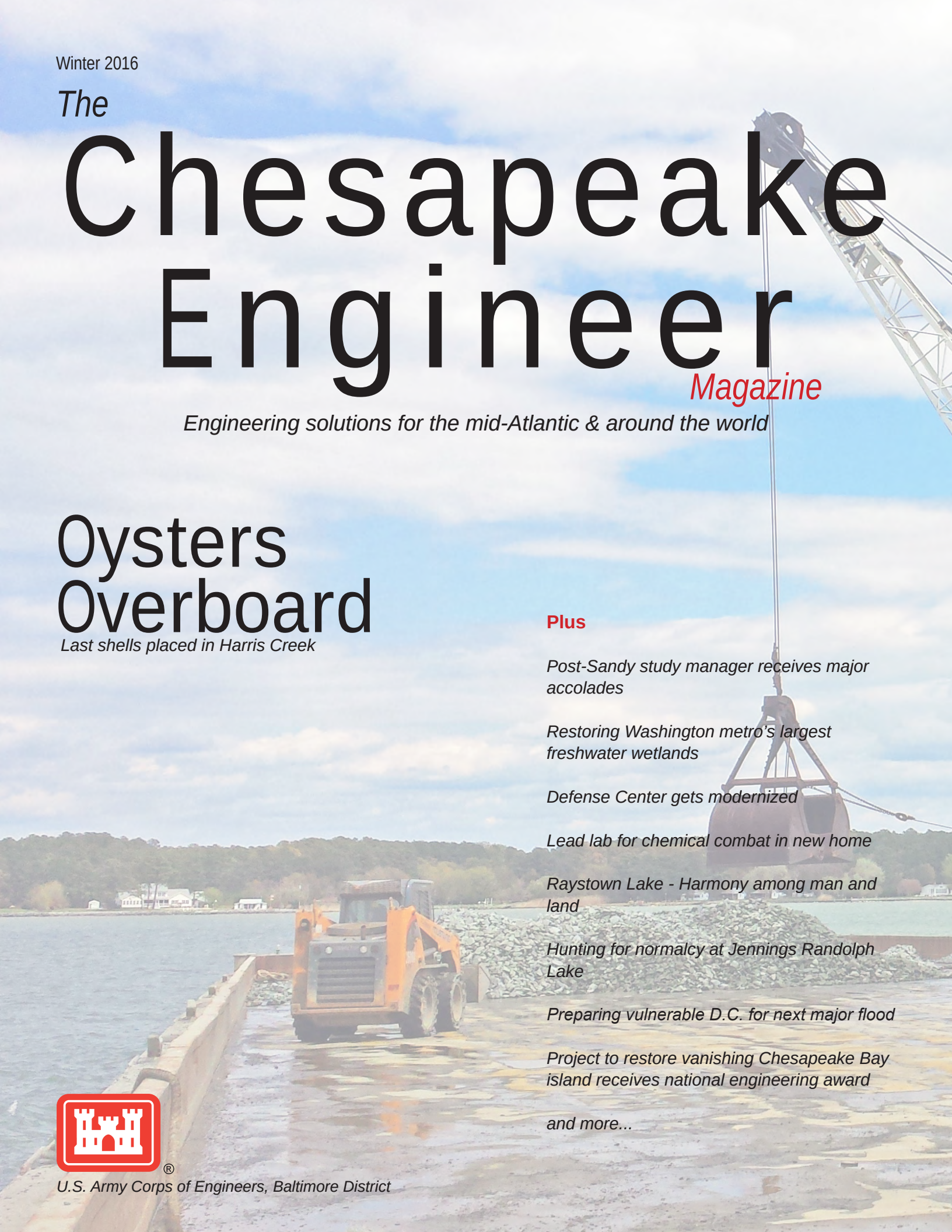
Winter 2016

The Chesapeake Engineer Magazine

Engineering solutions for the mid-Atlantic & around the world



Oysters Overboard

Last shells placed in Harris Creek

Plus

Post-Sandy study manager receives major accolades

Restoring Washington metro's largest freshwater wetlands

Defense Center gets modernized

Lead lab for chemical combat in new home

Raystown Lake - Harmony among man and land

Hunting for normalcy at Jennings Randolph Lake

Preparing vulnerable D.C. for next major flood

Project to restore vanishing Chesapeake Bay island receives national engineering award

and more...

U.S. Army Corps of Engineers, Baltimore District

The Chesapeake Engineer
Magazine
Winter 2016

On the Cover: The U.S. Army Corps of Engineers, Baltimore District, places rock to restore oyster reefs in the Chesapeake Bay tributary of Harris Creek, April 23, 2015. The rock is quarried in Havre de Grace, Maryland. (U.S. Army photo by Sean Fritzges)

Features

1 **Commander's Message**
Col. Ed Chamberlayne introduces the inaugural issue of the magazine

2 **District geographer named project manager of the year**
By Sarah Gross
Dave Robbins led a massive post-Sandy study that outlines actions to reduce the risk of storm damage to coastal communities

4 **Restoring Dyke Marsh**
By Sarah Gross
Interagency partnership to restore Washington Metro's largest freshwater wetlands

6 **Oysters Overboard** By Sarah Gross
Last shells placed to end construction on one of world's largest oyster restoration projects

10 **Defense Distribution Center gets modernized** By Clem Gaines
New energy-efficient Defense warehouse replaces facilities built during World War I

11 **Critical public health lab receives much-needed facelift**
By Clem Gaines
Groundbreaking for new lab at Aberdeen Proving Ground's Public Health Center

12 **Raystown Lake - Harmony among man and land** By Fred Furney
How this Central Pennsylvania lake is managed through good stewardship and sound land-management techniques

14 **Hunting for Normalcy**
By Cynthia Mitchell
Veterans join memorial hunt at Jennings Randolph Lake

15 **Lead lab for chemical combat in new home** By Clem Gaines
New state-of-the-art lab and research center to defeat chemical warfare

16 **Preparing vulnerable D.C. for next major flood** By Sarah Gross
Flood Emergency Manual for the District of Columbia gets put to the test

17 **Project restoring vanishing island in Chesapeake Bay receives national engineering award**
By Cynthia Mitchell
Poplar Island awarded Innovation in Sustainable Engineering for 2015 by American Society of Civil Engineers

18 **Soil-testing system earns geologist award in innovation**
By Clem Gaines
Ethan Weikel created a soil testing system that is smaller and 75 percent less expensive than commercially-available products

20 **2015 By the Numbers**
By Steve Bryson

Join the discussion on social media:

@USACEBaltimore

facebook.com/USACEBaltimore

linkedin.com/company/u-s-army-corps-of-engineers-baltimore

flickr.com/photos/corps_of_engineers_baltimore

youtube.com/USACEBaltimore

The mission of the U.S. Army Corps of Engineers, Baltimore District is to deliver innovative and effective solutions to our customers' engineering challenges in a manner consistent with our values and our principles of environmental stewardship.

