



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

Meet DoD’s New Regional Environmental Coordination Office Team Member

By DoD Chesapeake Bay Program

Please welcome to the team, Ashley Kelly, our new Department of Defense (DoD) Chesapeake Bay Program (CBP) Coordinator, Regional Environmental Coordination (REC) office in Norfolk, Virginia. Ms. Kelly grew up in the Adirondack Mountains in Upstate New York. Though she did not visit the coast of the Atlantic Ocean until the age of 10, she credits her love of the ocean to this experience. In 2010, she received her bachelor’s degree from University of Rhode Island with a major in Marine Biology. During her undergraduate education, she also studied abroad in Australia and attended James Cook University. This notable experience peaked Ms. Kelly’s interest in conservation. She later attended the College of the Atlantic and received a Master of Philosophy degree in Human Ecology with a focus in Marine Ecology and Policy in 2013.

From 2013 to 2015, Ms. Kelly worked as a Phytoplankton Specialist at the Community Environmental Health Laboratory within the Mount Desert Island Laboratory (MDIBL) in Maine. As a phytoplankton specialist, she collected phytoplankton and water quality at three coastal locations to monitor biotoxins. These activities resulted as part of a partnership with Maine Healthy Beaches and Maine Department of Environmental Protection. She submitted daily reports to Maine Department of Marine Resources to monitor the biotoxins that impact the Maine mussel industry. During her time at MDIBL, she was also a Research Assistant and Lab Manager for the Updike Lab where they study cellular totipotency and germline development using the genetic model organism *C. elegans*. From 2016 to 2019, she worked as a Senior Environmental Analyst for a government contractor supporting U.S. Fleet Forces (USFF) Command with environmental planning and marine resources efforts. A key planning effort included the Environmental Impact Statement/Overseas Environmental Impact Statement for Atlantic Fleet Training and Testing (Phase III).

In April 2019, Ms. Kelly accepted a position with Naval Facilities Engineering Systems Command Mid-Atlantic where she served as a National Environmental Policy Act project manager and oversaw complex environmental planning, consultation, and permitting efforts in support of Navy mission needs. She also managed and supported environmental planning efforts for the Marine Corps, other DoD, and federal agency

Ms. Kelly recently joined the Regional Environmental Coordination team in March 2023, and looks forward to building relationships and partnering with federal, state, local governments, and non-governmental organizations to protect and restore the Chesapeake Bay. Welcome, Ashley!



IMAGE PROVIDED BY ASHLEY KELLY, DoD CBP

Ms. Kelly hopes to bring her experience in marine science and relationship building with stakeholders to the CBP team.

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Commander's Corner: Chesapeake Bay Commanders' Conference After-Action Report

By Elizabeth Karivelil, Brown and Caldwell

The 2022 Chesapeake Bay Commanders' Conference (CBCC) was held August 17-18, 2022. The CBCC provided a venue for the DoD Chesapeake Bay Program (CBP) to share information about DoD's obligations to the CBP Partnership (Partnership) and the Chesapeake Bay Total Maximum Daily Load (TMDL), the DoD CBP's role, DoD's progress toward its commitments, and the remaining effort required by the end of the TMDL in 2025.

Day 1: 148 participants 14 Commanding Officers	Day 2: 106 participants 9 Commanding Officers
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The table below summarizes how the CBCC did or did not achieve the objectives and critical success factors (CSFs) identified during conference planning. In some cases, similar objectives and CSFs have been combined.

