



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

Chesapeake Bay Program Approves Revised 2025 Watershed Agreement

By U.S. Department of Defense (DoD) Chesapeake Bay Program and Jacobs Solutions Inc.

On December 2, 2025, the Chesapeake Bay Program’s Executive Council took a major step in protecting one of America’s most treasured natural resources by significantly modifying the original 2014 Chesapeake Bay Watershed Agreement. The updated agreement reflects a renewed vision for the bay’s future and strengthens the collaborative framework that has guided restoration efforts for more than four decades.

One of the most important lessons learned has been that, while watershed-wide partnerships can help to coordinate and catalyze progress, implementation is locally inspired and driven. The revised agreement introduces an updated vision, preamble, and operating principles, along with revised goals, outcomes, and targets designed to accelerate progress. At its core, the agreement focuses on four overarching goals:

- **Thriving Habitats, Fisheries, and Wildlife** – Protect, restore, and sustain fisheries and wildlife, as well as the network of land and water habitats they depend on, to promote a balanced and resilient ecosystem and support local economies and recreational opportunities.
- **Clean Water** – Reduce pollutants entering the bay and its rivers to achieve the water quality needed to support aquatic life, wildlife, and human health.
- **Healthy Landscapes** – Conserve, protect, restore, and enhance landscapes of ecological, economic, recreational, and cultural value to improve water quality, provide habitat for wildlife, and increase resilience.
- **Engaged Communities** – Engage and grow a community of local stewards and leaders through education, recreation, and professional opportunities to ensure the long-term success of restoration and conservation efforts.

These goals articulate the high-level aspirations of the Chesapeake Bay partners. Supporting them are 21 outcomes that define the tangible benefits needed to achieve each goal. Specific, measurable, and time-bound targets facilitate accountability and provide a clear roadmap for success. The Chesapeake Bay Partnership will update or develop new management strategies for each outcome, outlining how these objectives will be met.

The Executive Council also approved recommendations to streamline and simplify the Partnership’s structure and governance, with final revisions expected by July 1, 2026. Progress will be reported regularly to the Chesapeake Bay Program’s Principals’ Staff Committee, where the DoD is represented by the U.S. Environmental Protection Agency (EPA).



PHOTO CREDIT: CHESAPEAKE BAY PROGRAM

Four Interconnected Goals of Watershed Restoration

The revised 2025 Chesapeake Bay Watershed Agreement is available at:

<https://www.chesapeake.net/files/documents/CBWA-2025-IV-Final-Facing.pdf>

IN THIS ISSUE

Rear Admiral Stephen Barnett Assumes Duties of Commander, Navy Region Mid-Atlantic	2
Success Story: Fort A.P. Hill Awarded Resilience Funding for Monarch Butterfly Habitat	3
Success Story: Eagle Nesting Season Returns to Aberdeen Proving Ground	4
Implementation of Permeable Pavement and Pavers for Water Quality Improvements	5
Chesapeake Bay Action Team Updates	7
Webinars and Links of Interest!	8



Rear Admiral Stephen Barnett Assumes Duties of Commander, Navy Region Mid-Atlantic

By DoD Chesapeake Bay Program

In September 2025, Rear Admiral Stephen Barnett, a Columbia, Tennessee, native, assumed command of Navy Region Mid-Atlantic (CNRMA), relieving Rear Admiral Carl Lahti. A graduate of Tennessee State University and Troy State University, Barnett was commissioned in 1991 and now oversees all shore-based naval activities across a vast 20-state area. This region, stretching from North Carolina to Maine and west to Illinois, includes 14 installations and numerous reserve centers vital to the Navy's mission.

As he stepped into this position, Adm. Barnett championed the Navy's core principles, aligning his command with the service's enduring mission and future objectives. This change in leadership comes as the Navy reflects on its 250-year history of safeguarding America's freedom, a legacy forged at sea. At the heart of Adm. Barnett's command philosophy is a deep respect for the Navy's 250-year history as the safeguard of America's freedom. CNRMA will steadfastly support the fleet that projects power and ensures freedom of the seas. Barnett is committed to upholding this legacy of forward presence, which is the cornerstone of maritime dominance and guarantees the free flow of commerce that powers our nation's prosperity.

