking membrane.
D13-BR-01	Bioretention Areas	06/2011	UNSAT	UNSAT	Moderate to severe inlet obstruction, ponding at curb after rainfall, and standing water present in practice 48 hours after rain event. 1-2 inches of sediment caking on filter bed.
D13-DP-01	Dry Pond	06/2011	SAT / Notes	SAT / Notes	Approximately 2 inches of sediment accumulated at curb cut inlet; sediment accumulating at flanged inlet.
D18-DP-01	Dry Pond	06/2005	SAT / Notes	SAT / Notes	Appears to be incorrectly graded at inlet, potentially reducing intended treatment volume.
					Severe sediment deposition in swale.

Example excerpt of BMP Inspection Report Summary for NSN used to prioritize BMP maintenance.

THE BMP INSPECTION REPORT CLASSIFIES EACH BMP AS SATISFACTORY (SAT), SATISFACTORY WITH NOTES (SAT/NOTES), OR UNSATISFACTORY (UNSAT).

- A classification of SAT indicates that the BMP has no deficiencies requiring immediate attention.
- A classification of SAT/Notes indicates that the BMP is functioning properly but may have areas of concern if routine maintenance is not performed.
- A classification of UNSAT means deficiencies were identified that require immediate action to ensure the BMP functions as designed.

STRATEGY 2: Leverage an existing contract for Grounds Landscaping and Maintenance.

FUNDING SOURCE: Funding for this action was included in an existing negotiated contract action administered by the NAVFACSYSCOM MIDLANT Facilities Engineering and Acquisition Director.

ACTION: The original Grounds Landscaping and Maintenance contract was developed to perform grounds maintenance and landscaping services. NSN Environmental and Public Works staff worked with the Contract Manager and the Performance Assessment Representative to add priority stormwater BMP maintenance tasks identified from the BMP Inspection Report and routine maintenance activities such as:

- Removal of obstructions and control of vegetation in the storm drainage system
- Required maintenance of BMP structures, as defined in the installation's MS4 permit

The work covered under the contract specifically includes maintenance of rooftop disconnection units, Filterra systems, and parking lot vegetation. It also includes street sweeping (a Fill Gap strategy BMP) and cleaning of ditch and drainage channels, catch basins, yard drains, and curb inlets. The contractor is required to report maintenance needs beyond the scope of their contract.

This program has been in effect at NSN for over a year and continues to evolve. In the short-term, NSN is working to reduce the number of UNSAT BMPs each year. Eventually, NSN hopes to be able to address the deficiencies of every UNSAT BMP in the year it is identified. This will ensure the installation is in compliance with the MS4 permit and that it will continue to receive TMDL pollution reduction credits for its BMPs. This program's two-part strategy—to set up a new contract to create the framework to meet its regulatory obligation and then leverage an existing contract to complete the maintenance— is a template other installations may also consider when evaluating how to address inspection and maintenance at their installation.

Nature-Based Solutions to Current & Future Flooding

By Stephanie MacDurmon and Lauren Strader, Brown and Caldwell

In 2016, the Union of Concerned Scientists estimated that a three-foot increase in sea level would threaten the 128 coastal DoD installations across the United States[1]. However, other predictions indicate that some local areas may experience a much greater increase in sea level rise by 2100[2] . This will impact local vulnerability to flooding in two ways. First, sea level rise and an expected increase in annual precipitation and storm intensity over the next century will make coastal areas more prone to flooding during and after storm events. Second, sea level rise will lead to more frequent "sunny day" flooding. Sunny day flooding refers to non-storm related high tide events that inundate the stormwater system, which may flood roadways and buildings in areas not necessarily near a waterway. DoD installations throughout the Chesapeake Bay watershed face increasing impacts from both types of flooding. On 15 October 2020, a webinar entitled "How Nature Alleviates Flooding" discussed strategies developed and implemented in Hampton Roads, Virginia, to address flooding using nature-based solutions[3]. These nature-based strategies can provide DoD installations with options to mitigate flooding impacts across the Chesapeake Bay watershed.

Figure 1 – Areas impacted under different sea level rise scenarios in Norfolk, VA.