Table 1. Assessment of CBCC CSFs and Objectives

Objective/CSF	How the CBCC Did/Did Not Achieve the Objective/CSF
CSF 1: Increase engagement and buy-in, especially from installation COs and other DoD leadership.	14 COs attended on Day 1, and 9 COs attended on Day 2. This represents only 22% and 14% of installations in the watershed, respectively. This CSF was not achieved. More CO participation and collaboration with support staff is needed to meet mission and CBP goals.
CSF 2: Achieve higher attendance (measured by final head count, representation across Services, and attendance by COs) than the 2019 CBCC.	Overall attendance was higher for the virtual 2022 CBCC, but representation from COs was less than the 2019 CBCC. Because CO engagement was one of the conference's primary goals, this CSF was not achieved.
CSF 3: Provide information related to new tools/resources and funding opportunities for installations. Objective 2: Inform attendees of new tools and resources that can help installations or programs accomplish their CBP goals and support the installation mission.	Speaker presentations highlighted tools, funding opportunities, and potential partnerships to assist in meeting individual installation missions. Survey respondents agreed this objective was met.
CSF 4: Share positive messages about DoD's leadership in the Partnership with external partners.	The success stories shared by staff from six installations were the highest rated presentations from the CBCC. This CSF was achieved.
CSF 5: Improve understanding and commitment of DoD CBP goals from COs and installation staff. Objective 1: Describe installations' responsibilities and how installations and programs contribute to the overall DoD CBP outcomes and goals.	Day 1 presentations reviewed the DoD CBP's accomplishments and progress related to the TMDL, Chesapeake Bay Watershed Agreement goals, and municipal separate storm sewer system permits. Survey respondents agreed this objective was met.
CSF 6: Identify challenges, consequences, and potential solutions related to the Chesapeake Bay restoration.	The conference presentations highlighted tools and resources, programs, and potential partnerships that can be leveraged to overcome challenges, such as funding. This CSF was achieved.
CSF 7: Increase conference feedback, including participation in the post-conference survey.	Only 15 attendees (11 DoD respondents, including 5 COs) responded to the survey, equating to a 10% response rate. Therefore, the survey results may not reflect the opinions of most attendees. This CSF was not achieved.
CSF 8: Develop and strengthen relationships with non-DoD jurisdiction and regulatory partners. Objective 4: Share potential partnership and collaboration opportunities that can help installations or programs accomplish their mission.	Breakout sessions gave installations an opportunity to engage in new conversations, build connections, and develop ideas for future solutions to mission needs. Survey respondents agreed this objective was met.

From the 2022 CBCC, the DoD DBP team understood installation preferences to hold another conference before the 2025 Chesapeake Bay TMDL implementation deadline. Survey respondents recommended an in-person conference to alleviate the technical issues and limited networking opportunities caused by the virtual format. Potential topics for this conference include updates to on-base and off-base funding opportunities, DoD CBP benefits in supporting the DoD mission and Chesapeake Bay restoration goals, as well as successful projects and interactions between installations and non-DoD jurisdiction and regulatory partners.



Effects of Rising Water Temperatures in the Chesapeake Bay Watershed

By Elizabeth Karivelil, Brown and Caldwell

Since 1965, most waterbodies in the Chesapeake Bay watershed have warmed with more significant temperature increases in non-tidal streams and rivers compared to tidal waters. Higher water temperatures can negatively impact native plant and animal species, habitat quality, and water quality. To mitigate the effects of increasing temperature on DoD ecosystems needed for testing and training missions, installations should prioritize the conservation of natural land and shorelines and the implementation of BMPs that meet water quality and natural resource goals while providing cooling benefits.

Role of Water Temperatures in the Bay Restoration

For decades, the Chesapeake Bay Program Partnership (Partnership) has based its restoration and protection goals on the assumption that air and water temperature regimes are constant. However, scientific data now shows that water temperatures have been increasing in the Chesapeake Bay and its tributaries. Also, research supports the concept that temperature changes have significant ecological implications for water quality, natural resources, and watersheds in ways that could affect progress toward the goals of the Chesapeake Bay Total Maximum Daily Load and Chesapeake Bay Watershed Agreement. Therefore, the Chesapeake Bay Scientific and Technical Advisory Committee (STAC) held a workshop to examine the drivers, effects, and implications of rising water temperatures on the Chesapeake Bay and the Partnership's management strategies and future decision making. This article reviews their findings with an emphasis on steps DoD installations can take to mitigate the impacts of water temperatures increases.