A key priority for Barnett is the understanding that this forward defense begins at home, forged by American hands in America's shipyards. He has made it clear that CNRMA is dedicated to strengthening the industrial base within the Mid-Atlantic region, viewing it as a national security imperative. Under his guidance, CNRMA will be pivotal in supporting the expansion of our shipbuilding capacity, reinforcing the truth that "Naval power is national power."

American freedom was won on the waves and is sustained today by the most capable and lethal fleet in history. Looking ahead, Barnett's leadership is firmly fixed on the development of the "golden fleet." He asserts that America's ability to deter and win future conflicts depends directly on the support his shore-based command provides to build, sustain, and modernize the most capable and lethal fleet in history. Rear Admiral Barnett is committed to ensuring that the warships and submarines of the future have the backing they need to provide decisive responses to whatever challenges may lie on the horizon.



PHOTO CREDIT: U.S. NAVY

Rear Admiral Stephen Barnett



PHOTO CREDIT: CHIEF PETTY OFFICER AMANDA KITCHNER

Rear Admiral Stephen Barnett at the CNRMA change of command ceremony, September 12, 2025



Success Story: Fort A.P. Hill Awarded Resilience Funding for Monarch Butterfly Habitat

By Andrew Satterwhite, Fort A.P. Hill

Fort A.P. Hill (FAPH) was awarded nature-based resiliency funding to restore native habitat, with a focus on creating monarch butterfly habitat. This initiative reflects FAPH's integrated approach to strengthening military readiness while promoting sound natural resource management for long-term mission sustainability.

To identify opportunities for improvement, the Natural Resources Team evaluated several frequently mowed management units in and around the FAPH Landing Zone, a 600-acre open area that requires active management to reduce woody growth encroachment. While mowing helps control this encroachment, it also encourages sod-forming grasses like fescue and requires significant investment in resources, such as equipment, fuel, and time. The resulting habitat does not support many native species critical to the Department of War, such as the monarch butterfly and northern bobwhite quail.

By leveraging nature-based funding, FAPH is strategically restoring native habitats that not only reduce annual maintenance requirements and costs, but also enhance military mission resilience. Native plantings offer benefits far beyond supporting wildlife habitat, including improved water quality and runoff reduction.

To prepare the land, crews used heavy equipment, prescribed fire, and targeted herbicide application to remove invasive species and woody vegetation, creating a suitable seedbed for restoration. By summer 2025, 90 acres of native habitat were planted, with an additional 90 acres planned for spring 2026. The native seed mix comprises 26 species of native warm-season grasses and forbs, including 3 milkweed species essential for monarch butterflies.

Looking ahead, these areas will be managed on a 2-year rotation, using prescribed fire and light disking. Wildlife response is already evident after just one growing season. The long-term benefits will be felt through improved mission readiness and sustainability, alongside enhanced natural resources at FAPH. This project underscores the Department of War's commitment to environmental stewardship and aligns with FAPH's Integrated Natural Resource Management Plan.

