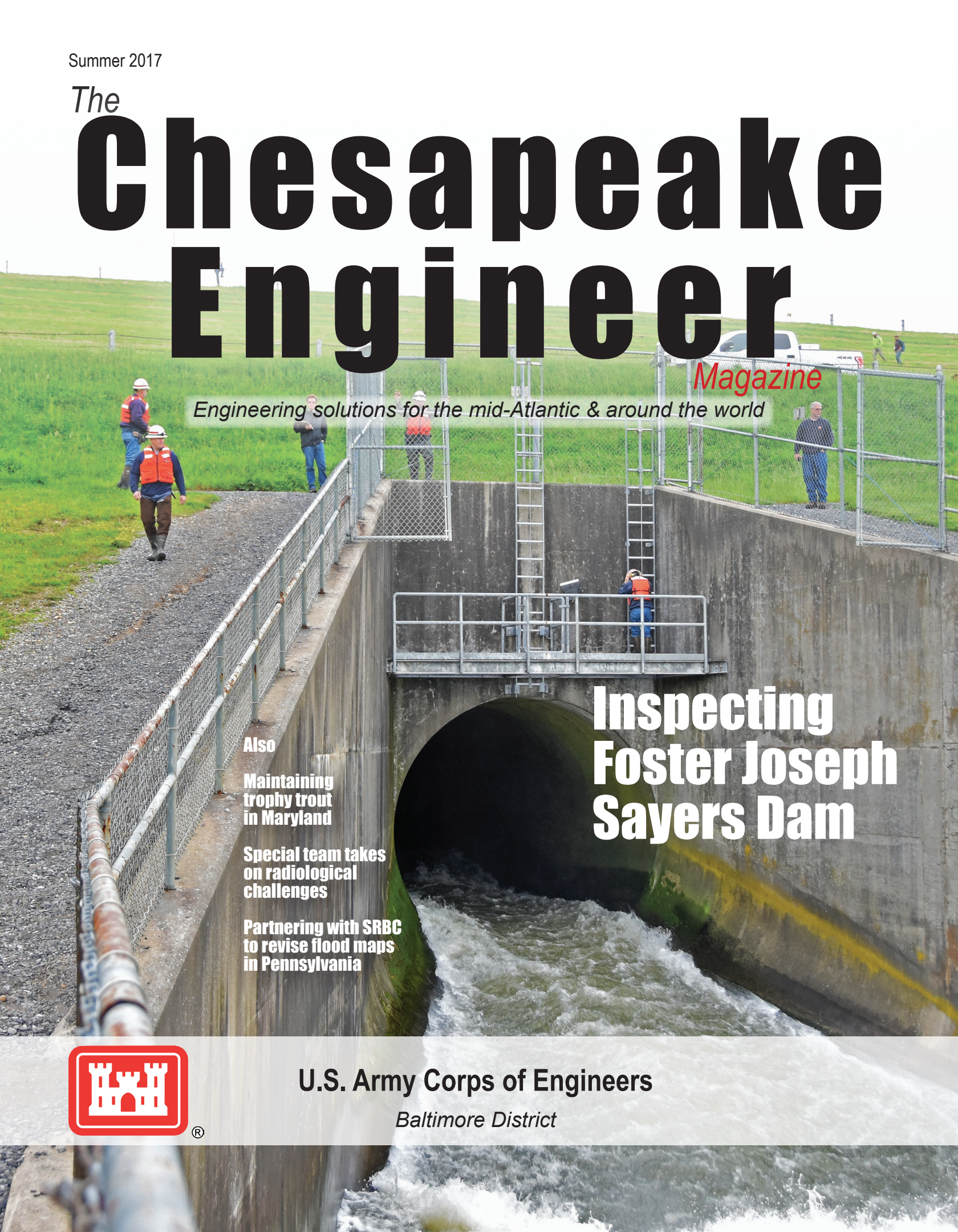
Summer 2017

The Chesapeake Engineer

Magazine

Engineering solutions for the mid-Atlantic & around the world



Inspecting Foster Joseph Sayers Dam

Also

Maintaining trophy trout in Maryland

Special team takes on radiological challenges

Partnering with SRBC to revise flood maps in Pennsylvania

U.S. Army Corps of Engineers

Baltimore District

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Magazine

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On the Cover: Engineers perform a periodic inspection at Foster Joseph Sayers Dam upstream from Blanchard, Pennsylvania, June 7, 2017. (U.S. Army photo by Cynthia Mitchell)

Features

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The mission of the U.S. Army Corps of Engineers, Baltimore District, is to deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters.

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Commander's *Message*

From left, Col. Ed Chamberlayne, U.S. Army Corps of Engineers, Baltimore District commander; Brig. Gen. William Graham, Corps, North Atlantic Division commander; Col. John Lloyd, Corps, Pittsburgh District commander; and Lt. Col. Michael Bliss, Corps, Philadelphia District commander, attend first-ever collaboration workshop between Corps and Pennsylvania officials at the Rachel Carson Building in Harrisburg, Pennsylvania, April 11, 2017. (U.S. Army photo by Sarah Gross)

One of the great privileges of commanding the U.S. Army Corps of Engineers, Baltimore District, is having the opportunity to help champion incredible programs that support our warfighters abroad and our communities at home. While most people know the Army as an elite group of specially-trained Soldiers, they may not know about the elite group of Civilians who apply specialized training to support not only our brave heroes deployed around the world, but also critical infrastructure and natural resources here in the U.S.

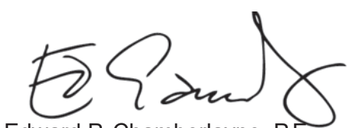
In this edition of The Chesapeake Engineer, I invite you to read more about some of our unique missions. One such mission involves our Base Development Team, a group of talented engineers who provide their expertise to solve engineering challenges to members of the military, U.S. State Department and Federal Emergency Management Agency, all of whom are serving contingency operations overseas in places like Iraq and Afghanistan. We also feature work in support of the 249th Engineer Battalion, headquartered on Fort Belvoir in Virginia. These specially-trained Soldiers help provide temporary emergency power to critical facilities in communities impacted by natural or man-made disasters. Our Baltimore Team is working on projects that will improve this unit's readiness and capabilities.

We also highlight the important work we do to inspect and maintain the dams within Baltimore District's area of responsibility. Our dams involve a wide range of engineering expertise, from the hydraulic engineers who measure speed and volume of water and how it behaves, to mechanical engineers, who ensure the gates and tunnels are functioning properly. Speaking of water, we also feature some of the key partnerships we have with the State of Maryland to support important environmental missions such as the expansion of Poplar Island, and restocking the Potomac River with trout. We also touch on how we're working to strengthen our existing relationship with the Commonwealth of Pennsylvania.