DoD Disclaimer
"The Chesapeake Engineer" is an official, authorized biannual publication of the Department of Defense that highlights the programs, projects and people of the Baltimore District. Contents of the magazine are not necessarily the official views of, or endorsed by, the U.S. Government, the DoD, or the U.S. Army. The editorial content of this publication is the responsibility of the U.S. Army Corps of Engineers, Baltimore District, Corporate Communication Office. Opinions expressed are not considered an official expression of the DoD or the U.S. Army. Any questions or ideas for content submissions can be directed to U.S. Army Corps of Engineers, Corporate Communication Office: CENAB-CC@usace.army.mil or 410-962-2809.

COMMANDER, U.S. Army Corps of Engineers, Baltimore District
Col. Ed Chamberlayne
DEPUTY COMMANDER, U.S. Army Corps of Engineers, Baltimore District
Lt. Col. Michael Ruppert
CORPORATE COMMUNICATION OFFICE CHIEF
Christopher Augsburger
EDITORIAL CONTRIBUTORS
Steve Bryson
Clem Gaines
Chris Gardner
Sarah Gross, Editor-In-Chief
Cynthia Mitchell
DESIGN & DEVELOPMENT
Sarah Gross

Postmaster
Send change of address to:
U.S. Army Corps of Engineers, Baltimore District, Corporate Communication Office, P.O. Box 1715, 21203

Visit us on the web:
www.nab.usace.army.mil

Commander's *Message*

Col. Ed Chamberlayne speaks at an event to mark completion of the initial construction phase for the Harris Creek oyster restoration project, aboard the REBECCA T. RUARK, Tilghman Island, Maryland, Sept. 15, 2015. (U.S. Army photo by Sarah Gross)

Welcome to the inaugural edition of "The Chesapeake Engineer" – the Baltimore District's magazine developed to better communicate with our customers! Although we do so much more than engineering and work in many other places than the Chesapeake Bay watershed, both are at the core of our history, our existence and mission.

Since becoming the 67th commander of the Baltimore District of the U.S. Army Corps of Engineers in July, I made a commitment to get out and meet as many members of our team as possible who deliver our military, civil works, and environmental solutions throughout the Chesapeake Bay watershed, and beyond.

I also made a commitment to meet our customers, stakeholders and partners who depend on us to deliver timely, cost-efficient, and quality solutions.

You hold in your hands our effort to keep our diverse audience apprised of our programs, projects and the professional excellence of our people. Our team is dedicated to improving the lives of Service Members, performing our civil works studies and projects hand-in-hand with our partners, operating our flood risk management projects and recreation areas, and improving the environment - from the sands of Ocean City, Maryland, to the highlands of central Pennsylvania, and from the lakes in southern New York to the District of Columbia, northern Virginia and beyond.

We have a significant array of projects within our portfolio, large and small, and you will see some of them highlighted in this edition - the first of two we plan to distribute in 2016. Rather than an annual report or briefing charts full of numbers, through this magazine, I hope you get a sense of the breadth of our projects, the customers we serve, and the professional capabilities of Team Baltimore. For example:

o The Baltimore District is part of the multi-agency team, including non-governmental agencies, working to restore oysters in our Chesapeake Bay. Studies show that less than 1 percent remains of historic oyster populations in the Bay. Our project in Harris Creek, and other tributaries, is working to helping to replenish our favorite bivalves.

o In concert with the Army and Department of Defense health community, we helped cut the ribbon at the U.S. Army Medical Research Institute of Chemical Defense at Aberdeen Proving Ground, Maryland, in September. One month later, we joined the Surgeon General of the Army and garrison leaders to turn the dirt and start construction on the new Army Public Health Center. The District has unique expertise in constructing advanced research labs in support of military and civilian personnel.

o Our Poplar Island restoration project was recognized by the American Society of Civil Engineers with the 2015 Innovation in Sustainable Engineering award. I believe this project will continue to grow as the Maryland Port Administration and we continue to work together to dredge the federal channel at the Port of Baltimore and make beneficial use of the material by rebuilding this once-vanishing Bay island - a win for everyone.

o Here is a personal fact: As a native of northern Virginia and current resident of Falls Church, Virginia, I learned one unique thing when I assumed command – the water that my family and I drink comes from the District's Washington Aqueduct project! We are the only District across the Corps with that kind of mission.

I hope you enjoy learning about the Baltimore District's programs, projects and people. We look forward to a busy 2016 thanks to continuing military and Congressional support and partnership with our many stakeholders. We plan to publish the next edition in the summertime, but, in the meantime, let me know what you think or if you have any questions by sending a note to our Corporate Communication Office. Also, stay in touch through our website and social media.

Essayons!

Col. C

District geographer awarded Project Manager of the Year

Led sustainable post-Sandy study

By Sarah Gross

Lt. Gen. Thomas P. Bostick, U.S. Army, chief of engineers, presented Dave Robbins with the 2015 Project Manager of the Year award at the annual U.S. Army Corps of Engineers National Awards Ceremony, held in Washington, D.C. on Aug. 6, 2015.

Robbins works within the Planning Division at the Baltimore District. He is a geographer by trade and was the project manager for the North Atlantic Coast Comprehensive Study (NACCS). This massive, innovative interagency study was a two-year, $20 million effort that came to fruition as a result of Hurricane Sandy's devastating aftermath. At the request of the Corps's North Atlantic Division on behalf of the National Planning Center for Coastal Storm Risk Management, Robbins led a project team of more than 200 professionals, comprised of a virtual team of more than 50 partners from federal, state, local, and non-governmental agencies.

This team developed shared tools and potential strategies that decision makers can use to assess coastal flood risks and identify solutions to reduce those risks across the entire region.

"This was a very intense commitment with a lot of unknowns," said Amy Guise, Baltimore District, chief of Planning. "Over the course of these two years, Robbins changed his work schedule to accommodate the demands of the project, and he exceeded leadership expectations."

The draft report actually had to be written within one year to provide adequate time for the necessary quality controls and policy reviews.

Leading a large virtual team, Robbins had to work through deployments, teammate changes and the need for continual mentorship for new members. Robbins was able to alleviate some of these challenges through the creation of an inventive interagency collaboration webinar series.

Somehow, within the intense demands of leading the charge for NACCS, he even found the time to enhance his own career development through securing his Project Management Professional certification.

"Our Corps of Engineers' teammates manage and lead many extraordinary projects each and every day, each and every year, across the United States and abroad," said Guise. "To be nominated as one of the best project managers - particularly from a large and complex district with many high performers, and then further selected as the best across the nation - is a great honor."

"The North Atlantic Coast Comprehensive Study Report is a road map focused toward offering a sound approach to identify solutions to address the challenges impacting the nation's coastal areas."

And this year's recipient could not agree more.

"I was fortunate to have the opportunity to work with some of the best professionals in the business as part of the broader project delivery team from across our organization, and especially here in the Baltimore District," said Robbins.