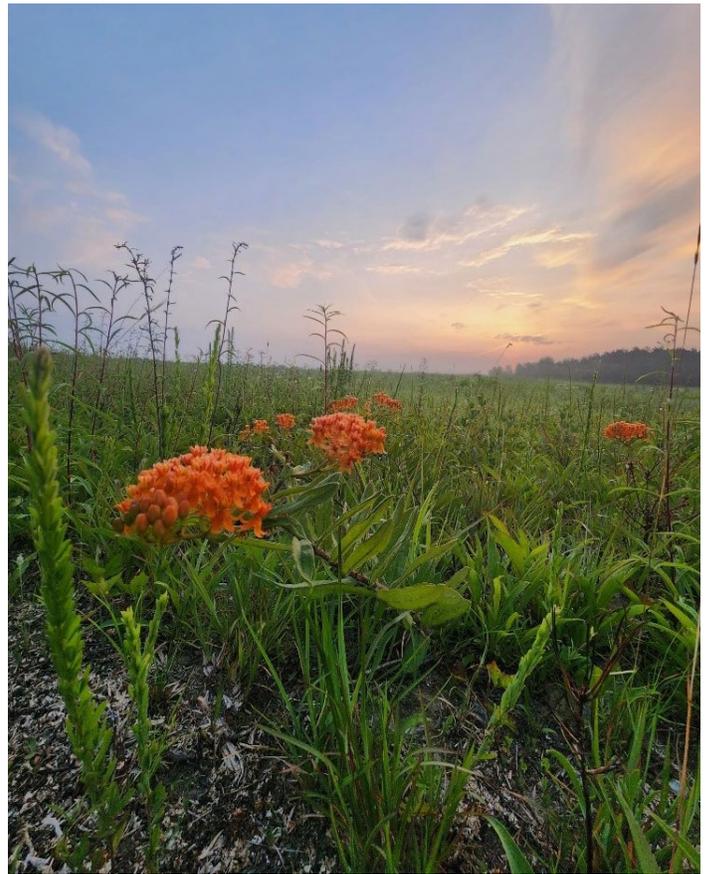


PHOTO CREDIT: ANDREW SATTERWHITE, FORT A.P. HILL

Butterfly milkweed in the field seen in the area of the prescribed burn



Area left unmowed for three years, overtaken by invasive autumn olive and other woody vegetation



PHOTO CREDITS: ANDREW SATTERWHITE, FORT A.P. HILL

Same area after autumn olive was removed



PHOTO CREDIT: ANDREW SATTERWHITE, FORT A.P. HILL

Prescribed fire used to prepare a site for native plantings



Success Story: Eagle Nesting Season Returns to Aberdeen Proving Ground

By Emily Myers, Aberdeen Proving Ground

Each winter, bald eagles begin one of the most critical phases of their life cycles on Aberdeen Proving Ground (APG): nesting and raising young. From December through early summer, the installation becomes an important sanctuary for the nation's emblem, supported by a comprehensive conservation program led by the APG Department of Public Works (DPW), Environmental Division – Natural Resources Team.

Bald eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. APG's management practices align with guidance from the U.S. Fish and Wildlife Service (USFWS) to ensure the species continues to thrive while military missions continue uninterrupted.

During nesting season, which typically begins December 15 and lasts until mid-June, APG establishes 200-meter protective buffer zones around known eagle nest trees. According to Lynda Hartzell, Natural Resources manager with DPW's Environmental Division, these buffers are essential to reducing disturbance.

"The buffers serve to protect the nest tree and associated habitat and minimize visual and auditory impacts associated with human activity near the nest site," Hartzell said. Within these areas, human activities are restricted during nesting season. Routine vehicle and pedestrian pass-through traffic on main roads is allowed, but smaller access roads may be temporarily closed with barricades or marked with signage. Many nests are in restricted range areas, where access is already limited.

In addition to seasonal protections, APG implements year-round conservation measures, including installing highly visible markers on overhead power lines to reduce eagle collisions, promptly removing road-killed animals to minimize vehicle strikes with scavengers, and conserving forested shorelines that provide critical habitat.

Monitoring eagle nests is a key part of APG's stewardship program. The Natural Resources Team conducts four to five aerial surveys each nesting season to track nest activity and productivity. "We look for indications of nest activity including fresh sticks and grass lining in the nest, eagles perched in the nest tree, and eagles standing or sitting in the nest," Hartzell explained. "Later in the nesting season, we count the number of nestlings in each nest."

These surveys are conducted in partnership with the Aberdeen Test Center (ATC) Aviation Operations Division, using in-house pilots and aircraft. The collaboration provides significant cost savings and ensures flights are conducted safely and efficiently. "ATC's pilots provide an immense level of expertise in navigating to every nest on the installation at the appropriate speed, altitude, and route to avoid disturbing the nests," Hartzell said.