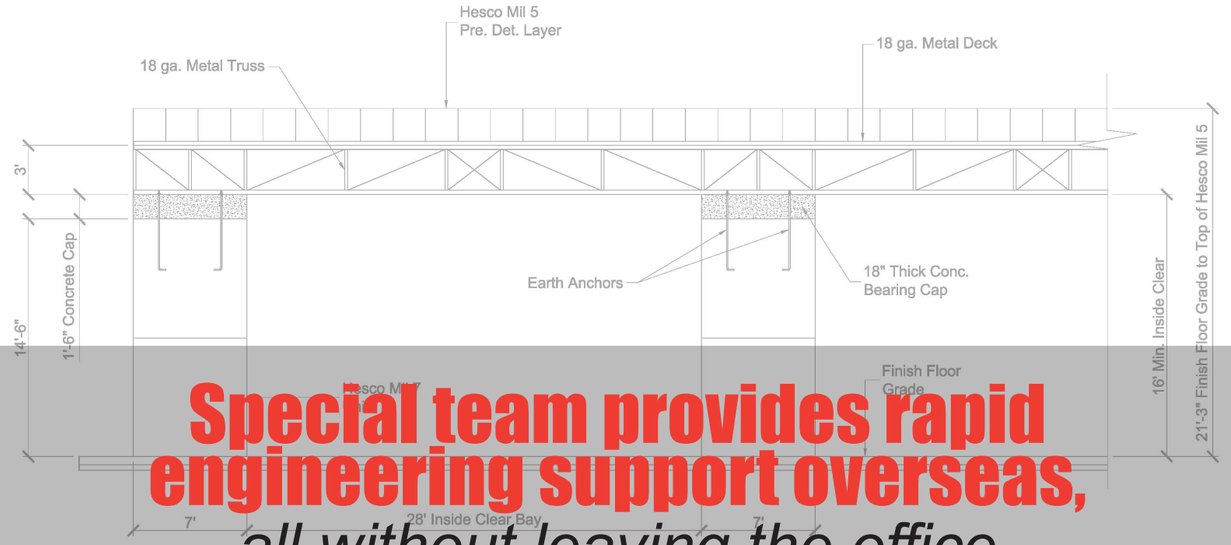
I'm proud to say that three of our own received national engineering awards this year. You will read more about Mary Foutz's Federal Engineer of the Year award in this edition, but I also wanted to highlight two other national Corps of Engineers awardees. Woody Francis, Regulatory Branch ecologist, won the Don Lawyer Regulator of the Year Award for his efforts to streamline the aquaculture permitting process in Maryland; and Marco Ciarla, Planning Division environmental engineer, won the Science, Technology, Engineering and Mathematics Individual Award for his mentorship and volunteerism (which you'll also learn more about in this edition).

The range and reach of our capabilities is astounding, but we only accomplish these important missions through partnership and collaboration with the public, our stakeholders and our partners at the local, state and federal levels. Public service is a team sport, and we are honored to serve alongside with each and every one of these public servants every day. I hope the stories and images you see in this magazine demonstrate just how valuable these partnerships are in helping to strengthen our Nation and the communities we serve.

Essayons!



Edward P. Chamberlayne, P.E.
Colonel, U.S. Army
Commander and District Engineer



Special team provides rapid engineering support overseas, *all without leaving the office*

By Sarah Gross

A C2 Bunker Design: Building Section

In the movie Apollo 13, an assortment of materials was tossed on a table in front of a team of engineers. Their mission was to "invent a way to make a square peg fit into a round hole" to fix a carbon dioxide filter and save the lives of three astronauts. Take this same idea, apply it to Soldiers in the field who need technical support from home, and you have a Base Development Team.

The BDT came to fruition in the early 2000s during a time of particular international strife as a way for deployed personnel around the world to get rapid technical expertise from the Corps when an engineering problem was beyond their capability to solve in the field.

The BDT is a part of the Corps' Readiness Operations Center out of the Engineering Research and Development Center, headquartered in Vicksburg, Mississippi. Baltimore District is one of 10 districts across the Corps with a BDT.

Baltimore's BDT is comprised of 14 team members with a variety of engineering specializations — including structural, architectural, site development, mechanical, fire protection, electrical, geotechnical and cost estimation.

The BDT tends to support deployees from the Armed Forces, U.S. State Department and Federal Emergency Management Agency who are serving contingency operations overseas in places like Iraq and Afghanistan.

"My job is to ensure any deployed asset, not just from the Corps, has what they need to stay safe and do their job," said Christy Pispitsos, Baltimore District Military Design Branch deputy chief. Pispitsos, a BDT member since 2003, is the Baltimore team leader and determines in-house capability for the team.

Each BDT from the various districts is on call every 10 weeks. Engineering-related inquiries are submitted through a central database checked daily by the BDT on duty. The expectation is that it will be fulfilled within 24 to 48 hours, working across different time zones, with a 10 to 20 percent design effort, if applicable.

"It's interesting to experience all of the different roles the Corps has a hand in — really seeing the nuts and bolts of who we are," said Pispitsos.

Through June 2017, the Baltimore BDT had already handled 300 requests for information since the start of the year. Requests vary, including things like cost estimates, estimates on land size for project needs, bomb damage assessments, storm damage assessments, trafficability, climate information and generic site plans.

"Being a part of the BDT allows us to take a break from our day-to-day work endeavors and provide rapid solutions to real-world situations, often directly impacting military and civilian personnel downrange," said Preston Jacka, Baltimore District structural engineer and BDT deputy leader.

The Baltimore BDT has worked on unique inquiries, including design modifications to guard towers as well as writing an accident report for a collapsed bunker.

"They sent us pictures of the bunker, as well as physical pieces of the bunker. We were able to assess what happened from thousands of miles away," said Pispitsos.

One of the more gratifying projects the Baltimore BDT worked on in the last several years was designing a simplistic, gravity-fed chlorinated water distribution system for Ebola treatment units in Liberia.

"They sent us pictures of the bunker, as well as physical pieces of the bunker. We were able to assess what happened from thousands of miles away."

"They provided us with a list of materials they had on hand, and we adapted our design to account for what they had and adjusted on the fly," said Pispitsos. "We essentially had to learn a lot about Ebola in a short period of time in order to aid in the design. They started constructing the design we sent them within a day or two."

Pispitsos recalls seeing the newly-installed distribution systems on the nightly news months later.

"I actually got to see physical proof that we're helping people," she said.

The BDT also provides expertise for humanitarian support, including displaced persons and refugee camps. Humanitarian Assistance has included hurricanes Gustav and Ike in 2008, Guam in 2007 and the Indian Ocean Tsunami in 2004.

"There is a certain satisfaction that comes from knowing your technical capabilities and experience can have a real and immediate influence on someone else's situation," said Jacka.

While the BDT is technically the non-deployable unit of the Corps Readiness Operations Center, the Forward Engineering Support Team – Advance (FEST-A) is the deployable unit that rapidly deploys overseas to provide on-the-ground technical support to commands.

Jacka is currently on the flipside of the coin also serving on a FEST-A.

"This has provided me the opportunity to write my own reach-back questions, submit them and receive support from the various BDTs, which has offered me a great perspective. The team members exercised quick decision making and execution."

Most of the same Baltimore BDT members have been serving alongside one another for several years, completing hundreds upon hundreds of inquiries and participating in in-depth training every two years — creating an almost family-like bond, according to Pispitsos.

"Sometimes we fight like brothers and sisters, but working through these inquiries takes a true team effort," she said. "We all have our different disciplines, but we help each other."