Robbins was well equipped to lead NACCS.

He started at the Baltimore District in summer 2007 as a study manager for General Investigation studies and project manager for Continuing Authority Program projects within the Planning Division, Civil Project Development Branch.

Lt. Gen. Thomas P. Bostick, U.S. Army chief of engineers, presents Dave Robbins, Baltimore District geographer and study manager, with the 2015 Project Manager of the Year award at the U.S. Army Corps of Engineers National Awards Ceremony held at the Government Accountability Office in Washington, D.C., Aug. 16, 2015. Command Sgt. Maj. Antonio S. Jones, U.S. Army Corps of Engineers, is also pictured. (U.S. Army photo by Jhi Scott)

Prior to his eight-year span at the district, Robbins worked for an Architectural/Engineering consulting company where he assisted with FEMA's flood insurance studies and digital flood insurance rate map production.

From 2008-2010, he was the study manager for the Anacostia Restoration Plan (ARP) – another expansive study with an aggressive two-year schedule with the intent to produce a systematic 10-year restoration plan for environmental and ecological restoration within the Anacostia River watershed's 176 square urban miles. The ARP identified more than 3,000 candidate restoration opportunities within the watershed.

So, what makes a great project manager?

According to Robbins, it is listening.

"For a project like the North Atlantic Coast Comprehensive Study, you hear a lot of different perspectives. And although there is limited time available to get the work done, you need to be able to take the time to listen to what the team of experts is telling you."

"Dave brings his full attention to each task and challenge, even in the most trying situations," asserted Guise. "He is professional, courteous, thorough and a patient communicator."

The NACCS Project Delivery Team (PDT) was also awarded the 2015 PDT of the Year Award.

"The North Atlantic Coast Comprehensive Study Report is a road map focused toward offering a sound approach to identify solutions to address the challenges impacting the nation's coastal areas," said Joe Vietri, North Atlantic Division, chief of Planning and Policy Division. "The activities that had to be defined, scoped, and conducted, along with the immense team of professionals, required a Herculean effort."

Because of this study and resulting release of the report in January 2015, coastal communities can start planning responsibly and taking actions now to reduce the risk of damage from future coastal storms – and that is really greater than any award or awards can truly convey. ■

Restoring Dyke Marsh

By Sarah Gross

By the Numbers

100 (up to) acres proposed for restoration within the **485**-acre preserve

300 plant species call Dyke Marsh home

40 years of mining and other human factors altered the landscape

$24.9 million allocated by Congress to restore Dyke Marsh

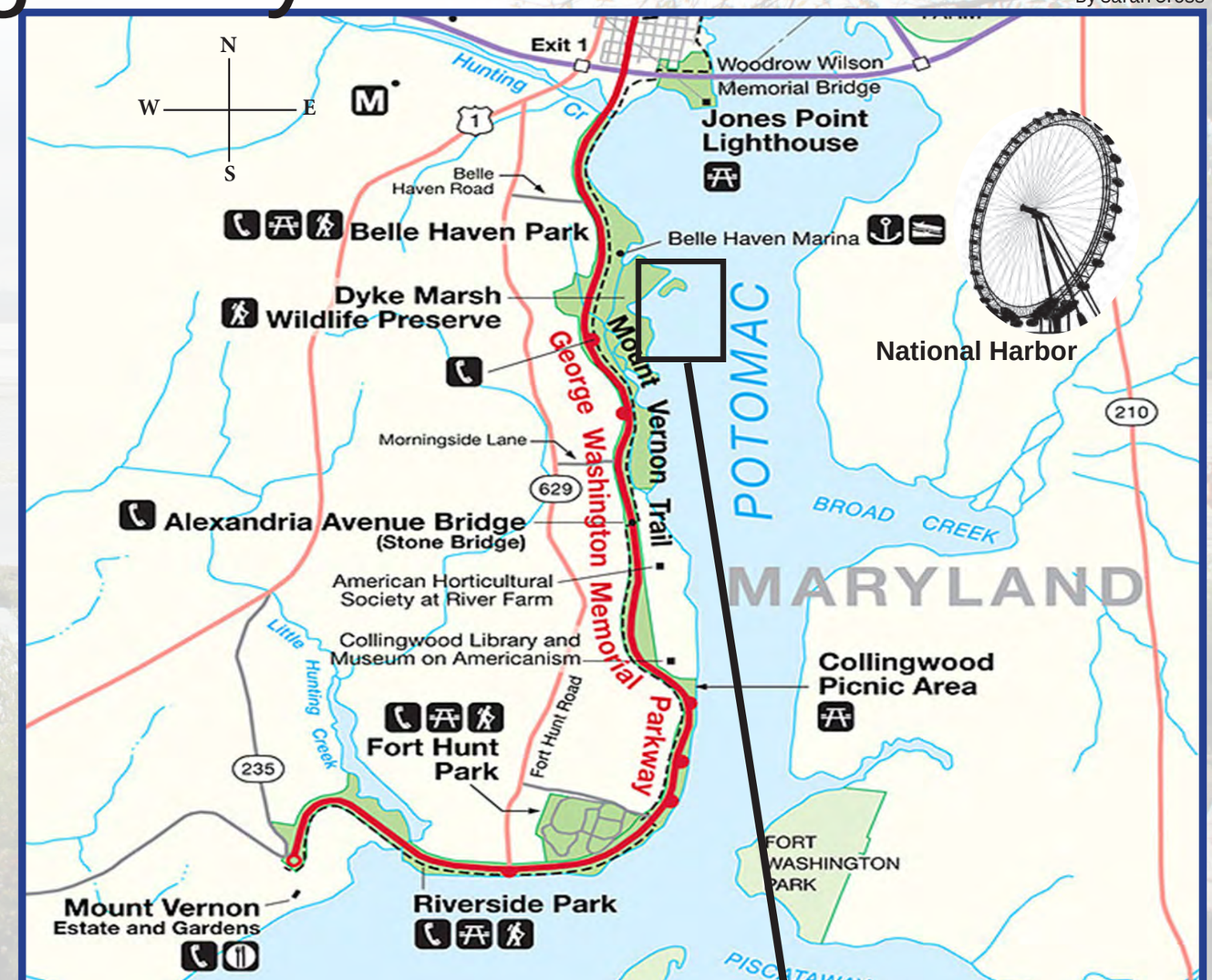
270 bird species reside at Dyke Marsh

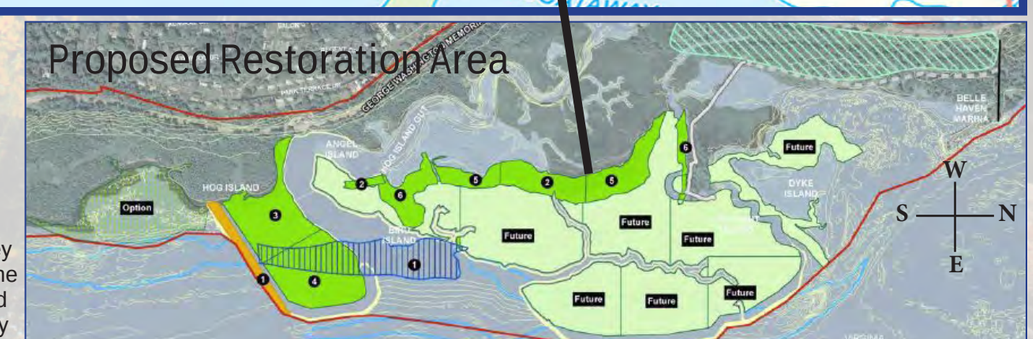
6 to 7.8 feet is the average annual erosion rate