Non-Tidal Waters

Compared to the tidally influenced waterbodies near the Chesapeake Bay, non-tidal streams and rivers have experienced higher rates of temperature increases. Drivers of this change, and the direction of their influence on water temperatures, are shown in Figure 1. In addition to these drivers, site-specific characteristics also contribute to the change in temperatures. For example, the channel shape, water depth, and the presence of vegetation on the bank or overhead can affect how higher air temperatures influence the waterbody and the exposure of wildlife that live in it.

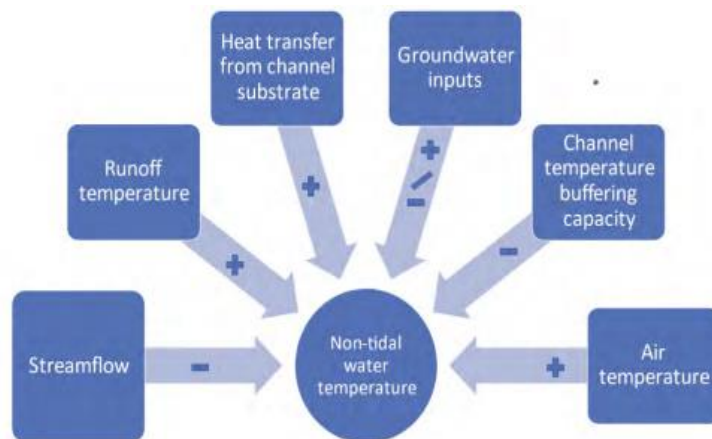


Figure 1. The drivers of non-tidal water temperature rise in the Chesapeake Bay watershed. (Batiuk et al., 2023)

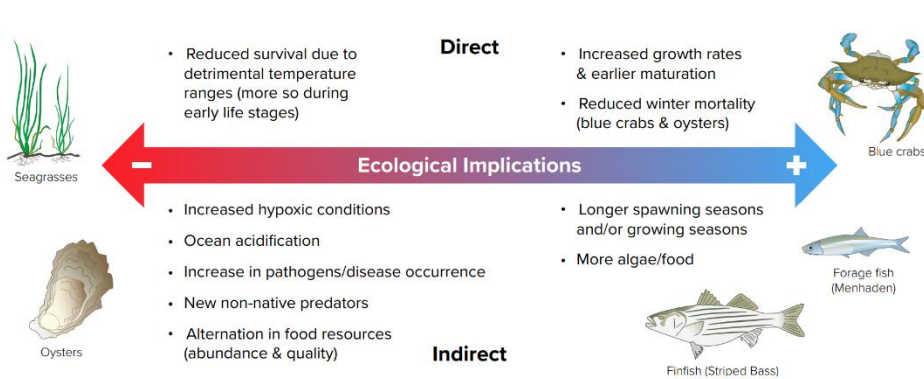
Higher water temperatures can be expected to have an overall negative impact on aquatic habitats and species that provide important ecological and recreational services. Warmer waters may lead to growth of invasive species, algae, and bacteria and the decline in dissolved oxygen levels, all of which degrade healthy watersheds.

Many of the most common best management practices (BMPs) implemented to reduce pollutant loads in the Chesapeake Bay watershed actually contribute to higher water temperatures. These “heater” BMPs include detention basins and vegetated open channels where stormwater from warm impervious surfaces is conveyed to receiving waterways. Other examples are shoreline hardening techniques, such as seawalls and breakwaters, that harm fish and submerged aquatic vegetation (SAV) habitats and can lead to additional warming. Moving forward, installations should prioritize the implementation of “cooler” BMPs such as riparian forest buffers, upland tree plantings, urban stormwater infiltration practices, and wetland restoration. These “cooler” BMPs reduce water temperatures by infiltrating urban stormwater heated by impervious surfaces or by reducing the exposure of stormwater and conveyance waterways to conditions that would lead to higher water temperatures. Land conservation is also an effective strategy to preserve natural systems that provide shade and reduce water temperatures. Protecting land from development and conversion to impervious area also reduces the amount of heated runoff and contaminants entering waterways.