Reachback Support - Structural Technical Evaluation

Subject: *Bunker Collapse - Camp Leatherneck, Afghanistan*

Date of Request for Information (RFI): *29 November 2012*

Site Weather: *Clear skies, no recent precipitation noted*

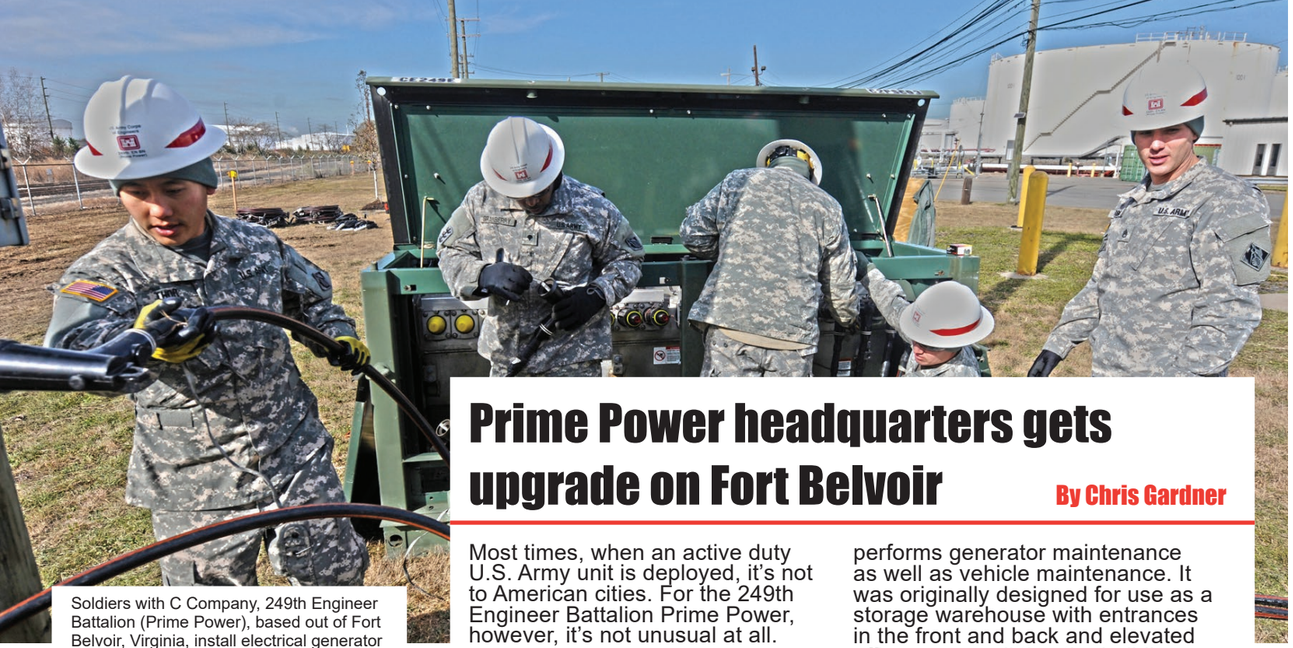
RFI Request: *Assessment of structural collapse mechanism and determination of adequate design load capacity*

Jacka shared a similar sentiment.

"I get to work alongside some of the best team members available within the Baltimore District. We are good at what we do, and we know it is appreciated."

It is clear that the team members are instilled with a sense of pride in executing their BDT mission and recognize that their expeditious efforts have lasting effects.

"Not everyone is able to deploy; this is my contribution," said Pispitsos. "I am very passionate about this team and our support to the warfighter."



Soldiers with C Company, 249th Engineer Battalion (Prime Power), based out of Fort Belvoir, Virginia, install electrical generator equipment at a fuel depot following Hurricane Sandy in Carteret, New Jersey, Nov. 6, 2012. (DOD photo by EJ Hersom)

Prime Power headquarters gets upgrade on Fort Belvoir

By Chris Gardner

Most times, when an active duty U.S. Army unit is deployed, it's not to American cities. For the 249th Engineer Battalion Prime Power, however, it's not unusual at all.

These specially-trained Soldiers, the only active duty unit of the U.S. Army Corps of Engineers, help provide temporary emergency power to critical facilities in communities impacted by natural or man-made disasters — from providing power to the New York Stock Exchange after Sept. 11, to powering fuel depots in New Jersey after Hurricane Sandy. These missions helped re-establish normalcy to the region.

With four companies strategically stationed across the United States, the battalion's headquarters currently sits in multiple aging facilities on Fort Belvoir in northern Virginia...but not for long.

The Corps, Baltimore District, is working with its Prime Power colleagues to renovate three buildings that are home to the headquarters, as well its C Company and a Reserve platoon.

"Our Soldiers provide outstanding support to contingency and emergency operations both at home and deployed," said Lt. Col. Julie Balten, commander (former) for the 249th Engineer Battalion. "The funding for and completion of these renovations lets our Soldiers know we are investing in them and that their mission is important."

Construction started with the Prime Power's heavy maintenance facility, and the roughly $6-million interior renovation was completed in the spring. This is where the unit performs generator maintenance as well as vehicle maintenance. It was originally designed for use as a storage warehouse with entrances in the front and back and elevated office space splitting the building into sections.

"Previously, they couldn't move trucks or generators from one end of the building to the other without going outside," said Nhat Tran, project engineer for the Baltimore District. "We've improved the flow of work of the building by removing the office space in the middle and adding built-in cranes to help with the functionality of the facility."

The work is not only being done to improve functionality for the Soldiers, but it's also being done to improve safety and efficiency through removal of rust, lead paint and asbestos, as well as replacement of aging mechanical, electrical and plumbing systems.

The contracts for the renovations of the other two buildings are anticipated for award later this year.

"The goal is to upgrade the battalion's post-World War II facilities and provide us with the maintenance space we require to provide power support to the Army and the nation," said Capt. Brad Davis, logistics officer for the 249th Engineer Battalion.

While the phased work continues, Prime Power is carrying out its missions in the facilities awaiting renovation.

"This renovation will update our 1940s-era workspace and enable us to continue our mission well into the future," Davis said. ■

The Corps of Engineers' 249th Engineer Battalion (Prime Power) provides commercial-level power to military units and federal relief organizations during full-spectrum operations.

It is charged with the rapid provision of Army generators to support worldwide requirements.

The commander serves as the commandant of the U.S. Army Prime Power School, responsible for the development of Army and Navy power generation specialists.

Army Corps, Pennsylvania officials meet for first-ever collaboration workshop

By Sarah Gross

The U.S. Army Corps of Engineers held its first-ever regional collaboration meeting with the Commonwealth of Pennsylvania in April at the Rachel Carson Building in Harrisburg to increase awareness of interagency capabilities and strengthen partnerships.

"This workshop is important, so we know what everyone's piece to play is in the Commonwealth," said Brig. Gen. Tony Carrelli, adjutant general, who represented Gov. Tom Wolf. "We're working together to protect our residents and preserve the environment. We will see how we can take some of our overlapping resources to fill some of our gaps."

Pennsylvania is served by multiple Corps districts: Baltimore, Pittsburgh, Philadelphia and Buffalo.

"Connecting our agencies — from leadership positions to our program managers — ensures we are aware of the most pressing priorities and needs, available resources and funding opportunities, and short-term and long-term actions we can take to reach viable solutions for the Commonwealth," said Col. Ed Chamberlayne, Corps, Baltimore District commander.

In addition to Chamberlayne, Corps attendees included North Atlantic Division Commander Brig. Gen. William Graham, Pittsburgh District Commander Col. John Lloyd and Philadelphia District Commander Lt. Col. Michael Bliss. Representatives from Planning and Project Management from each of the districts were also in attendance.

"This workshop acts as quality assurance, as we try to ensure consistency between our districts," said Graham. "Working with our partners in the Commonwealth, we want our efforts to complement one another; one plus one shouldn't always equal two."

In addition to Carrelli, representatives from the Commonwealth of Pennsylvania included Patrick McDonnell, Pennsylvania Department of Environmental Protection acting secretary; Cindy Adams Dunn, Pennsylvania Department of Conservation and Natural Resources secretary; Richard Flinn, Pennsylvania Emergency Management Agency director; Leo Bagley, Pennsylvania Department of Transportation special assistant to the secretary; and Dennis Davin, Pennsylvania Department of Community and Economic Development secretary.

"It's vital for our team and Pennsylvania leaders to share information at all levels in order to identify key issues and work together on solutions," said Bliss.