5,000 years, the marsh has been in existence

Fast Facts

- Washington Metro's largest freshwater wetlands
- U.S. Army Corps of Engineers and National Park Service (NPS) leading restoration effort
- Located in Fairfax County, Virginia, across the Potomac River from the National Harbor
- One of best-studied wetlands in nation
- Has hosted the only breeding population of marsh wrens in region
- Will provide 1) a storm buffer for the historic and scenic George Washington Memorial Parkway, 2) a natural filter to clean the Potomac River and 3) a critical habitat for a variety of wildlife





Timeline

- **1974** — Congress passes Dyke Marsh restoration legislation
- **2013** — Congress funds project
- **2014** — Public comment on plans and environmental impact statement
- **August 2015** — USACE and NPS sign interagency agreement
- **September 2015** — Kick-off design meeting
- **Summer 2017** — Construction anticipated to start
- **2019** — Construction anticipated to end
- **2035** — The year an NPS and U.S. Geological Survey study estimates the ecosystem would be entirely lost by without restoration

Oysters Overboard

By Sarah Gross

Last shells placed to end construction on one of world's largest oyster restoration projects

The Corps places rock to make reefs for oyster restoration in the Chesapeake Bay tributary of Harris Creek, May 7, 2015. (U.S. Army photo by Sean Fritzges)

Angie Sowers, right, Baltimore District biologist, finishes pouring baby oysters overboard the REBECCA T. RUARK at an event to mark completion of the initial construction phase for the Harris Creek oyster restoration project, Tilghman Island, Maryland, Sept. 15, 2015. (U.S. Army photo by Sarah Gross)

The last placement of baby oysters was tossed overboard the REBECCA T. RUARK during a ceremony this fall to mark the completion of reef construction in Harris Creek - what the Nature Conservancy regards as the largest oyster restoration project in the world.

The Baltimore District and partners have restored more than 350 acres of reef and planted 2 billion oysters in this Chesapeake Bay tributary since efforts began in 2011.

Areas that previously had less than one oyster per square meter now have upward of 25, preliminary monitoring results from the workgroup show.

These efforts represent a key part of the statewide oyster restoration program that identifies the best tributaries in the Chesapeake Bay for restoration.

Oysters are essential to the Bay. They filter the water and provide critical habitat for other Bay creatures.

A single adult oyster can filter up to 50 gallons of water in 24 hours, according to the National Oceanic and Atmospheric Administration (NOAA).

These mollusks also help with cycling nutrients, reducing sediment and storing carbon long-term to help mitigate global warming.

Successful oyster restoration requires leveraging funding and expertise from a number of agencies.

NOAA maps the water bottom to tell the team the most suitable sites to place the reefs; these sites are then screened by the team to account for the location of navigational aids, docks and other potential navigational concerns.

The Baltimore District and the Maryland Department of Natural Resources provide funding and construction contracts to obtain the reef materials and construct the reefs.

The Oyster Recovery Partnership plants baby oysters, or "spat-on-shell," on top of the reefs.

"Great progress is being made to restore the oyster population in the Chesapeake Bay, and great partnerships provide the path for success," said Angie Sowers, Baltimore District Integrated Water Resources management specialist. "This means not only inviting everyone to the table, but allowing for them to have a deeper involvement, especially those whose livelihoods depend on working in the Bay."

By the Numbers

2 Billion oysters planted at Harris Creek

350 acres of reef constructed at Harris Creek

Goal is to restore **10** Bay tributaries by **2025**

Only 1 percent of historic oyster populations remain in the Bay

A single oyster can filter up to **50 gallons** of water in **24 hours**

Government partnership serves as just one key element in the process. This spring, the District and its partners met with Maryland's Watermen Association several times to discuss a path forward for working more closely together throughout the planning and restoration processes.

Following a series of meetings and visits to restoration sites, the team is modifying its initial plans at one of its restoration sites to minimize impacts to trotlining by crabbers.

Oyster populations in the Chesapeake Bay have declined considerably in the last century, due to several factors to include parasitic diseases and loss of habitat. Less than 1 percent remains of historic oyster populations, according to NOAA.

There is not sufficient natural shell available to restore oyster habitat in the bay; therefore, other materials like rock are used to construct reefs. For reefs constructed in Harris Creek, mixed-shell materials come from coastal processing plants, and the rock is quarried in Havre de Grace, Maryland.

These alternate materials have proven to be successful at restoration sites, including Harris Creek.

Although restoration only takes place in pre-existing sanctuaries, as established by Maryland DNR, the objective is for oysters to reproduce and settle not only within the sanctuary, but also on public shellfish fishery areas that watermen can access.

Thus far, partners have worked to restore three Maryland tributaries, including Harris Creek and the Tred Avon and Little Choptank rivers.

The goal, as laid out in Executive Order 13508, is to restore 10 tributaries by 2025 in both Maryland and Virginia. ■

Rocks used for restoration of reefs and quarried from Havre De Grace, Maryland, on a barge at Harris Creek, May 26, 2015. (U.S. Army photo by Sarah Gross)

Out with the Old...In with the New

Defense Distribution Center gets modernized

New energy-efficient Defense warehouse replaces facilities built during World War I

By Clem Gaines

Workers and installation leaders cut the ceremonious ribbon Nov. 16, marking the completion of a 204,000-square-foot general purpose warehouse at the Defense Distribution Center in Susquehanna, Pennsylvania. This $24.6 million project stores many high-value items and replaces two facilities built during World War I.

"This is a significant step in the ongoing modernization of the installation," said Col. Corey New, commander, Defense Logistics Agency, Distribution Center.

This warehouse, known as building 780, is designed to save energy. It is climate controlled for both bulk and high-rack storage. The roof houses a water-heating system that provides hot water to the networks of water-tube systems circulating through the storage area floor. The water warms the concrete floor to provide heat at the floor level where personnel are located. The warehouse is also equipped with high-efficiency lighting and motion sensors to adjust operations as personnel move throughout the building.

Building 780 also has solar panels on the south-facing wall that circulate heated air. The heated air is blown into the warehouse to aid in temperature control during the cold Pennsylvania winters. The dual solar-heated air and in-floor heated water network helps maintain the required climate-controlled environment throughout the year.