At NSN, the Union of Concerned Scientist study estimates an increase of 1.4 to 2.0 feet in sea level rise by 2050[1]. Persistent flooding caused by increasing sea level, annual precipitation, and storm intensity can pose a risk to the local economy, public health, and military readiness (Figure 1). Flooded buildings, disrupted transportation, and lack of access to or suitability of training areas may also negatively impact operations at military installations. These problems will only worsen if current trends continue or if more extreme scenarios are realized. For example, in Hampton Roads, 1.7 days of sunny day flooding were observed in 1960 compared to 7 days in 2014. By 2100, sunny day flooding could become an almost daily occurrence (300-365 days/year)[4]. The Union of Concerned Scientists study concluded that a sea level rise of only 1.4 feet would lead to flooding of low-lying areas at NSN about 280 times each year[1]. Worrying trends like these mean that policymakers and facility managers must develop new strategies to address flooding.

Nature-Based Solutions

Flooding is often managed using localized solutions, such as filling in low elevation areas, elevating roadways and structures susceptible to flooding, and installing hard structures along coastlines to armor against coastal erosion. These localized solutions provide a quick fix but are costly and ineffective in the long term and, in the case of shoreline armoring, are damaging to the natural environment.

Nature-based solutions proposed during the webinar that offer the most benefits to DoD installations include:

- Attenuate wave energy and stabilize eroding banks with living shorelines and wetland restoration projects
- Install ponds in upland areas of the watershed to store water that would otherwise cause flooding downstream, as well as provide habitat, improve water quality, and provide recreational opportunities
- Install gates and pumps in existing wet ponds to increase flood storage
- Design or modify drainage ditches to convey stormwater and provide flood storage by retaining water
- Intercept rain and increase stormwater infiltration, groundwater uptake, and transpiration by planting trees
- Implement community projects such as rain gardens and rain barrel adoptions
- Restore streams and create oyster reefs

Policy Strategies

To address flooding concerns, installations are encouraged to participate in local and state policy development and implementation. Several state-wide policies have been implemented to increase Virginia's resilience to future sea level rise and climate change. These policies include the passing of Virginia EO24 in 2018, which requires the development and implementation of a Coastal Resilience Master Plan for the Commonwealth; the passing of Virginia EO45, which created the Floodplain Management Standard; the establishment of the Community Flood Preparedness Fund; and the expanded authority of the Marine Resources Commission. In addition, multiple communities in the Hampton Roads area have partnered with the Navy to develop CUPs. As discussed in the opening article, these plans are developed collaboratively to identify mutually beneficial projects that reduce flooding impacts to military operations and within the surrounding community. Similar policy efforts and CUP development and implementation are in progress in Bay states, and installations can engage in these efforts to ensure DoD interests are considered. For more information about the CUPs that have been developed in the Hampton Roads area, visit the HRPDC website (**https://www.hrpdcva.gov/departments/joint-land-use-studies/**) for their development.

For communities like the City of Norfolk, citywide climate action and green infrastructure plans can be effective tools to adopt zoning regulations and policies that build resilience[5]. Other zoning strategies include the creation of zoning overlays and re-naturalization. Re-naturalization refers to the purchase of properties that frequently flood and the re-purposing of them as urban stormwater parks. Though DoD installations are not subject to local zoning regulations, DoD employees, contractors, and their families will be affected by the resilience, or lack of resilience, in surrounding communities where they live, shop, and recreate. For this reason, DoD installations can be an active stakeholder in promoting more resilient policies and projects near their installation and an advocate for regional policies that impact their state.

Regulatory Opportunities

Installations can and should leverage their regulatory obligations to better protect their facilities against flooding using nature-based strategies that ultimately preserve the important military operations that occur at these locations. These opportunities include:

INRMPs. Through the Sikes Act, DoD is required to protect and enhance natural resources in coordination with its military mission. Flood mitigation is a direct benefit of some natural resource projects, such as those that promote wetland health and diversity, and living shoreline projects. Installations should consider and document this benefit for projects in their INRMP.