Corps representatives gave presentations on the types of studies and projects they perform throughout the Chesapeake Bay region to provide attendees a better idea of how the Corps and Commonwealth could work together to solve water resources issues using federal funding and partner contributions. Topics included Technical Assistance Programs, the interagency Pennsylvania Silver Jackets flood risk management team, Regulatory permitting, Continuing Authorities Program and Emergency Management.

"I knew you were phenomenal recreation providers," said Dunn of the Corps, which operates and maintains several dams in Pennsylvania, including Tioga-Hammond, Cowanesque and Raystown. "Today, I became aware of the breadth of programs that I had no idea you worked on."

PADEP also shared their Growing Greener Program with the Corps. This grant program helps protect open space, clean up abandoned mines, preserve farmland and provide new and upgraded water and sewer systems.

Following presentations, the floor was open for discussion.

"This was a great model to better collaborate across federal and state agencies to meet the many water resources challenges facing Pennsylvania," said Lloyd.

Amy Guise, Baltimore District Planning Division chief, seconded this notion.

"This workshop proved valuable in understanding our respective challenges across the Commonwealth," she said. "Some challenges we share and some are different, but, either way, we can now use a collective effort to solve those issues better and faster. Since the workshop, we have already begun aligning our programs and funding in certain areas, so there are clear cost savings to the state and federal government, and, ultimately, more completed projects to reduce flood risk in our communities." ■

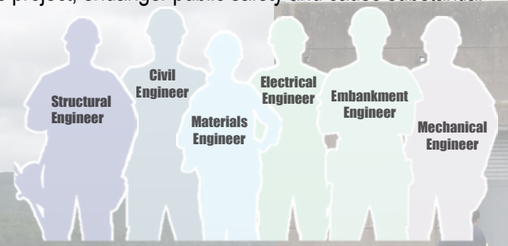
At top: Brig. Gen. William Graham, U.S. Army Corps of Engineers, North Atlantic Division commander (at left), and Brig. Gen. Tony Carrelli, Pennsylvania adjutant general, speak at workshop in Harrisburg, Pennsylvania, April 11, 2017.

Above: Amy Guise, Corps, Baltimore District, Planning Division chief, briefs at the workshop. (U.S. Army photos by Sarah Gross)

Periodic Inspections keep infrastructure and public safe

By Cynthia Mitchell and Malcolm Jones

Foster Joseph Sayers Dam, located on Bald Eagle Creek, approximately one mile upstream from Blanchard, Pennsylvania, underwent a periodic inspection June 7, 2017. Every five years, a multidisciplinary team from the Baltimore District, led by a professional engineer, performs periodic inspections at 17 dams across Maryland, West Virginia, Pennsylvania and New York. The team assesses the condition of the dam embankment and structural features because failure or partial failure could jeopardize the operations of the project, endanger public safety and cause substantial property damage.



Periodic inspections are only one part of the Corps' Dam Safety Program. Day-to-day inspections (as needed), annual inspections, and large-scale assessments that occur once every 10 years allow the Corps to identify and prioritize operations and maintenance needs at each project site.

What are we inspecting?

Spillway

- Condition of concrete surfaces
- Joints and joint materials
- Junction of spillway and abutments
- Approach and discharge channels

Dam Embankment

- Surface cracks and other surface conditions
- Riprap or rock slope protection failures
- Dam roadway and access road surfaces
- Noticeable seepage through embankment
- Settlement or sloughing of embankment

Gate Structure and Tower

- Electrical systems
- Seepage between joints
- Machinery and mechanical features
- Cracking and spalling (peeling or flaking off due to water entrance) of concrete surfaces

Outlet Works Tunnel

- Operating gates and liners
- Emergency gates
- Tunnel entrance and access

- Cracking and spalling of concrete surfaces
- Any movement of joints and materials between structures
- Weepholes (small openings that allows water to drain)
- Handrails

Stilling Basin and Outlet Channel

Embankment Foundation and Berm Monitoring

- Survey Monuments
- Piezometers
- Weirs

Corps, DNR partner with unusual hatchery to maintain popular trophy trout destination

By Cynthia Mitchell

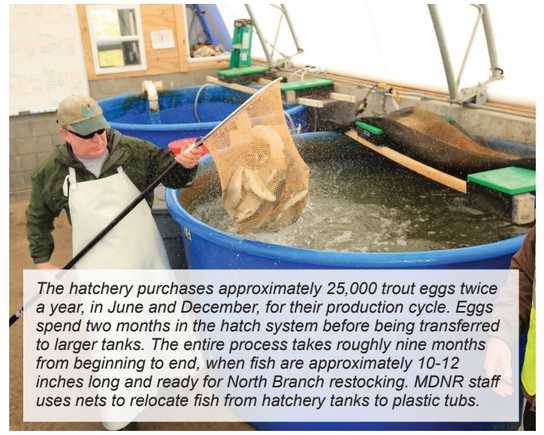
Along the North Branch of the Potomac River, nestled between Garrett County, Maryland, and Mineral County, West Virginia, sits Jennings Randolph Lake Dam (JRL). This flood risk management project was completed in 1981 by the U.S. Army Corps of Engineers, Baltimore District, and has provided not only flood control but water quality control, water supply and recreation to the local area, while also attracting nature lovers looking for scenic and tranquil solitude.

The tailwater section of the North Branch downstream of JRL is especially popular with anglers and fishermen. The area is recognized as a high-quality fishery and popular trophy trout destination, thanks in part to a long-standing partnership between the Corps and Maryland Department of Natural Resources (MDNR).

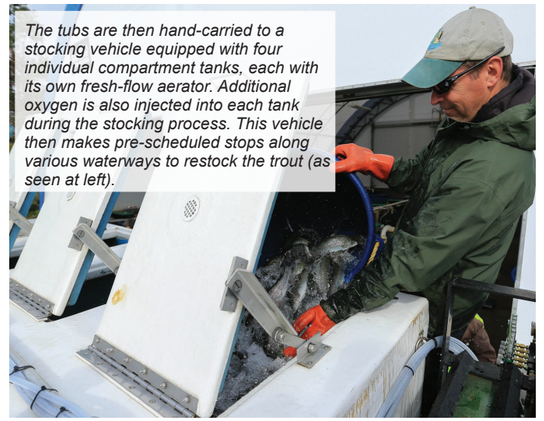
Historically, the North Branch was not the popular fishing destination it is today. Decades of pollution caused by acid mine drainage and a paper mill operation in Luke, Maryland, decimated the waterway's aquatic life.

Congressional legislation on clean water, placement of machines that use lime to neutralize acid, and the completion of JRL all contributed to the environmental restoration of the North Branch.

Given the North Branch's complicated past with the coal mining industry, it may come as a surprise



The hatchery purchases approximately 25,000 trout eggs twice a year, in June and December, for their production cycle. Eggs spend two months in the hatch system before being transferred to larger tanks. The entire process takes roughly nine months from beginning to end, when fish are approximately 10-12 inches long and ready for North Branch restocking. MDNR staff uses nets to relocate fish from hatchery tanks to plastic tubs.



The tubs are then hand-carried to a stocking vehicle equipped with four individual compartment tanks, each with its own fresh-flow aerator. Additional oxygen is also injected into each tank during the stocking process. This vehicle then makes pre-scheduled stops along various waterways to restock the trout (as seen at left).

The Mettiki Hatchery in Garrett County, Maryland, consists of twelve 1,000-gallon circular tanks in which trout are cultured to larval size, along with two 210-gallon tanks used for hatching trout. The hatchery's water supply derives directly from the coal treatment plant clarifier. Supply water passes through a degassing and oxygenation system then passes through an ultraviolet disinfection system before entering the hatchery.