"The combination of sustainable energy-saving elements in this warehouse is unique and sets a new standard for military warehouse construction," said Carrie Ouellette, project manager.

"This day has been a long time coming," said Lt. Col. Michael Ruppert, deputy commander, Baltimore District. "We have a long and continuing history in supporting Defense Logistics Agency's worldwide mission as a leading provider of global distribution support to America's military including receiving, storing and issuing supplies, as well as providing other tailored services to increase warfighter readiness."

Logisticians not only have a new green environment to work in, but one that places quality of life prominent.

"Locker areas, modern bathrooms, break areas, and shelter areas were a first thought and not an afterthought," said New.

The Baltimore District and the Installation Engineering Team were able to complete the construction of this state-of-the-art warehouse within two years. ■

Solar panels on the south-facing wall of Building 780 at the Defense Distribution Center, Susquehanna, Pennsylvania. (Courtesy photos)

Rendering of new Public Health Center lab

Critical public health lab receives much-needed *facelift*

By Clem Gaines

Employees at the U. S. Army Public Health Center (PHC) will soon be working in a new laboratory and headquarters building. Their current facility was built in 1967.

A groundbreaking event Oct. 22, at Aberdeen Proving Ground (APG), Edgewood Area, marked the beginning of the end of a concept proposed by PHC leaders since 1984.

The Baltimore District will provide contract administration and construction management plus a team of uniquely-experienced engineers, technicians and designers during construction.

"This is an historic moment," said Lt. Gen. Patricia Horoho, surgeon general, U.S. Army. "The Army's investment in this new facility is a symbol of their respect and appreciation of the vital role of this great organization."

The mission of the PHC is to promote health and prevent disease, injury and disability of Soldiers and military retirees, their families, and Department of the Army civilian employees; and to assure effective execution of full-spectrum veterinary service for Army and Department of Defense veterinary missions.

"When you hear about things like chemical hazards that Soldiers experience; when you hear about things like burn pits, the laboratory work in support of those situations was done in this building," said John Resta, PHC director.

The $248 million, 279,000-square-foot-replacement laboratory facility will provide a modern, consolidated laboratory to support the increased demands of PHC lab services. The project consolidates lab services from 11 separate buildings on the installation that range in age from 43 to 90 years old.

PHC and the Health Facilities Planning Agency collaborated with the APG Garrison Team during every step of the design and advertising process. With the project approved by Congress, the design team planned a facility that included all of the customer (Defense Health Affairs) and garrison key criteria, all while meeting Silver certification through Leadership in Energy and Environmental Design (LEED). The design entails the creation of a multi-story facility that addresses multiple elements – laboratories, vivarium, administrative offices, central utility plant, landscape, infrastructure, life safety, natural sunlight, stormwater management, IT systems, building information modeling and more.

The design also includes emergency power for approximately half the laboratory area and the vivarium with two, 2,000 kilowatt generators.

Many of the engineers and technicians have recent experience in the construction of two other state-of-the-art laboratories for the Army and the Department of Defense. These include the ongoing work at the U.S. Army Medical Research Institute of Infectious Diseases at Fort Detrick, Maryland, and the recently opened U.S. Army Medical Research Institute for Medical Defense, located next to the site for PHC.

The new laboratory is scheduled to open in summer 2019. ■

By the Numbers

- ***$248 million*** new LEED lab
- ***279,000*** square feet
- Consolidates ***11*** older facilities
- ***2 2,000*** kilowatt generators provide emergency power for half the lab
- Replaces buildings ***43*** to ***90*** years old
- ***2019***, projected opening date

Winter at Raystown (Courtesy photo)

Raystown Lake - Harmony among man and land

By Fred Furney

For years, the staff at central Pennsylvania's Raystown Lake has incorporated several principles into the operation of its facility, which is managed by the Baltimore District. One of the most prevalent principles is Aldo Leopold's "Conservation is a state of harmony between men and land."

The lake's unique diversity of natural resources and those affected by the project's existence are managed through good stewardship and sound land-management techniques.

One of the goals of the project is to maintain and enhance the quality of existing resources through an active management program designed to optimize the natural-resource potential.

These management practices must also align with the needs and desires of the approximately 1.2 million people who visit the project annually. The effects of these practices are not only felt locally and regionally, but have impacts downstream to the Chesapeake Bay.

The Natural Resource Management Program at Raystown Lake is divided into three main programs: Wildlife Management, Forest and Habitat Management and Fisheries Management.

The primary objective for wildlife management is to maintain or enhance habitat components, such as conifer cover, grassland habitat and riparian buffers.

Forest and habitat management objectives are focused on diversification within the major vegetation types to include different age classes and a diversity of field types.

The objective of the fisheries management program continues to be the establishment of an integrated fisheries management plan that includes fish-structure placement, fish stocking and fisheries population research.

Due to Raystown Lake's hilly terrain, barren substrate, and regular wind and wave generation, the lake constantly faces severe shoreline deterioration and subsequent siltation. As a tributary to the Chesapeake Bay, it is important to limit sedimentation entering the waterway.

"The lake's unique diversity of natural resources and those affected by the project's existence are managed through good stewardship and sound land-management techniques."

Raystown Lake staff has partnered with the Pennsylvania Fish and Boat Commission (PFBC) to initiate and design a unique, cost-effective, habitat-supporting, and aesthetically-pleasing solution to their shoreline erosion situation. Both vegetative-management and mechanical practices are employed at the lake to reduce erosion and soil runoff, preserve water storage capacity for flood risk management, maintain water quality, and preserve and enhance the lake's water quality and fishery.

Raystown Lake staff has been at the forefront of the Federal Land and Resource Management watershed approach by leveraging partnerships with various state and federal governmental agencies like the PFBC and developing ties to volunteer groups, universities and private entities to come up with innovative and cost-effective solutions to manage resources - even through resource constraints.

Through an innovative partnership, the Corps worked with The American Chestnut Foundation (TACF) and Friends of Raystown Lake to establish an American chestnut orchard in 1999 in order to maintain a continued genetic stock. Re-establishment of the valued native tree at the lake will directly improve degraded forest lands, educational opportunities and sustainability. Habitat tours at the lake now include a special visit to the orchard site to highlight the cooperative project.

To further highlight Raystown's commitment to education, for over 40 years, Raystown Lake has partnered with Juniata College that operates an on-site education and research center. This allows the facility to obtain quality data at virtually no cost. The students use this lakeside facility to perform studies on vegetation; the life cycles of fence lizards, song birds and turtles; water quality; and aquatic invasive species.