Tidal Waters

The average annual temperature of tidal waters in the Chesapeake Bay is estimated to increase by 1°C from 1995 to 2025. Global atmospheric forces are a major contributor to the increase; 0.6°C or 78% of the total temperature change in Chesapeake Bay bottom water temperatures over a 30-year period is attributed to higher air temperatures. Sea level rise and higher river temperatures also affect tidal water temperatures. Sea level rise slightly cools the Chesapeake Bay mainstem water column temperatures during the warmer months, April to September, but warms the water at the bottom of the Bay from November to February. Increasing river temperatures also warm the Bay’s mainstem water column, though the impacts are limited in comparison with atmospheric forces.

Temperature changes in tidal waters influence the basic ecological functions of species like fish, oysters, and SAV; the direct and indirect impacts are summarized in Figure 2. Fish are very sensitive to environmental conditions; certain species cannot survive in warmer temperatures and may shift their habitat range. Oyster populations have already declined due to disease, overfishing, and habitat loss. Though warmer temperatures could potentially allow oyster habitat range to expand, the anticipated effects of ocean acidification and salinity change would negatively affect their survival rates.



Aquatic habitats, including SAV beds and salt marshes, are also likely to be impacted. Warmer temperatures in tidal waters will favor more heat tolerant SAV species; however, in the short term, warmer waters will lead to a loss of SAV biodiversity and ecological services in the Bay. Moreover, co-stressors on water quality, such as decreased water clarity and dissolved oxygen levels, can further reduce the productivity of SAV and other aquatic plant species.

Figure 2. The positive and negative changes associated with rising water temperatures for various species. (Batiuk et al., 2023)

To address higher temperatures in tidal waters, DoD installations should

prioritize the use of natural infrastructure for installation protection and shoreline stabilization. Conservation of marshes, reefs, and SAV and the restoration of wetlands using living shoreline techniques provides benefits, such as increasing the available oxygen, providing shade, and filtering pollutants, which help address the impacts of climate change. Conserving and restoring natural and nature-based features also provides carbon sequestration co-benefits consistent with Service Climate Action Plans that call for DoD actions to build climate resilience.

Recommendations for DoD Installations

The effects of higher water temperature ripple throughout upland and aquatic ecosystems. Installations should consider strategies to improve communications between media managers, subject matter experts, and stakeholders on the new temperature regime, as well as its impact and potential adaptation strategies. The STAC’s recommended natural and nature-based management strategies to reduce water temperatures can also mitigate the effects of urban heat islands, which can damage infrastructure and limit military fitness, training, and other mission activities.

Inland installations can address higher temperatures in non-tidal waters by prioritizing “cooler” BMPs and maintaining and enhancing natural areas by planting trees, restoring streams and riparian forest buffers, and conserving natural lands. Installations located on the Chesapeake Bay or other tidal waters can address higher temperatures by prioritizing the use of natural infrastructure to conserve or restore streams, creeks, natural vegetated shorelines and SAV beds. These practices provide a dual benefit to meet water quality and natural resource requirements of the Clean Water Act and Sikes Act as well as DoD commitments to the Chesapeake Bay TMDL and Watershed Agreement. The STAC also identified action items for the Partnership, which may produce resources to help installations, such as nearshore research and identification of habitat restoration areas with high ecological and climate resilience co-benefits. This is a growing area of research and reflects the Partnership’s efforts to refine its approach to a changing climate and emerging science.