U.S. Army photos by David Gray

that the largest controlled, cold-water source for potential trout rearing in Western Maryland today belongs to a coal mine — Mettiki Coal LLC, located in Garrett County.

Millions of gallons of acid water flow out of Mettiki's mine tunnels daily, which are then funneled into a collecting basin 600 feet underground and treated with lime.

Since 1993, following a successful experimental program through MDNR, Mettiki has used water from its acid mine drainage treatment plant to culture trout, supplying the state's restocking program along the North Branch.

The Corps and MDNR remain committed to assuring the North Branch maintains its reputation as one of the finest trout fisheries in the east, both upstream and downstream of JRL.

"The Army Corps of Engineers allows us to turn this river back into a trout stream," said Jody Johnson, MDNR fish biologist for Garrett and Alleghany counties. "Together, we're working for the fishermen, trying to increase the amount of fishing opportunities whenever we can."

Tom Craig, Corps JRL park ranger, agrees.

"The Corps and MDNR work together to form our water quality mission by letting out high-quality, cold water that not only helps MDNR stock trout, but also helps us with recreation," said Craig. "Without this partnership, we wouldn't have the successful trout stream that we do today."

Mary Foutz, Baltimore District Mechanical Section chief, speaks with Col. Ed Chamberlayne, Baltimore District commander (at left), and Lt. Gen. Todt T. Semonite, chief of Engineers and commanding general of the U.S. Army Corps of Engineers (at right), prior to the Federal Engineer of the Year Award ceremony at the National Press Club in the District of Columbia, Feb. 17, 2017. (U.S. Army photo by Sarah Gross)

Baltimore District engineer recognized nationally at ceremony in DC

By Sarah Gross

The ceremony

Mary Foutz, Baltimore District Military Design Branch, Mechanical Section chief, received an esteemed national award as an agency winner during the Federal Engineer of the Year Award ceremony at the National Press Club in the District of Columbia, Feb. 17, 2017. As an agency winner, she, alongside 25 other esteemed engineers nationwide, was a finalist for the Federal Engineer of the Year.

“It’s a big deal that you’re a part of this small group,” said Lt. Gen. Todd T. Semonite, chief of Engineers and commanding general of the U.S. Army Corps of Engineers, to Foutz prior to the ceremony.

Federal Engineer of the Year Award is sponsored by Professional Engineers in Government, which is affiliated with the National Society of Professional Engineers (NSPE).

Typically, the honor is reserved for a current employee, either civilian or military, who is either a licensed professional engineer or engineer in training and who works at a federal agency that employs at least 50 engineers worldwide.

“I nominated Mary for her vast professional achievements, organizational engagement, as well as her steadfast desire for continual learning,” said Baltimore District Engineering Division Chief Ron Maj.

Col. Ed Chamberlayne, Baltimore District commander, attended the ceremony in support of Foutz.

“It’s high time one of our own engineers, specifically Mary, is recognized for accomplishments to our nation and overseas to help ensure national security and to deliver effective solutions to our customers,” said Chamberlayne. “Engineers often don’t receive enough credit.”

NSPE President Kodi Verhalen emphasized this notion.

“Engineers provide a direct and vital impact to our nation,” she said. “Though these plaques are small in size, they serve a big purpose.”

In good company

Top ten finalists included lieutenant colonels from the U.S. Air Force Air Combat Command, a commander with the National Park Service, a captain with the U.S. Department of Health and Human Services, and engineers with the Tennessee Valley Authority and U.S. Nuclear Regulatory Commission. Ultimately, an engineer from the Bureau of Reclamation in Washington State was selected as the Engineer of the Year.

The top ten finalists and main awardee were selected by a panel of judges established by the Professional Engineers in Government based on a point system using the following criteria: education, registered P.E., continuing education, professional/technical society activities, NSPE involvement, awards or honors, civic and humanitarian activities and engineering achievements.

The making of a Federal Engineer of the Year Award nominee

Foutz began her 25 years of federal service — all with the Baltimore District — after earning a Bachelor of Science in Mechanical Engineering from the University of Maryland.

“Mary is extremely active in professional organizations as well as within the Department of Defense,” said Maj. “She is a recognized subject matter expert and provides thoughtful, well-researched positions on Corps engineering and construction policy.”

She holds professional membership in American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), Society of American Military Engineers (SAME) and is an Association of Energy Engineers Certified Commissioning Professional.

“To be successful and to have an impact on our mission in what can be a highly-complex engineering field, one needs to be acquainted with diverse organizations and individuals,” said Foutz. “It is important to stay abreast of emerging technologies and industry trends; seek different perspectives and new solutions to problems; and interface directly at every opportunity with industry leaders in tangential professions.”

Foutz has been honored with several individual and team awards in recent years, including recognition as an outstanding supervisor by the Federal Executive Board and for her mechanical engineering support to the U.S. Naval Hospital Okinawa for approximately 13 years. She has received team awards for work on the High Performance Computing Center project and the Air Force Civil Engineer Center Sustainable Infrastructure Assessment II Program.

Foutz also leads the Corps North Atlantic Division’s Fire Protection Regional Center of Expertise (RCX), in which she supports all NAD districts with fire-protection engineering services.

“I consider the mentoring of the young, inexperienced mechanical and fire protection engineers I have been privileged to supervise in my design section over the years to be my greatest achievement, and greatest service to the Corps and nation,” said Foutz. “It has been my most profound pleasure to motivate and assist the professional development of these men and women as they have developed into solidly-grounded, respected and capable engineers.”

She is also a leader in the Commissioning RCX, in which she has developed new guidance for performing total building commissioning in accordance with Department of Army’s Sustainable Design and Development Policy, and has also developed commissioning requirements for complex facilities.

“Mary has led the Baltimore District over the past several years in designing cost-effective, high-quality facilities,” said Maj. “She has made expert technical recommendations on critical and complex mechanical systems and energy-efficient technology applications for various types of projects both here in the U.S. and overseas.”

What’s next for Foutz?

Despite all she’s succeeded so far, Foutz has no plan to slow down any time soon.

“My ambition is to continue to develop myself professionally into the most effective, hands-on mechanical engineer, and leader of engineers, that I am capable of becoming and to continue to contribute to the successful execution of the most high-stakes, critically-important DOD facilities, all while navigating in a technologically-challenging engineering field.” ■

Foutz’s Creds

- *Credited as a reviewer of several chapters within American Society of Heating, Refrigeration and Air-Conditioning Engineers’ “Laboratory Design Guide,” second edition*
- *Former chair of the Society of American Military Engineers’ Student Mentoring Committee*
- *Played key role in updating Engineer Regulation 1110-345-723 Total Building Commissioning*
- *Assisted in contract negotiations and design development to correct exhaust system operational issues for chemical laboratories at U.S. Army Medical Research Institute of Chemical Defense*
- *Provided technical support to the high-profile Missile Defense Agency Aegis Ashore project in Romania. Proposed a workable, cost-effective solution for critical mechanical-engineering systems issues*

Corps partners with Susquehanna River Basin Commission to revise flood maps in Pennsylvania

By Sarah Gross

Matthew Elsasser picked up a piece of equipment that looks like a futuristic yellow sled and dipped it up and down in a slow rhythmic dance while making two full rotations.

"I'm mimicking the pitch and roll of the water to calibrate our equipment," said Elsasser, environmental technician with the Susquehanna River Basin Commission. "My movement is based on the current conditions of the water. The choppier the water is, the more I move."

This tool is actually a small boat that carries an Acoustic Doppler Profiler (ADP), which uses a sonar beam to measure the depth to the ground under the water surface.