Flights are scheduled early in the morning, before testing ranges become active, with constant coordination with Range Control. As trees leaf out in late spring and nests become harder to see from the air, the team transitions to ground surveys to confirm when young eagles have successfully fledged.

APG personnel, residents, and visitors are encouraged to enjoy observing bald eagles — from a distance. "An eagle will let you know you are too close by stopping and not resuming its normal activity, by flying off, and/or by vocalizing," Hartzell said.

Human activities are restricted to within 200 meters of nests during nesting season, though exceptions are made for routine traffic and ongoing mission operations. For hunters and outdoor recreation users, eagle nest buffers are clearly identified on APG's iSportsman website (<https://aberdeen.isportsman.net/>), the installation's online portal for recreational access. These measures help balance wildlife protection with APG's testing, training, and recreational missions.

Education is another cornerstone of APG's eagle conservation efforts. Each year, the Natural Resources Team convenes meetings with mission partners to review and update the Integrated Natural Resources Management Plan, which outlines how APG manages wildlife and habitat while sustaining military readiness.

The team also supports community outreach, including annual Arbor Day and Earth Day events, featuring hands-on demonstrations and educational displays about APG's natural resources programs. Through careful planning, monitoring, and community cooperation, APG continues to serve as both a critical military installation and a haven for bald eagles — helping ensure that future generations can witness these iconic birds nesting within the Chesapeake Bay watershed.



PHOTO CREDIT: ABERDEEN PROVING GROUND

A bald eagle nesting area sign



Implementation of Permeable Pavement and Pavers for Water Quality Improvements

By Jacobs Solutions Inc.

Permeable pavement and pavers are a type of low-impact development (LID) stormwater best management practice (BMP) that reduce runoff volume and improve water quality. They can help installations, especially those with open space or natural land cover constraints, comply with municipal separate storm sewer system (MS4) regulations, and meet water quality Federal Planning Goals. These systems also advance resilience objectives under the DoD's Unified Facilities Criteria (UFC) for LID by mimicking natural conditions and eliminating the need for underground sewer pipes and conventional stormwater systems.

What are Permeable Pavements and Permeable Pavers?

Permeable pavements are an alternative type of pavement designed to allow stormwater to filter through a pavement surface into underlying layers of open-graded aggregates, typically soil and gravel mixes. These layers provide temporary storage and initial treatment of stormwater before it infiltrates as groundwater or is discharged at a controlled rate to the storm sewer system. Conventional, impervious pavements route runoff directly to drainage inlets and pipes, while permeable pavements reduce runoff by promoting infiltration and groundwater recharge. When infiltration capacity is exceeded, excess water is conveyed to the storm sewer system at a regulated rate.

Best Applications at Military Installations

Military installations can experience high stormwater runoff rates due to extensive impervious surfaces, such as parking lots, flight aprons, low-speed roads, and more. Permeable pavement applications are most effective in areas like parking lots, sidewalks and walkways, and low-traffic roads.

Several military facilities within the Chesapeake Bay watershed have implemented permeable pavement, including the Washington Navy Yard (D.C.), Defense Supply Center Richmond (VA), National Security Agency at Fort George G. Meade (MD), and more.

Site suitability for permeable pavement depends on key criteria:

- The soil infiltration capacity should be tested to determine if direct infiltration is feasible, or if an underdrain is required.
- Weather and freeze-thaw cycles should be considered, though these surfaces may reduce the need for salt application by preventing surface pooling.
- Certain military vehicles' load-bearing requirements or traffic uses may preclude the use of permeable pavement.

Design Requirements

Design requirements for permeable pavements include proper subgrade strength and compaction, and suitable soil composition for acceptable infiltration rates or underdrain installation, if acceptable infiltration rates cannot be achieved. The permeable pavement hydraulic design will need to manage stormwater volume and flow. Detailed guidance and technical criteria for implementation are provided in UFC 3-210-10 Low Impact Development¹ and jurisdictional guidelines.