PHOTO BY WILL PARSON, CBP.

Flooding due to sea level rise in Norfolk, VA.

REPI Program. New development can compound existing flooding risks. Land conservation removes this negative pressure and preserves natural areas that may attenuate floodwaters. In 2019, Congress passed legislation to allow land conservation projects that create climate resilience to be eligible for funding under the REPI program (see examples on pages 3-4).

BMPs. DoD installations with MS4 permits have regulatory requirements to reduce pollutant loads for the Chesapeake Bay TMDL. Some water quality BMPs, such as ponds, swales, and rain gardens, provide flood storage. Others, like tree plantings and impervious surfaces removal, mitigate flooding by allowing more rainfall to soak into the ground. Natural resource BMPs, like stream and wetland restoration, protect installations from storm-caused erosion and help prevent downstream flooding. DoD installations can and should prioritize BMPs that provide secondary benefits for climate resilience as a part of their water quality programs.

DATA SOURCES:

1 Union of Concerned Scientists. The US Military on the Front Lines of Sea Level Rise. 2016. https://www.ucsusa.org/sites/default/files/attach/2016/07/us-military-on-front-lines-of-rising-seas_all-materials.pdf (December 2020)

2 Hampton Roads Planning District Commission. Proposed Sea Level Rise Planning Policy and Approach. 2018. https://www.hrpdcva.gov/uploads/docs/11_Attachment_Proposed%20Sea%20Level%20Rise%20Planning%20Policy%20and%20Approach%20100518.pdf (December 2020)

3 Chesapeake Bay Foundation. How Nature Alleviates Flooding. October 15, 2020. https://www.cbf.org/events/webinars/brock-environmental-learning-series-how-nature-alleviates-flooding.html

4 U.S. Climate Resilience Toolkit. "High Tide Flooding." Accessed December 2020. https://toolkit.climate.gov/topics/coastal-flood-risk/shallow-coastal-flooding-nuisance-flooding (December 2020)

5 City of Norfolk. Norfolk Vision 2100. https://www.norfolk.gov/DocumentCenter/View/27768/Vision-2100---FINAL?bidId= (December 2020)

Chesapeake Bay Action Team Updates

By Hee Jea Hall, Brown and Caldwell

Members of the CBAT convened for their quarterly meeting on 29 October 2020, to review ongoing Chesapeake Bay-related service and installation projects and activities. Members reviewed takeaways for installations from the 2019 DoD Progress Evaluation and 2025 Implementation Plan.

Chesapeake Bay Service Leads and Installation Updates

- Ms. Elisa Ortiz, Army Environmental Command, noted that the Virginia Department of Environmental Quality (DEQ) Chesapeake Bay TMDL Action Plan guidance document update is in draft form. After the meeting, it was determined that DEQ published the revised guidance on 7 December 2020, including a comment period prior to the final document. Comments are due 6 January 2021.
- Mr. Mitch Keiler, Fort George G. Meade, asked for an update on DoD-specific shared use or nutrient trading. Participants noted that while DoD installations cannot purchase credit on open markets, DoD facilities have traded wastewater credit within the same watershed. Mr. Nathan Stokes, Environmental Attorney for NAVFACSYSCOM HQ, noted further information is expected following an upcoming inter-service discussion on the topic.

2019 DoD Progress Evaluation and 2025 Implementation Plan: Takeaways for Installations

Ms. Stephanie MacDurmon reviewed the status of progress toward the DoD's pollutant load goals at the end of state year (SY) 2019. Results are from the 2019 DoD Chesapeake Bay TMDL Progress Evaluation and 2025 DoD Implementation Plan report. She presented the pollutant loads for total nitrogen, total phosphorus, and total suspended solids at the end of SY2019 by jurisdiction. Those results were then compared to the goals in the DoD two-year Work Plans. In addition to summarizing 2019 DoD progress through SY2019, she also reviewed the planned BMP implementation and load reductions through SY2025 and the additional level of effort needed to achieve the 2025 federal planning goals (FPGs), also known as the Fill Gap strategy. BMPs that make up the Fill Gap strategy include urban nutrient management plans, street sweeping, stream restoration, tree planting, and runoff reduction BMPs. The Fill Gap strategy, which was developed at the jurisdiction level, has been divided among individual installations; a table with each installation's estimated contribution will be distributed later in December. Installations are encouraged to provide feedback to the DoD CBP on the current Fill Gap strategies or alternative means/BMPs installations will use to meet the FPGs.