This is the Commission's first day on Swatara Creek, a tributary of the Susquehanna River in east central Pennsylvania, for a project in collaboration with the U.S. Army Corps of Engineers, Baltimore District, to provide information to the Federal Emergency Management Agency Region III that will help FEMA update their flood risk maps.

These maps will help the communities they serve to better understand their flood risks and then take the appropriate actions to help lower that risk.

The Swatara Creek study accounts for about 40 percent of a larger surveying effort for FEMA across the Mid-Atlantic region that the district is coordinating.

"Swatara Creek is a high priority for FEMA," said Craig Thomas, North Atlantic Division regional technical specialist for floodplain management and Baltimore District environmental protection specialist. "An almost 500-year flood completely annihilated Hershey, Pennsylvania, and the surrounding area during Tropical Storm Lee in 2011."

To complete the Swatara Creek portion of the study, the Corps is conducting on-land surveys, and the Commission is taking on the in-channel survey work.

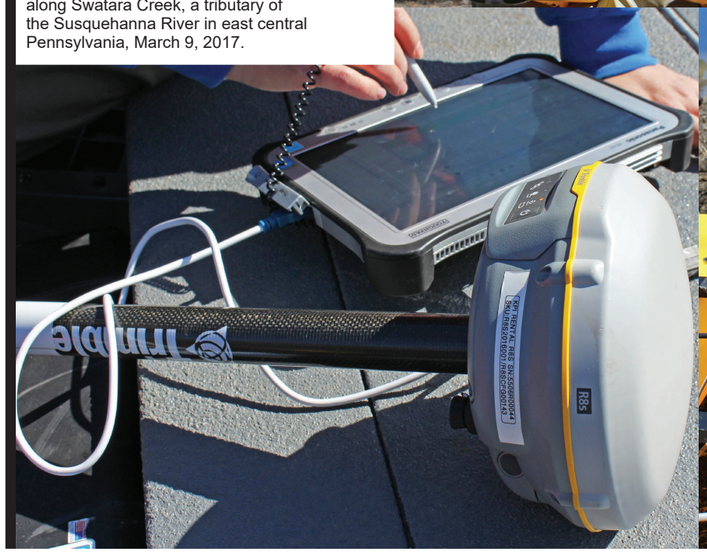
"The river is so big, and we needed a boat and this specialized equipment to augment our capabilities," said Thomas. "Luckily, the Commission was able to help, and we were able to figure out a way to provide funding to them, which will only open the door for future collaboration."

The Corps is documenting surface elevations and bridge dimensions for about 60 bridges within the study area in order to determine potential flow restrictions and conduct modeling to simulate the extent and depth of potential flooding along Swatara Creek. Bridges are a crucial part of survey work the Corps performs because bridges constrict water movement and create potential bottlenecks for water to flow freely during flooding.

The Corps was on hand for the Commission's first day in the field to provide operational support and to nail down shared project expectations. Luckily for the team,

Matthew Elsasser, Susquehanna River Basin Commission environmental technician, calibrates survey equipment along Swatara Creek, a tributary of the Susquehanna River in east central Pennsylvania, March 9, 2017.

Karl Kerr, U.S. Army Corps of Engineers, Baltimore District geographer, provides instructions on how to use Real Time Kinematic equipment to Benjamin Pratt, Susquehanna River Basin Commission water resources engineer, prior to surveying Swatara Creek, March 9, 2017.



U.S. Army photos by Sarah Gross

March 9, was an unseasonably warm day, as field work is preferable in the winter, so foliage doesn't inhibit signals from the equipment.

The Corps team provided the Commission with ideal locations to collect data points from within the creek. These locations are between bridges, so as to not duplicate data the Corps is collecting. The Commission will collect depth data from the ADP per river mile in Swatara Creek, as well as one corresponding elevation reading along the bank per river mile using supplemental Real Time Kinematic (RTK) equipment.

The Corps will compile the on-land and in-channel survey data to determine potential flood extents and depths and delineate the floodplain and regulatory floodway boundaries in the watershed under various flood events.

"We should get great modeling results from all of our data," said Thomas. "We have a lot of historical data and high water marks, including data from Lee, to compare our current modeling to."

To perform the first channel survey, Elsasser tied a rope anchored atop the survey boat to the calibrated tool, dropped it in the water and guided it back and forth six times across the width of the channel. The depth data was then logged within the ADP collection software and averaged to obtain a more accurate number.

"Multiple crosses allow interpolation between the bottom elevations collected," said Kimberly Dagen, Commission environmental scientist. "This process helps smooth the data out to ensure a representative cross section of the channel is obtained."

At the end of this first run, the team had completed data collection for one river mile along Swatara Creek by lunchtime — leaving 51 more to go.

The Swatara Creek study is anticipated to wrap up this summer, at which time data will be turned over to FEMA.

"This effort represents an extension of a long-standing partnership the Commission has with the Baltimore District to provide flood-hazard reduction strategies to communities in the Susquehanna River Basin," said Benjamin Pratt, Commission water resources engineer. ■

By Becca Nappi

Baltimore District Real Estate Around the World

Geographically, Baltimore District's Real Estate Division is responsible for fulfilling all of the Army's real estate needs within the Baltimore and Philadelphia districts' military and civil boundaries. This includes acquisition, management and disposal of a full range of real property interests. Real Estate Division also provides relocation assistance services for landowners and tenants displaced by federal projects. While that footprint constitutes the division's main focus, the team is also involved with real estate activities in other parts of the U.S. and around the world, for both the Army and other agencies. Check out this map to see where in the world our real estate team worked this year.

Interagency & International Support (IIS)

Real Estate Division's IIS customers include various agencies and commands throughout the world, including the Environmental Protection Agency, Missile Defense Agency and the Department of Homeland Security.

Department of Defense National Relocation Program (DNRP)

Through DNRP, Real Estate Division assists eligible and authorized Department of Defense (DOD) civilian transferees with relocation from one duty station to another. This program is the only one of its kind in the DOD and is managed by Baltimore District employees.

Enhanced Use Leasing (EUL)

The EUL Program engages private sector entities through a competitive process to develop underused but not excess Army real property for purposes that are compatible with an installation's mission and serve the public interest. The following are current Real Estate Division-managed EULs:

- Central Utility Plant, Fort Detrick, Maryland – Land lease to Chevron Corporation in partnership with Keenan Development for a central utility plant providing steam and electricity to tenants on the installation. This project won the 2008 Infrastructure Project of the Year Award.
- Gate Project, Aberdeen Proving Ground, Maryland – Land lease to St. John Properties for the development of a corporate office park. This project is satisfying the space needs of many private sector defense contractors who support missions conducted at this installation.
- Redstone Arsenal, Huntsville, Alabama – Corporate Office Properties Trust through an affiliated LLC is developing 468 acres near the arsenal's main gate into office, retail, hotel, educational, and warehouse/research and development space.

United States Army in Europe

Real Estate Division acquires and manages leases for housing and other facilities required to support U.S. Army activities in Poland, Romania, Lithuania, Hungary, Kosovo, Israel and Turkey.

Arlington National Cemetery Expansion

At the rate of nearly 30 burials a day, Arlington National Cemetery will reach maximum capacity sometime in the early 2040s. The proposed expansion is intended to increase capacity and allow burials to continue farther into the future. Real Estate Division is working with the cemetery and other federal agencies to acquire land, and relocate roads and utilities so that the cemetery can expand into the area around the former Navy Annex.

Armed Forces Recruiting Leasing

Real Estate Division is continuing security upgrades for all Armed Forces recruiting centers within its geographic footprint that are not currently located on a military installation. These new features, which will be found throughout recruiting stations nationwide, will provide a safer and more secure work environment.