¹ Unified Facilities Criteria (UFC). 2023. "Low Impact Development." <https://www.wbdg.org/dod/ufc/ufc-3-210-10>.

Three Major Types of Permeable Pavement

- **Permeable interlocking concrete pavers (PICP):** Consist of concrete or stone modular units with open, permeable spaces between the units to pass stormwater through.
- **Porous asphalt:** Standard hot-mix asphalt with interconnected voids that allow stormwater to drain through it. Typically, these applications are designed above a subsurface stormwater system for storage and infiltration.
- **Pervious concrete:** A high-porosity concrete that allows stormwater to drain through it. Similarly to porous asphalt, these applications are designed above a subsurface stormwater system for storage and infiltration.



Pollutant Removal Benefits

Permeable pavements reduce pollutant loads to groundwater and surface waters through filtration within the aggregate layers and, in some cases, biological treatment in the subgrade.

Removal of nutrients (nitrogen and phosphorous) require specific design features. Partial infiltration designs that detain water for over 24 hours ensure de-nitrification; and systems accompanied by filter layers made of iron reduce phosphorous loads. Integrated “filter train” systems that route overflow to bioswales or rain gardens further enhance nutrient removal efficiency.

Maintenance Requirements

Routine maintenance is essential to preserve functionality and longevity of permeable pavements. Key periodic maintenance tasks include:

- Periodic removal of fine sediments from the surface to optimize permeability and prevent clogging
- Periodic maintenance and replenishment of joint materials to sustain infiltration (typically in PICP applications)

Annual inspections, ideally soon after winter, should be performed to assess sediment accumulation, structural integrity, and overall performance. Observation wells allow visual monitoring of drawdown following storm events.

Clogging, particularly after winter, is a common issue and typically requires vacuum sweeping to restore infiltration. Sand use during winter should be minimized to prevent clogging, and any surface damage, such as cracking or deterioration, should be repaired in accordance with design standards.

Cost to Implement

The most significant costs associated with permeable pavement occur during design and construction, including site preparation, material procurement, and labor and equipment for installation. Unit costs per square foot vary by pavement type, as shown in the callout box. Although upfront costs are typically higher than conventional pavement, permeable pavements offer long-term savings through reduced stormwater management (SWM) and maintenance expenses. Additional information on construction and material costs is available through the Department of Energy and Environment of DC’s tool for SWM BMP Green Infrastructure Construction Price Calculator.²

Recent Innovations

Recent advancements in permeable pavement technology have enhanced their effectiveness as sustainable infrastructure solutions. Material innovations, including increased porosity, enhance infiltration rates, and high-strength compositions allow for applications in areas with heavy traffic loads. Design improvements, including treatment trains and integrated sub-surface stormwater storage systems, expand the stormwater volume storage capacity and improve water quality. Additionally, the incorporation of smart monitoring sensors enables real-time performance tracking, supporting proactive maintenance and long-term system reliability.