References

Batiuk et al., “Rising Watershed and Bay Water Temperatures – Ecological Implications and Management Responses” paper: <https://www.chesapeake.org/stac/document-library/rising-watershed-and-bay-water-temperatures-ecological-implications-and-management-responses/>

Promoting Education and Awareness at Fort Gregg-Adams and Naval Station Norfolk

By John Allen, Fort Gregg-Adams, and Lieutenant Commander Lindsay McCarl, U.S. Navy

This spring, Virginia installations including Fort Gregg-Adams (formerly Fort Lee) and Naval Station Norfolk held public outreach events to promote environmental stewardship and climate resilience in the DoD community. These events highlight DoD's continued commitment to encourage public involvement and engagement in the Chesapeake Bay watershed.

Fort Gregg-Adams Harrison Branch Cleanup for Earth Day

On 21 April 2023, 64 Marines and 13 civilian volunteers at Fort Gregg-Adams (formerly Fort Lee) worked together to remove nearly 1,000 pounds of trash from 2,400 linear feet of Harrison Branch as part of its Earth Day celebration. Harrison Branch is a tributary of the Appomattox River and receives stormwater runoff from base housing and a state highway. Due to its isolated location and dense vegetation, the clean-up site had been neglected for many years. During the event, volunteers collected tires, plastics, glass, scrap metal, and other litter. The Fort Gregg-Adams Cultural Resource archaeologist and curator was present to help identify items of potential cultural or archaeological significance. The installation's Pollution Prevention Manager and Natural Resources Manager also shared information about the installation's recycling program and native and invasive vegetation species the volunteers encountered. This event embodies the spirit of Earth Day with tangible environmental improvement and meaningful environmental education.



IMAGE PROVIDED BY ERICKA GILLESPIE, FORT GREGG-ADAMS

Volunteers and military personnel participated in the clean-up to collect nearly 1,000 pounds of trash along Harrison Branch.

Naval Station Norfolk Climate Resilience Bus Tour

Lieutenant Commander Lindsay McCarl, the Regional Environmental Counsel for the U.S. Navy, organized and led a bus tour around Naval Station Norfolk (NSN) for 30 law students and faculty from the College of William & Mary on 31 March 2023. Mr. Brian Ballard, the Navy Region Mid-Atlantic Region Community Planning Liaison Officer, and Mr. Kevin Du Bois, the Acting Regional Environmental Coordination Director, presented to the group about DoD and the Department of the Navy's climate resilience initiatives and projects implemented in the Hampton Roads area, explaining the important connection between climate resilience and military readiness and operations. This event represents an investment by the DoD in the area's next generation of policy and decision makers.



IMAGE PROVIDED BY LCDR LINDSA Y MCCARL, U.S. NAVY

Law students from William and Mary join LCDR Lindsay McCarl, Kevin Du Bois, and Brian Ballard on a bus tour around NSN.



Navy's Focus to Minimize Impact on the Chesapeake Bay

By Adrian Dascalu and Evan Miles, NAVFAC Washington, edited by the DoD CBP team

NAVFAC Washington is working hard to improve the water quality of the Chesapeake Bay by constructing facilities to treat stormwater runoff and completing shoreline/stream restoration projects. These projects minimize the impact of daily Naval operations on the environment and stabilize installation boundaries to minimize loss and erosion.

Stormwater runoff from developed urbanized areas typically contains contaminants, such as trash, oils, chemicals, and sediment. The Navy treats stormwater runoff with the use of best management practices (BMPs), such as bioretention areas, permeable pavement, sand filters and rain gardens. These BMPs filter pollutants before the runoff enters our rivers, streams, lakes, and coastal waters. As good stewards of the environment, NAVFAC Washington has constructed approximately 680 BMPs throughout Naval District Washington (NDW) at a cost of more than \$60 million. Routine maintenance and inspection activities that ensure the proper functionality of these BMPs require an annual budget of nearly \$5 million.