Raystown Lake and the Ruffed Grouse Society entered into an agreement in the late 1990s to create two unique habitat improvement projects in memory of Jim Bashline - a well-known outdoor writer and conservationist. The Jim Bashline Wildlife Habitat Management Area is managed through timber harvesting. Management activities are also coordinated by the Pennsylvania Game Commission (PGC). Timber harvest operations provide the dense, young forest habitats required by ruffed grouse, American woodcock, golden-winged warblers and numerous other species. Additional activities include the establishment of conifer seedlings and fruiting shrub plantings to augment local food sources and provide cover.

The other project area offers interpretive stations designed to educate on the benefits of timber harvest, plantings, wetland habitat and tree identification.

The National Wild Turkey Federation (NWTF) has also been an invaluable partner to Raystown Lake. The Terrace Mountain Chapter of NWTF has worked with the Corps to plant flowering crab-apples; clear locust trees; and plant clover, warm season grasses, corn, sorghum, buckwheat and sunflowers.

Raystown Lake and NWTF also annually host the popular Wheelin' Sportsmen Hunt, which allows hunters with disabilities the chance to harvest a deer on the last day of Pennsylvania's regular firearm whitetail deer season. This specialized hunt also functions to control the over-abundant deer population and to reduce damage to native vegetation.

Raystown Lake has also worked with PGC, Ducks Unlimited (DU), and the U.S. Fish and Wildlife Service to establish wetlands.

"What makes Raystown Lake so dynamic is the balance between the recreational and environmental stewardship programs," said Jude Harrington, lead park manager. "What makes these two high-profile programs so effective is the various private-public partnerships we have been able to forge."

The Corps also partners with Indiana University of Pennsylvania chapter of the National Art Education Association to host annually a sidewalk chalk art contest that brings art into the community while spreading the messages of water safety and environmental stewardship. Here is a fan favorite by Michelle Grill from the Aug. 1, 2015, event.

Hunting for Normalcy

Veterans join memorial hunt at Jennings Randolph Lake

By Cynthia Mitchell

Several months ago, retired U.S. Army Sgt. Luis Rosa decided he wanted to pick up a new hobby: hunting.

There was only one problem.

Rosa is a Wounded Warrior who served two tours of duty in Iraq before an improvised explosive device (IED) altered his life course in April 2008, only two days before his 25th birthday. He lost both of his legs, part of his left arm, and also suffers from hearing and vision loss. His disabilities provide an additional challenge to an already complicated sport.

Fortunately for Rosa, he came across information on the 10th annual Bill Nesbit Memorial Hunt, hosted by the Baltimore District Nov. 16-17, 2015, in Elk Garden, West Virginia.

The event provided 10 hunters with physical disabilities, including five U.S. Veterans, the opportunity to harvest a deer.

The annual hunt has been held on the grounds of Jennings Randolph Lake since its inception in 2005. It is dedicated in the memory of Bill Nesbit, a past participant and volunteer who lost his life to cancer in 2008.

"It started out as a wildlife management tool, to cut down on the doe population at the project," said Bill Donnellan, Jennings Randolph Lake park ranger. "Now the coin has flipped, and it's more about giving back to folks in the area."

The event has continuously evolved over the years to accommodate participants' varied disabilities.

This progression is most noticeable amongst the hunting blinds, which have advanced from flimsy pop-up tents to wheelchair-accessible structures, complete with insulation and temperature control.

"Initially, we were putting up blinds in places we thought were a good place to deer hunt," said Donnellan. "Over the years, we've had to put ourselves in the hunters' shoes and consider their physical disabilities. It's been a learning experience for the organizers and our volunteers."

Retired Army Sgt. Luis Rosa (right) poses alongside Hunter Safety Instructor Harold Bennett during the 10th Annual Bill Nesbit Memorial Hunt at Jennings Randolph Lake, Nov. 17, 2015. (U.S. Army photo by David Gray)

Both sponsors and volunteers are major contributing factors to the annual hunt's success throughout the past 10 years. Sponsors include the Elk District Volunteer Fire Company, Walmart of Keyser, and Burgess Farm Service.

Many volunteers continuously donate both funds and personal time, including signing up to be weapons safety instructors who ensure hunters' safety remains a top priority.

One of these volunteers is Stephen Rexrode, a Vietnam veteran and one of the event's original organizers. It was Rexrode who began to solicit Wounded Warrior participation several years ago.

He reached out to numerous Veterans' organizations to extend an invitation to the hunt, and he succeeded in recruiting Veterans like Rosa.

"It's important to me that we bring these Veterans in, to try to do everything we can do for them," said Rexrode. "I've made that a point of mine."

As for Rosa, he was able to bag his deer the second day of the hunt, and he has plans on returning again next year.

"To find a hunt that was accommodating to my needs, it seemed impossible. To be able to feel normal…who wouldn't want that?" ■

Lead Lab for chemical combat in new home

By Clem Gaines

U.S. Army Public Health Command lab technician assesses toxicology samples, Oct. 2, 2002. (U.S. Army photo by Ben Bunger)

Soldiers now have a state-of-the-art laboratory and research center to defeat chemical warfare at the new U.S. Army Medical Research Institute of Chemical Defense (USAMRICD) - the Department of Defense's lead laboratory for the development of medical countermeasures against chemical threat agents.

The Baltimore District team joined USAMRICD and Aberdeen Proving Ground (APG) officials at the Sept. 15 ribbon cutting ceremony for the 526,000-square-foot, $320 million facility dedicated exactly six years after its groundbreaking.

"As a first lieutenant in Desert Storm, my Soldiers and I had to trust the medical countermeasures given to us that were developed here," said Brig. Gen. William Graham, commander, North Atlantic Division, U.S. Army Corps of Engineers. "Now, your team has the tools it needs to continue to keep Soldiers safe."

The facility's architecture, designed by the Baltimore District, enhances its operations and overall value to both the mission and the scientists and support team who work there. It includes open-space design, natural sunlight and collaboration areas.

"The design of the workspaces facilitates critical interaction and collaboration between the workforce, as staff are no longer compartmentalized and scattered among 10 buildings," said Col. Roman Bilynsky, commander, USAMRICD.

"The building is designed with the concept of a 'main street' that connects programmatic functions while enhancing sense of community and encouraging interaction and collaboration among the various teams," said Scott Johnson, area engineer, Baltimore District.

Main Street is a three-story, naturally-lit corridor that connects the administrative and training wing with the functional laboratories, and also acts as a bridge between the live animal and neat agent laboratories and the non-animal science laboratories.

The Baltimore District has unique experience in building these kinds of facilities. At Fort Detrick in Frederick, Maryland, the District continues construction of the U.S. Army Medical Research Institute of Infectious Diseases, another state-of-the-art laboratory and research center dedicated to the health and safety of Soldiers and civilians.

This considerable project came together through the cooperation of multiple agencies including the Defense Health Agency, the Baltimore District, Health Facilities Planning Agency, APG, and the Institute of Chemical Defense - Design Partnership.

The new facility is certified Silver under the Leadership in Energy and Environmental Design (LEED) green building certification program.