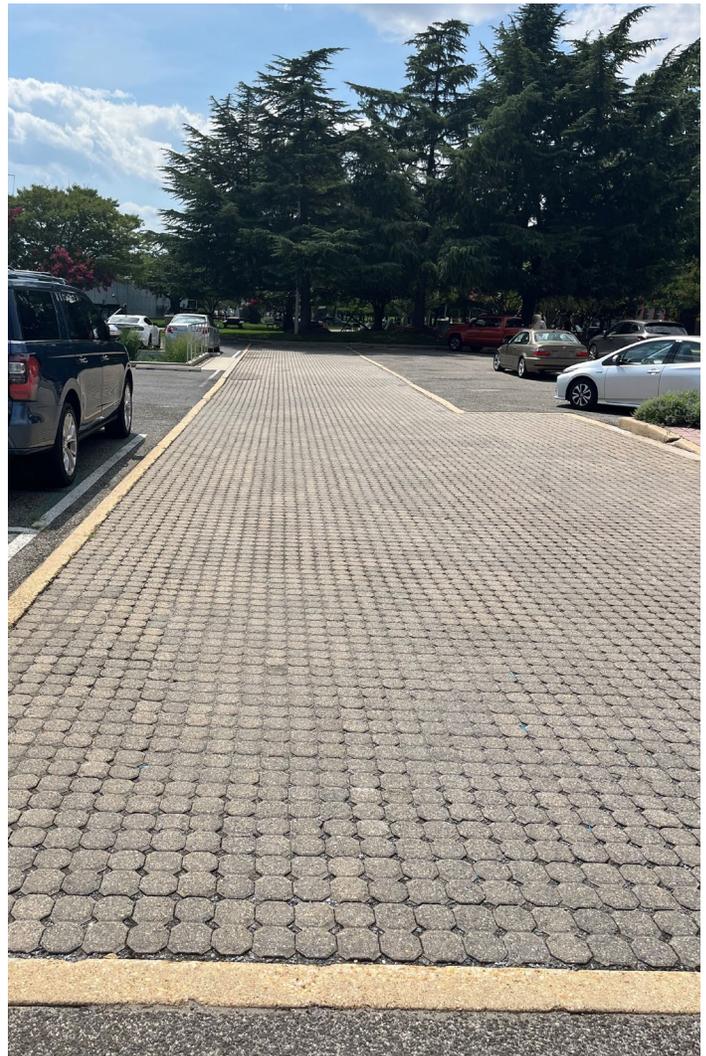


PHOTO CREDIT: NAVAL SUPPORT ACTIVITY WASHINGTON NAVY YARD

Permeable pavers at Naval Support Activity Washington Navy Yard

Unit Costs by Pavement Type

PICP: \$7–\$14/square foot (sf)

Porous Asphalt: \$1–\$1.5/sf

Pervious Concrete: \$3–\$9/sf

Traditional Asphalt: \$1–\$2/sf

² Department of Energy and Environment DC. No date. “Permeable Pavers Info.” SWM BMP Green Infrastructure Construction Price Calculator. https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Permeable%20Pavement%20-%20SWM%20BMP%20Green%20Infrastructure%20Construction%20Price%20Calculator_1_0.xlsx.



Resources for Stormwater Managers

Stormwater managers seeking guidance on permeable pavement implementation can refer to the following key resources:

- **UFC 3-210-10: Low Impact Development** provides comprehensive requirements and design guidelines for integrating permeable pavement into DoD SWM strategies.³
- **EPA Green Infrastructure Resources** offer best practices, technical specifications, and case studies for permeable pavement applications, including:
 - Soak Up the Rain: Permeable Pavement⁴
 - EPA Stormwater BMP Fact Sheet: Permeable Pavements⁵
- For **jurisdictional standards**, consult local and regional references for compliance with applicable permeable pavement design and installation requirements.

Conclusion

Permeable pavement and pavers offer substantial SWM and water quality benefits for DoD installations, particularly in areas with extensive impervious surfaces. Successful implementation requires thorough site assessment, proper design, and consistent maintenance to help ensure long-term performance. While initial construction costs may be higher than traditional pavements, permeable pavement systems offer a cost-effective alternative by reducing nutrient loads to meet Federal Planning Goals and minimizing downstream infrastructure requirements.