In addition to the implementation of stormwater BMPs, the Navy has focused on the stabilization and enhancement of wetlands and waterways in and around NDW installations. To date, NAVFAC Washington has stabilized and enhanced over 24,000 linear feet of shoreline and 6,500 linear feet of streams. These shoreline and stream restoration projects reduce erosion, cool tidal and non-tidal waters and stop sediment from entering the Chesapeake Bay. Wherever possible, the Navy strives to utilize natural means of stabilization to enhance stream and shoreline habitat. Natural methods include marsh and beach habitat creation, forested and emergent wetland creation and restoration, native plantings, and rock stabilization methods, such as breakwaters, sills, cascades, weirs, and pools. For construction projects impacting wetlands, the Navy collaborated with internal and external partners, such as the Maryland Department of Natural Resources, to create emergent and forested wetland in adjacent watersheds. The largest individual wetland project encompasses 5 acres and was completed in 2022 at Cedar Point Wildlife Management Area in Welcome, Maryland.

IMAGES PROVIDED BY NICOLE HERNANDEZ, NAVFAC WASHINGTON



The before (left) and after (right) of the 5-acre wetland restoration project at Cedar Point Wildlife Management Area in Welcome, Maryland.

NAVFAC Washington projects have had a significant and tangible impact on the resilience and flexibility of the Navy mission. Through the stabilization and enhancement of the natural environment, NDW installations protect DoD lands from erosion, loss of shoreline and real estate, floods and storm surge, and the resulting inevitable damage to mission critical infrastructure. Along with advancing the Navy mission, these stream and shoreline projects create wildlife habitat and help the Navy meet environmental conservation goals. The Chesapeake Bay and its tributaries have excess nutrients and sediment from a variety of human sources (such as agricultural operations, urban and suburban stormwater, and wastewater) which lead to murky water and algae blooms that are detrimental to the health of the Chesapeake Bay. These Navy projects have prevented nearly 4,200 pounds of total nitrogen, 1,500 pounds of total phosphorus, and a remarkable 3.7 million pounds of sediment per year from entering the Chesapeake Bay from Naval property. Preserving local ecosystems allows the Navy to train and develop technologies that enable warfighters to operate in nearly every theater on the globe while maintaining responsibility for the Chesapeake Bay community. The NAVFAC Washington Environmental team remains committed to improve the water quality of the Chesapeake Bay and enhancing the Navy's mission.



Chesapeake Bay Action Team (CBAT) Updates

By Elizabeth Karivelil, Brown and Caldwell

Members of the CBAT convened for their quarterly meeting on April 27, 2023. Members reviewed ongoing Chesapeake Bay-related service and installation projects and activities and were also provided with a presentation on last summer's Chesapeake Bay Commanders' Conference (CBCC).

Chesapeake Bay Service Lead and Installation Roundtable Discussion

Ms. Jennifer McDonnell from Joint Base Anacostia-Bolling shared information about the detailed procedures and fees that federal facilities in Washington, DC must follow and pay to develop an Erosion and Sediment Control Plan (ESCP). To address this issue, Ms. McDonnell provided a document from the DC Department of Energy and Environment that outlines an efficient and cost-effective process for DC installations to obtain an ESCP.

There was also discussion of the Maryland Coastal Zone Management Act and Critical Area regulation requirement for a 10% reduction of phosphorus loads for projects with construction footprints greater than 250 square feet.

2022 DoD Chesapeake Bay Commanders' Conference After-Action Report Review

Ms. Stephanie MacDurmon, with Brown and Caldwell, reviewed the 2022 CBCC After-Action Report, which documented the planning process, day-of events, and post-conference feedback from the virtual CBCC held on August 17 and 18, 2022. The presentation highlighted the successes, lessons learned, and recommendations from the conference in the context of the conference's objectives and critical success factors (CSFs). Mentimeter polls were used to gather additional feedback from CBAT members during the presentation.