Fill Gap Implementation by Installation (Virginia)					
Installation	UNM Plan	Street Sweeping	Stream Restoration	Tree Planting	RR BMPs
	Acres	Acres	Feet	Acres	Acres
Arlington National Cemetery					
ARNG (VA)					
Camp Peary					
Defense Supply Center Richmond					
Fort A.P. Hill					
Fort Belvoir					
Fort Lee					
JBLE-Eustis					
JBLE-Langley					

Excerpt of the installation-level Fill Gap strategy breakdown table for Virginia.

DoD CBP Updates

- Thank you to all participating installations for their support of the BMP and Progress and Indicators datacalls.
- NAS Patuxent River ($3 million) and NWS Yorktown and partners ($1 million) are winners of REPI Challenge grants.
- Pilot Installation comments on the draft template for the Installation Status Report Pilot have been received.
- The 2021 Chesapeake Bay Commanders' Conference has been postponed until 2022.
- The DoD CBP will forward the Principals' Staff Committee's Climate Change Update presentation.
- The DoD CBP Quarterly Journal for Fall 2020 was distributed in November.
- A new DoD CBP fact sheet titled "Reporting Water Quantity and Non-Conforming BMPs" was released in November.
- Virginia installations with an MS4 permit are asked to forward a copy of their approved submission spreadsheets from the DEQ BMP Warehouse to Ms. Stephanie MacDurmon.

The CBAT presentation and meeting notes can be found at **https://authoring.denix.osd.mil/chesapeake/dod-cbp-chesapeake-bay-action-team-cbat/cbat-meeting-minutes/**. The next CBAT meeting is scheduled for 21 January 2021.

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Check it Out

Submit your best project photos to be included in the FY2020 Annual Progress Report. Send high-resolution digital photos to the DoD CBP office at kevin.dubois@navy.mil and hbenson@brwncald.com.

Key Player in War on Climate Change? The Pentagon, CNN opinion article by Michele A. Flournoy, published 26 October 2020. www.cnn.com/2020/10/26/opinions/climate-change-pentagon-flournoy/index.html

Assessing Coastal Risks and Enhancing Resilience: A Virtual Seminar Series, University of Maryland Center for Environmental Science. Weekly seminars, 23 September 2020 to 13 January 2021. Recordings available at www.umces.edu/horn-point-seminars

2020 REPI Challenge Winners, REPI webinar, December 9, 2020. A recording and information about other webinars in the series are available at https://www.repi.mil/Resources/Webinars/

DoD Climate Assessment Tool, DoD Natural Resources Program webinar. 12 November 2020. Video located at denix.osd.mil/nr/resources/webinars

New Resource Conservation Paradigms on DoD Lands, SERDP and ESTCP webinar. 11 March 2021, 12:00 to 1:30 pm EDT. To register, visit serdp-estcp.org/Tools-and-Training/Webinar-Series.

Virginia Coastal Resilience Master Planning Framework. On 22 October 2020, the Commonwealth of Virginia released the Virginia Coastal Resilience Master Planning Framework, which outlines the principles and strategies that will drive the creation of the state's Coastal Resilience Master Plan that will be developed in 2021. The Framework can be viewed at: https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/Virginia-Coastal-Resilience-Master-Planning-Framework-October-2020.pdf

CBAT Quarterly Conference Call and Meeting. 21 January 2020, 10:00 am to 12:00 pm EDT.

MS Teams Conference Call Phone Number: 571-388-3904; Conference ID 255 269 41#.

Contact Kevin Du Bois or Jessica Rodriguez to receive a meeting invitation with a web link.

Agenda topics will include training for installation staff on how to use the Chesapeake Assessment Scenario Tool (CAST) to determine BMP pollution reductions.

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