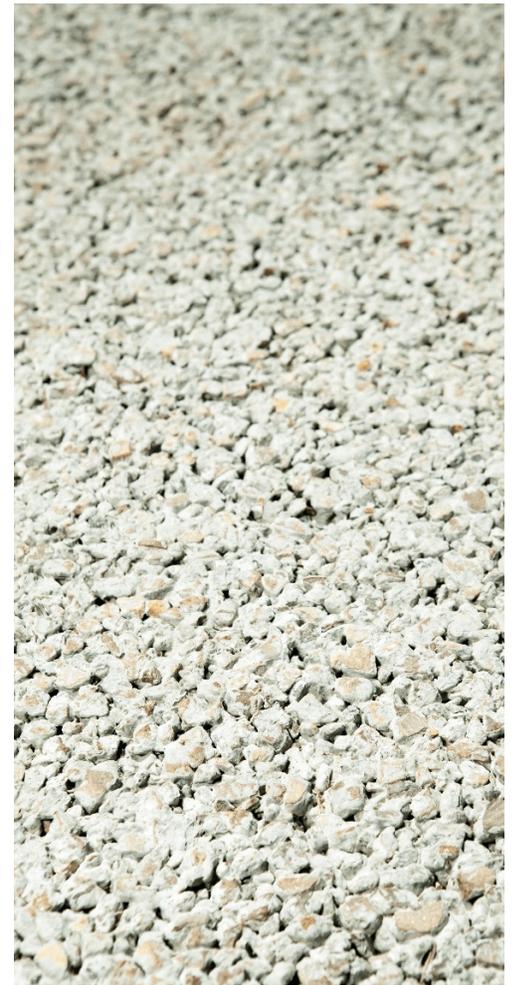


PHOTO CREDIT: EPA PERMEABLE PAVEMENTS FACT SHEET

Close-up view of pervious concrete pavement

³ UFC. 2023. “Low Impact Development.”

https://www.wbdg.org/FFC/DOD/UFC/ufc_3_210_10_2023.pdf.

⁴ EPA. 2025. “Soak up the Rain: Permeable Pavement.”

<https://www.epa.gov/soakuptherain/soak-rain-permeable-pavement>.

⁵ EPA. 2021. “Stormwater Best Management Practice Permeable Pavements.”

<https://www.epa.gov/system/files/documents/2021-11/bmp-permeable-pavements.pdf>.

Chesapeake Bay Action Team Updates

By Jacobs Solutions Inc.

Members of the Chesapeake Bay Action Team (CBAT) last convened for its meeting on December 17, 2025.

Monarch Joint Venture

CBAT members were provided with an overview of the Monarch Joint Venture organization and examples of projects in collaboration with military installations. Installations were provided with best management practices for sustaining monarch butterflies and opportunities for future cooperation between the Monarch Joint Venture and DoD installations in the Chesapeake Bay watershed.

Chesapeake Bay Service Leads and Installation Roundtable Discussion

CBAT members were provided with updates on the Middle Chesapeake Sentinel Landscape, the Virginia Security Corridor Sentinel Landscape, and the Kittatinny Ridge Sentinel Landscape.

2024 DoD Total Maximum Daily Load Progress Evaluation

Members were presented with an overview of DoD Total Maximum Daily Load progress through state fiscal year 2024, planned effort through 2025, and the additional level of effort needed to achieve 2025 Federal Planning Goal targets.



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Webinars and Links of Interest!

Upcoming and Past Webinars

(past webinars can be viewed at the links provided)

- **01/27/2026: Community to Conservation: How Participatory Science is Closing Knowledge Gaps and Driving Conservation**
Presented by Jennifer Thieme, Monarch Joint Venture, and Rich Hatfield, Xerces Society, as part of the Monarch Conservation webinar series
<https://monarchjointventure.org/resources/monarch-webinar-series/citizen-science/community-to-conservation>
- **05/12/2026: Northern Monarch Larva Monitoring Project Course**
The Monarch Larva Monitoring Project team from the Monarch Joint Venture will lead this virtual one-day training on how to collect data that contribute to our knowledge about the monarch population. Participants learn about monarch biology, monitoring procedures, and data entry protocols, and are able to ask monarch biologists questions about monarchs and monitoring.
Register in advance: <https://learn.monarchjointventure.org/courses/LIVE-Monarch-Larva-Monitoring-Project-Northern-2026>

Helpful Links

- **DoD 2025 Readiness and Environmental Protection Integration (REPI) Program 19th Annual Report to Congress, April 25, 2025**
https://www.repi.mil/Portals/44/2025_REPI_RTC_20250430_1.pdf

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