The conference purpose was to share information with installation Commanding Officers (COs) on the roles and responsibilities of the DoD CBP, individual installation obligations to the Partnership and the Chesapeake Bay TMDL, the status of DoD's progress, remaining effort required toward the TMDL, and new resources and collaboration opportunities to accomplish water quality and military goals. Ms. MacDurmon shared key metrics from the conference, including the number of presentations (12), breakout sessions (8), overall attendance (148 on Day 1, 106 on Day 2), and CO attendance (14 on Day 1, 9 on Day 2).

Ms. MacDurmon then reviewed how the CBCC did or did not achieve the conference's four objectives and eight CSFs. The assessment was based in part on results of the conference survey; however, because only 15 participants (10% of attendees) responded, the results may not represent the opinion of most attendees. Based on the survey results, the CBCC accomplished its stated objectives. Unfortunately, not all critical success factors were accomplished because of the limited engagement from COs and the low participation rate in the survey. More information about the objectives and CSFs can be found in the Commanders' Corner article on page 2.

CBCC participants and members of the CBAT expressed interest in another in-person CBCC before 2025. The DoD CBP team has identified steps to achieve greater success in future conferences.

DoD Chesapeake Bay Program Updates

- Naval Air Station Patuxent River received Earth Day honors for its shoreline restoration work. More information can be found at <https://www.dvidshub.net/news/442070/naval-air-station-patuxent-river-gets-earth-day-honors-shoreline-restoration-work>.
- The Climate Resilience Workshop 2023 in St. Louis, Missouri, which will be held from July 10-13, 2023, will provide a forum for DoD, stakeholders, and partners to explore the facets of climate change.
- Thank you to Navy installations that submitted their Installation Natural Resource Management Plans (INRMPs). Other Services are encouraged to send their INRMPs to Mr. Kevin Du Bois (kevin.r.dubois.civ@us.navy.mil).
- The next CBAT meeting is scheduled for July 27, 2023.



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✓ Check it Out

Achieving Water Quality Goals in the Chesapeake Bay: A Comprehensive Evaluation of System Response. Published May 11, 2023. This CBP Partnership, Science and Technical Advisory Committee report evaluates the differences in expectations and results regarding TMDL and water quality standards progress. The full report is available at: <https://www.chesapeake.org/stac/wp-content/uploads/2023/05/CESR-Final-update.pdf>

Using UST Finder in Identifying UST Locations, Impacts on Drinking Water Supplies, and Climate Change Impacts. This EPA webinar, recorded on April 6, 2023, showcases the Underground Storage Tank (UST) Finder tool that maps UST and leaking UST data. The recording can be found at: <https://youtu.be/gw8LkXP-y8Q>

Lessons Learned: Navigating Federal Resilience Programs, REPI webinar, June 14, 2023. Learn more about how installations and partners received funding from other federal programs and best practices they learned throughout the application process at: <https://bah16f18.adobeconnect.com/rdy6cwj9gar8/>

Assessing Ecological PFAS Exposure and Effects. This SERDP-ESTCP webinar, recorded on May 18, 2023, focused on DoD-funded research efforts to assess ecological PFAS exposure and effects. A recording can be found at: <https://youtu.be/ggzl1s0ESEw>

CBAT Quarterly Conference Call and Meeting. This meeting will be on July 27, 2023, 10:00 am to 12:00 pm. EDT. Contact Kevin Du Bois or Ashley Kelly to receive a meeting invitation with a web link.

MS Teams Conference Call Phone Number: (888) 404-2493

Phone Conference ID: 207 140 022#

This newsletter is produced by Brown and Caldwell under NAVFAC Atlantic A-E Contract N62470-14-D-9022 for Support of Safe Drinking Water Act and Clean Water Act Environmental Compliance Program. For more information or to be added to the email distribution list, please contact the DoD Chesapeake Bay Program: <http://www.denix.osd.mil/chesapeake/home>.