The various strategies of the sustainable design process included: reducing operating energy by installing variable mechanical valves to allow maximum ventilation; exhaust air heat recovery; low-energy glazing and sun-control shades; using light-colored roofing materials to reduce heat island effect; and eliminating the use of drinking water for landscape irrigation by selecting native non-water intensive plants.

In addition, the design minimized stormwater runoff and used vegetated-filter strips and on-site retention structures. Inside the facility, indoor air quality was improved by establishing a Green Housekeeping plan and fresh air flush before occupancy.

"The investment our leadership has made in creating this new institute is incredibly important for the safety of our service members, as well as our public's health," noted Bilynsky. "The critical square-footage, under hoods and in glove boxes has markedly expanded, enabling more simultaneous scientific experimentation." ■

Preparing vulnerable D.C. for the next major flood

By Sarah Gross

The District of Columbia is home to many critical and historic resources, including the very documents our nation is founded upon.

Positioned precariously along the banks of the Potomac and Anacostia rivers, the District is also home to some of the nation's most susceptible locations for flooding - placing these invaluable items at high risk. Three types of flooding can impact low areas of the District: river, coastal storm surge and interior.

The most significant riverine flood of record was in 1942 when the Potomac River stage reached 17.7 feet. More recently, in 2006, major flooding impacted the Federal Triangle.

"Without the proper implementation of a flood emergency plan, flood risk in the District is high," said Stacey Underwood, Silver Jackets coordinator, Corps Baltimore District. "There are numerous agencies that have roles and responsibilities during a flood, and they all must be fully prepared to respond in order to reduce the risk of flooding to residents and the critical downtown infrastructure."

The District of Columbia's interagency flood-fighting team, the Silver Jackets, completed a tabletop exercise to test the effectiveness of its Flood Emergency Manual Nov. 3, 2015. This manual is undergoing revisions and details how federal, District of Columbia, and public agencies will respond to flood emergencies in the region, including emergency closures and the operation of the 17th Street closure structure that is part of the Potomac Park Levee.

The updated manual will feed into a project to develop a District-wide flood emergency plan.

The revision to the flood manual, last significantly updated in 2006, is being prepared and coordinated by the Baltimore District, which is the federal co-lead for the District of Columbia Silver Jackets. This team leverages resources to identify and implement comprehensive, resilient, and sustainable solutions to reduce flood risk around the District.

D.C. Silver Jackets Coordinator Stacey Underwood speaks to participants at a flood risk tabletop exercise in Washington, D.C., Nov. 3, 2015. (U.S. Army photo by Chris Gardner)

Other major players include the D.C. Department of Energy and Environment (DOEE) as the lead Silver Jackets agency for the District; the National Park Service, the federal co-lead; the National Weather Service, and the D.C. Department of Homeland Security.

The agencies worked through realistic storm scenarios to determine what would trigger a flood response action, which agencies would respond, and how. This exercise was executed in accordance with the Homeland Security Exercise and Evaluation Program.

One such action would be when to erect the 17th Street closure structure, which is a removable element consisting of aluminum panels to be erected between steel posts. Operated and maintained by the National Park Service, the structure would attach to the floodwalls on both sides of 17th Street, which is a major District artery, at Constitution Avenue prior to an anticipated high-water event. The Corps completed construction on the closure structure in fall 2014.

Did you Know?

Cities 100, a global publication, highlighted the D.C. Silver Jackets as a climate change leader.

"Flood risk management is critical in the District," said Tommy Wells, director, DOEE. "This exercise meets the Sustainable D.C. Plan to better prepare the District of Columbia's emergency services in order to improve processes and measures that will help save lives, protect property and reduce future expenditures."

The Silver Jackets team will use lessons learned from the exercise to update and finalize the District's flood manual.

"Exercises like this one in which emergency managers and agency representatives work together through various aspects of flooding scenarios are invaluable and will pay dividends during future emergency events," said Dorie Murphy, chief, Emergency Management, Baltimore District. ■

Baltimore District and National Park Service test the 17th Street closure, Washington, D.C., Oct. 31, 2014. (U.S. Army photo by Brittany Bangert)

Project restoring vanishing island in Chesapeake Bay receives national engineering award

By Cynthia Mitchell

Representatives from the Embassy of the Netherlands and other Dutch dignitaries visit Poplar Island to observe construction and learn more about best practices, as they construct a similar remote habitat project in the Netherlands, Oct. 1, 2014. (U.S. Army photo by Sarah Gross)

In the mid-1800s, Poplar Island was a 1,140-acre community that housed approximately 100 inhabitants. After decades of erosion and sea level rise, only four acres of the island remained by the late 1990s.

Just off the Chesapeake Bay coastline and about 34 miles south of Baltimore in Talbot County, Maryland, Poplar Island is once again helping to ensure the economic vitality of the region.

In 1998, restoration of Poplar Island began under a partnership between the U.S. Army Corps of Engineers, Maryland Port Administration (MPA), Maryland Environmental Service and other federal and state agencies.

Today, the island has been restored to its former size with a thriving wetland habitat - thanks to more than 27 million cubic yards of clean dredged material – most of which comes from maintaining navigation channels in the Baltimore Harbor.

For these remarkable accomplishments, the Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island was awarded the 2015 Innovation in Sustainable Engineering Award from the American Society of Civil Engineers (ACSE) during their national convention, held in New York, Oct. 11-14, 2015.

The ACSE award recognizes the innovative spirit of this project, which combines traditional design and construction such as dikes, dredging and grading with techniques for constructing wetlands to create productive intertidal wetlands and upland habitat.

"The American Society of Civil Engineers has been a steadfast advocate of sustainable practices in engineering," said Robert D. Stevens, president, ASCE. "The Poplar Island restoration project is a stellar example of what can be accomplished when vision, collaboration and creativity come together to improve economic, social and environmental sustainability."

"We couldn't be more pleased to share this momentous recognition with our partners at the Maryland Port Administration," said Col. Ed Chamberlayne, Baltimore District commander, who was in attendance at the convention. "Poplar Island restoration has become an international model for habitat restoration, fulfilling our commitments to both protect and restore the health and natural resources of the Chesapeake Bay and maintain a safe and economically-viable Baltimore Harbor."

Col. Chamberlayne was accompanied by Justin Callahan, Poplar Island project manager.

Due to its success, the island is scheduled to be expanded by another 575 acres of wetland, upland, and open water embayment beginning in 2016. ■

Poplar Island in the mid 1990s

Poplar Island in 2011

Geologist Ethan Weikel points to the miniature heater in the ground-source heat pump system he developed at the Soils Laboratory at Fort McHenry, Dec. 7, 2015. Weikel's system, housed in a portable ice chest, gives engineers a more mobile and less-costly way to measure heat transfer capabilities in the earth. (U.S. Army photo by Jhi Scott)

Soil-testing system earns geologist an award in innovation

By Clem Gaines

Engineering acumen and creative problem solving earned Baltimore District Geologist Ethan Weikel the 2015 U.S. Army Corps of Engineers Innovation of the Year award.