Special Operations Command in Africa

Real Estate Division supports the real estate needs of multi-service Special Operations Forces across eight African countries. The team has leased property throughout these countries, while facing language barriers, currency conversions, metric conversions, various cultural preferences and large time-zone differences.

Group of radiological experts tackles challenges around the world

By Chris Gardner

Crews carefully lifted the large Reactor Pressure Vessel by crane from the U.S. Army's long-retired floating nuclear plant and placed it into a specially-designed shielded shipping container, in which it was safely transported to a certified radioactive waste disposal facility.

The removal of this large reactor component was a major milestone in the ongoing decommissioning and dismantling of STURGIS, a converted WWII Liberty Ship that is home to the deactivated MH-1A nuclear reactor. With the removal of the Reactor Pressure Vessel, 98 percent of STURGIS' radioactivity has now been removed and disposed of safely.

This complex effort is the culmination of years of planning and on-site work being overseen by a highly-specialized team from the U.S. Army Corps of Engineers, Baltimore District's Environmental and Munitions Design Center (EMDC). The EMDC includes program and project managers, engineers, legal and regulatory specialists, resource management, contract specialists, industrial hygienists and safety specialists, as well as houses the Radiological Health Physics Regional Center of Expertise (RCX).

When the U.S. Army needed to develop plans to decommission its obsolete nuclear reactors, it went to their original designers and builders — the Corps of Engineers

When the U.S. Army needed to develop plans to decommission its obsolete nuclear reactors as part of its Deactivated Nuclear Power Plant Program (DNPPP), it went to their original designers and builders, the Corps of Engineers. While the reactors, none of which have been in use since the 1970s, are not all local to the Mid-Atlantic region, Baltimore District was selected to execute the program because of its unique radiological expertise through the RCX. For DNPPP, the RCX's work is not limited to any geographic region, with ongoing decommissioning efforts on Fort Belvoir in Virginia; Fort Greely in Alaska, as well as aboard STURGIS in Galveston, Texas (moved from Virginia).

In the late 1990s, the Corps established a Radiation Safety Support Team (RSST) to provide radiological support to all Corps commands. Baltimore District was a charter member to the RSST, and the RCX is often called upon to support radiological requests from the RSST or by partners throughout the Army and other agencies.

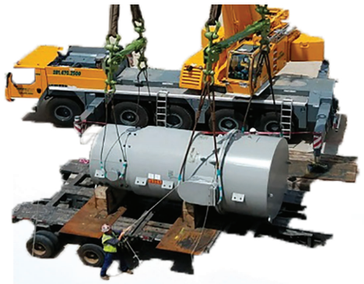
"The district's highly-trained and experienced team of health physicists provides radiation safety and technical support to the Corps of Engineers and other federal agencies across the United States and overseas for projects involving all aspects of radiological work," said Hans Honerlah, program manager in the RCX and trained radiological health physicist. "This can include providing coordination, oversight and consultation for investigation, decommissioning and radiation safety work."

Brenda Barber, Baltimore District project manager, noted the importance of the support provided by the RCX for STURGIS and other DNPPP work.

"Having the expertise of RCX professionals has been an integral part of the STURGIS project," she said. "From the planning stages through the contract award and now the day-to-day work of safely dismantling and disposing of the various aspects of this floating nuclear reactor, the expertise of the RCX has been crucial to the success of this complex project, and will continue to play a role as we plan for the reactors at Fort Belvoir and Fort Greely."

Planning the safe remediation of these sites with deactivated nuclear reactors is no simple task, nor a common one, which is why Baltimore District's RCX plays a large role in supporting these efforts.

"The RCX supports projects like these, and others, in many ways," Honerlah said. "The RCX assists with the development and implementation of decommissioning plans, cost estimates and several other aspects of the planning and execution of remedial work. The RCX team considers all legal and regulatory standards associated with occupational exposure to radioactive materials, site clean-up levels, and appropriate transportation and disposal requirements for the materials with residual radioactive materials."



Reactor Pressure Vessel from STURGIS is carefully loaded onto a transport vehicle inside its specially-designed shielded shipping container. The RPV and its container weigh approximately 81 tons. (Courtesy photo)

Personnel from Baltimore District's Radiological Health Physics Regional Center of Expertise aboard STURGIS to discuss decommissioning efforts, Galveston, Texas, Dec. 8, 2015. STURGIS is a former World War II Liberty Ship that was converted into the first floating nuclear power plant in the 1960s. (U.S. Army photo by Chris Gardner)

The RCX also provides its capabilities and expertise to a variety of other projects involving radiological materials that are managed by other Corps districts. Support includes anything from remediation efforts at Formerly Utilized Sites Remedial Action Program (FUSRAP) sites with contamination stemming from the nation's early nuclear research to auditing Radioactive Materials Licenses for Corps' dredges and gauges.

While Baltimore District team members have been providing radiological expertise support to other districts and partners for many years, it was officially recognized as an RCX in 2011.

As a formal RCX, the district has also supported external partners including the Environmental Protection Agency, National Park Service, other Army commands, and other branches of the military. Of note, the RCX is supporting the ongoing Operation Tomodachi effort, which involves surveying potential radioactive contamination of U.S. Navy assets following the Fukushima Nuclear Power Plant disaster in Japan precipitated by a tsunami in 2011.

"The RCX has in-house staff and equipment to self-perform smaller tasks for the Corps as well as other customers," Honerlah said. "As the issues and projects become larger, the staff can support the development and award of contracts for these specialized tasks related to radiological work. After contract award, the RCX can support the supervision, quality assurance and technical oversight of these contracts."

As for the ongoing support to the STURGIS effort, while the bulk of the radioactivity has been safely removed, the RCX will work to remove the remaining contaminated items and prepare the STURGIS for more traditional shipbreaking/recycling efforts, all while awaiting the next radiological challenge. ■

Expanding into new waters

Poplar Island expansion underway in Chesapeake Bay

By Becca Nappi

A large flock of migrating birds sit perched atop a bronzed barge, rusted from decades of exposure to the Chesapeake Bay. Approaching Poplar Island, their chirps and the sounds of crashing waves echo ashore, and the small pink flags that mark terrapin nests start to become visible.

While the environmental habitat on the Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island continues to thrive, just on the edge of the north end of the island, massive piles of sand and construction vehicles are helping to expand the habitat.

Currently boasting 1,140 acres, a 575-acre expansion project will not only increase wetland and upland habitat on the island but will also add an embayment area, a new type of habitat.

Poplar Island's expansion has been in the works for the U.S. Army Corps of Engineers and its partner the Maryland Port Administration (MPA) since 2005 to create an ever-greater area of environmental habitat in the Chesapeake Bay while also benefitting its economic driver, the Port of Baltimore — a $3-billion wage and salary industry.

U.S. Army photos by David Gray

"It was really our dredge material management plan from 2005 that pointed us in the direction of expanding Poplar as the most cost-effective option for beneficial placement of material dredged from Bay channels," said Justin Callahan, Baltimore District project manager.

Traveling back to the late 1800s and early 1900s, Poplar Island was a small town with its own post office, school, general store, homes and sawmill. The island was even a vacation spot for Presidents Franklin D. Roosevelt and Harry S. Truman. From that flourishing community, Poplar Island quickly succumbed to erosion and shrank from a recorded 1,100 acres in 1847 to only about 4 acres in 1993.

Since 1993, Baltimore District and MPA have worked to restore the island to its last-recorded footprint — from 4 acres to 1,140 acres.

Callahan was one of the surveyors when the Corps first conducted surveys on the Island.