Weikel developed and implemented an innovative soil-testing system that is smaller and 75 percent less expensive than commercially-available products – but comparable in effectiveness.

This tool determines how effective ground-sourced heat pumps can be at a project site. Using ground-source heating reduces building energy costs and provides a more efficient heating and cooling system.

"This is like a typical heat pump for heating and cooling in a home except the transfer of energy occurs below ground instead of in the air," Weikel said. Heat exchanging fluid is circulated through the ground in piping that is part of the building's heating/cooling system.

"Ethan has been a leader in the geothermal field for the District," said Ron Maj, chief, Engineering Division. "After being approached by the project manager for Letterkenny Army Depot about installing geothermal wells on the installation, Ethan was eager to explore a new mission area for the District."

Creativity and necessity motivated Weikel to develop the test unit.

"Our customer needed site-specific information for a ground-source geothermal heating/cooling feasibility study," said Weikel. "We didn't have the time or money to buy a commercial unit to support the customer needs, so I suggested we build it, but cheaper, smaller, and more portable."

And that is just what he did.

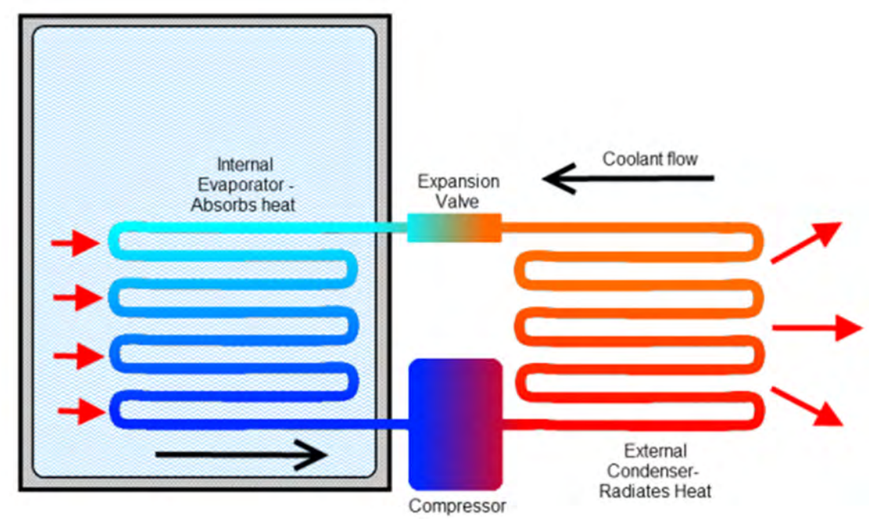
"My experience in the field gave me enough familiarity and expertise with this type of test system to build one of my own," he explained. "I'm definitely a tinkerer, whether it's mechanical, electrical or both. I love it."

Weikel's innovation and experience has led to other opportunities to benefit the Corps beyond the Baltimore District.

"Upon the successful completion of this project, Ethan presented the results at the annual Geo-Materials community of practice meeting," said Maj. "His presentation generated quite a bit of interest, and he ended up building a geothermal test system for the Savannah District."

Weikel's knowledge of drilling equipment is also aiding the District's Engineering Division in the Dam Safety Program. Drilling at dams is critical to understanding the foundation materials, troubleshooting issues and having instruments to calculate water levels and pressures. Soil investigations around a dam are sometimes on a flat surface, but not always. Weikel is helping the District to purchase a specialized tilt-bed drill in order to accomplish work on the steep slopes of the Corps's vast portfolio of dams.

"Geologists are all about the subsurface," he said, "and here, we work on dams and levees, environmental contamination, water supply, foundation issues, surface geophysics for munitions investigations, wetlands, and just about anything else involving the subsurface."



How it Works

Outside a building, plastic piping is laid out in a series of loops that go out into the ground and come back into the facility. In the summer, pumps send heated propylene glycol (the same fluid used in car radiator antifreeze) through the system. As the fluid goes through the system, it loses some of its heat to the earth and returns to the building cooler than when it left. This cooler fluid is then integrated into the building's air handling system. The reverse process occurs in the winter. Data is gathered to determine if the ground next to a facility is a good candidate for this heat transfer process.

Weikel graduated from the College of William and Mary in 2002 with a Bachelor of Science in structural geology. He later completed graduate coursework in subsurface hydrology, geotechnics, and engineering geology at the University of Missouri-Rolla. He has seven years of experience with the U.S. Army Corps of Engineers and currently works in the Engineering Division's geology and investigations section. He is also a member of the Corps' Headquarters minerals extraction team and certified by the ground-source heat pump industry association as an installer.

His award, signed by Steven Cary, the deputy director for Research and Development for the U.S. Army Corps of Engineers, attests to Weikel's "exceptional innovation, creativity and effectiveness, with applications and substantial benefits for the Army and the Department of Defense."

"Baltimore District took a calculated risk in my test system, but it has paid dividends," said Weikel. "We now have an effective, and less costly, way to calculate the project requirements and positive impacts of using ground-source geothermal capabilities at a project."

2015 By the Numbers

By Steve Bryson

1.7 Million
plantings to date on Poplar Island

60
Billion Gallons
of drinking water treated

CFC
$46,000 Donated
by employees through the Combined Federal Campaign

320,000 Pounds
of scrap metal inspected, certified, and shipped to recycler as part of Time-Critical Removal Action at Fort Wainwright, Alaska

150 Miles
of Federally-constructed levee systems in Levee Safety Program inspected

100 Munitions and explosives of concern
Indentified and destroyed

100 Acres
proposed for new restoration project at Dyke Marsh – Washington Metro's largest freshwater wetlands

370 Acres
of new oyster habitat created and 2 billion oysters planted in Harris Creek

204 Species
of birds documented on Poplar Island

4,000
permit decisions in Maryland, D.C. & Pennsylvania by the Regulatory Program

$665 Million
total project costs for 8 military project ground breaking and ribbon cutting events at 5 installations

#1 Corps Regulatory Program
in permit efficiency

15 Million
visitor hours at District recreation sites

13 Military Installations
Baltimore District supports

2 Officers
District hosted two British Army Captains

$20 Million
in storm damages prevented by District reservoirs & levees

2.83 Million Cubic Yards
of material dredged from navigation channels

450,000 cubic yards
of material dredged from Ocean City Inlet

2,300 Youth
reached as part of STEM activities

32,000 Square Feet
leased from Armed Forces Retirement Home to DC charter school

3,238
contract actions processed with $1.1 billion obligated

U.S. Army Corps of Engineers,
Baltimore District

10 S. Howard St.
Baltimore, MD 21201

Looking Back

Construction of a floodwall as part of the Potomac Park Levee system in the District of Columbia April 12, 1938. The project was completed in 1939 and has since reduced risk to human safety and critical infrastructure downtown from flooding of the Potomac River.