"Since I've been a part of this project, I've seen the physical changes [on Poplar] from week to week," said Callahan. "And now we are expanding the footprint of the island by about 50 percent."

Clean dredged material is used to build cells on the island that are in various stages of completion. From the initial dredge inflow process to the final planting stage, cells take approximately six years to complete.

With the expansion, the island will encompass 1,715 acres, including 200 acres of wetlands, 259 acres of uplands and a 110-acre embayment area. This provides the project an additional 28-million cubic yards of dredge material capacity.

The embayment area will be an untouched, natural bay bottom habitat for Chesapeake Bay fish. The expanded wetlands and uplands will create more habitat for various species that inhabit the island, including osprey, terns, terrapins and egrets.

Construction for the expansion will be completed in three phases. Contract one is set to be completed by December 2017 and contract two in March 2018. Contract three is expected to take approximately nine months and will allow the inflow of dredge material into the expansion area to begin. With optimal funding, the Poplar Island project is set to wrap up by 2044.

Poplar Island not only provides unlimited environmental benefits but it helps to ensure the channels to the Port of Baltimore stay navigable and open by creating a site for MPA to place clean dredged material.

"The benefits accrued to navigation are relatively short lived when you compare them to the nearly-indefinite environmental impacts the project will have," said Callahan. ■

U.S. Army photo by Becca Nappi

Taking mentorship, volunteerism to the next level

By Cynthia Mitchell

For the second year in a row, Baltimore District employees Erin Cox and Marco Ciarla volunteered their time and expertise to serve as professional mentors for Johns Hopkins University (JHU) students undergoing their Environmental Engineer Senior Design Capstone projects.

Cox, a civil engineer, and Ciarla, an environmental engineer, worked alongside JHU professors and Fort George G. Meade Department of Public Works Environmental Division employees to introduce and guide the students through the identification of stormwater Best Management Practices (BMPs) for potential implementation on Fort Meade.

Over the course of both the fall and spring semesters, students reviewed stormwater management concepts, Fort Meade water resource history and Maryland Department of the Environment stormwater regulatory requirements. They were then tasked with a problem statement: designing specific BMPs for three various sites on Fort Meade to help meet Chesapeake Bay Total Maximum Daily Load restoration goals.

Cox and Ciarla engaged with students while they conducted research, guiding and accompanying them during site visits at their respective project sites.

“We easily contributed at least 30 hours individually over the length of the course between guest lectures, class time, site visits and email exchanges,” said Cox. “We even called into a few classes.”

Students delivered their final presentations May 16 at Aimes Hall on JHU in Baltimore. Presentations included a summary of existing site conditions, BMPs selection process and proposed designs, as well as construction cost estimates, scheduling and maintenance requirements.

“Marco and Erin were instrumental in providing the right background, regulatory parameters and real-life experiences,” said Dr. Edward Bouwer, Abel Wolman Professor of Environmental Engineering, JHU Department of Environmental Health and Engineering. “They are a great resource because they are still fairly young engineers that can really mentor our students; tell them about what life can be like for them in a few years; and be good role models for engineers working in the profession.”■

Young engineers turned mentors

Marco Ciarla and Erin Cox, Baltimore District engineers and Johns Hopkins University student mentors. Ciarla was recognized as the 2016 U.S. Army Corps of Engineers Science, Technology, Engineering and Mathematics Individual Award winner for his efforts at JHU and more. (U.S. Army photo by Alfredo Barraza)

Dredging expertise helps Eastern Shore project receive climate adaptation recognition

A thin layer of material dredged from Blackwater River is sprayed across deteriorating marsh on the Blackwater National Wildlife Refuge in Dorchester County, Maryland. (Courtesy photo)

By Sarah Gross

A critical Maryland marshland project that provides habitat for the American Bald Eagle, as well encompasses the Harriet Tubman Underground Railroad National Historical Park, was honored with an esteemed climate change adaptation award — thanks in part to U.S. Army Corps of Engineers’ dredging expertise.

The Blackwater National Wildlife Refuge Marsh Resiliency project was awarded runner-up in the 2017 American Society of Adaptation Professionals Prize for Progress in Adapting to Climate Change awards, based on its effectiveness, significance and innovation.

According to ASAP, “the promising practices from these models will provide guidance and encouragement for other communities…and will help celebrate progress in an emerging field and strengthen the professional foundations of current climate adaptation efforts.”

Rising sea levels threaten the marsh ecosystem and critical bird habitat on the Blackwater refuge, which resides in Dorchester County on the Eastern Shore.

The Conservation Fund, who is the lead organization for the project, approached the Corps’ Baltimore District more than a year ago about offering technical advice as part of an interagency adaptation project on 40 acres of declining marshland on the refuge. The Fund secured money through the National Fish and Wildlife Foundation’s Hurricane Sandy Coastal Resiliency Grant Program, and the district was able to join the project team that also includes the U.S. Fish and Wildlife Service and the Audubon of Maryland and the District of Columbia.

The goals of the project include slowing the rate of marsh loss through targeted enhancement and restoration, enhancing high-quality native vegetation and conserving undeveloped habitat in bird-migration corridors.

“This project presented a unique way to partner with a non-governmental agency and is also a great example of how the Corps can fulfill a unique niche in a partnership,” said Amy Guise, Baltimore District, Planning Division chief.

As part of this project, a thin layer of material dredged from the nearby Blackwater River was sprayed across deteriorating marsh surface to increase the marsh’s profile and enable more resilient native plants in the face of rising seas, and, therefore, create a more sustainable bird habitat.

Baltimore District provided information on previous thin-layer dredged material placement at the refuge that was completed around 2003.

“Using what was accomplished in that demonstration helped outline what works and what doesn’t,” said Danielle Szimanski, Baltimore District, Navigation Branch project manager. “My team provided a fair amount of background on how to set up a contract, as well as information on dredging plans, equipment and pumping specifications.”

The final phase of work on this project is underway, and the refuge is one step closer to becoming a living laboratory. A team of native plant installers is placing Spartina patens plugs in an elevated but undeveloped portion of the refuge. Data from this project will be included in the Salt Marsh Habitat and Avian Research Program that examines adaptation strategies on at-risk birds.

“My thanks to our project team members for their expertise and dedication and to our agency friends for their active support and assistance,” said Erik Meyers, The Conservation Fund, Climate and Water Sustainability vice president. “At completion, nearly a quarter million plants will help this site fully rejuvenate. I have already noticed birds active across the site, appreciating the renewed marsh.”■

U.S. Army Corps of Engineers,
Baltimore District

10 S. Howard St.
Baltimore, MD 21201

Looking Back...

OCEAN CITY, MD. SHOWING DEPTH OF SAND DEPOSITED IN STREETS DURING THE STORM.
4-30

SAND IS PUMPED ONTO THE BEACH AT OCEAN CITY IN 1991 AS PART OF INITIAL CONSTRUCTION OF THE BEACH BERM AND DUNE THAT ARE PARTS OF THE COASTAL STORM RISK MANAGEMENT PROJECT THERE.

Fifty-five years ago, the Corps of Engineers responded to a storm in Ocean City, Maryland — a storm like none the area had ever seen.

Ultimately remembered as the Ash Wednesday Storm of 1962, it was described in a Corps report as “the most unexpected storm, most complex in structure, most unusual in behavior and most devastating to the beaches, dunes and barrier islands.”

This storm changed the Corps’ relationship with the coast in ways still directly felt today and motivated their initial involvement with the beach at Ocean City. Years later, this led to the construction of the existing coastal storm risk management project that continues to provide risk reduction for the community.

Check out the three-part series on the storm on our web site.