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ecologist helps
agencies strike
balance between
missions,
environment **34**

Environmental Operating Principle #5

Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.



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This issue of The Corps Environment focuses on Environmental Operating Principle #5: Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.

To maintain its status as a world-class engineering and scientific organization, the U.S. Army Corps of Engineers is revolutionizing many of its processes.

Our commanding general and 54th Chief of Engineers Lt. Gen. Todd Semonite recently stated, “Within the Corps, we are revolutionizing our culture to responsibly accelerate project delivery, optimize financing and budgeting, and improve permitting and regulatory activities.”

As we examine the way we deliver our programs and analyze ways to be more effective and efficient, we’ve had a lot of conversations throughout the enterprise about how we make risk-informed decisions.

The concept of risk management has been embedded in our Environmental Operating Principles since their adoption in 2002. This issue of *The Corps Environment* focuses on Environmental Operating Principle #5: Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.

As stewards of the environment, the Corps does a tremendous job considering risks to the environment. In addition to the efforts of our 4,000 environmental specialists across all mission areas within the Corps – Military Programs, Civil Works, and Research and Development – we have a very attentive workforce and committed leadership that ensures we follow appropriate sustainable practices in all our operations.

However, we often look at this stewardship as a trade-off. While we know that we must comply with environmental regulations

and consider environmental impacts, the activities associated with this stewardship is often viewed as a risk to schedule and/or budget. It may not be something that is explicitly discussed, but it’s embedded in a question I receive almost weekly: “How can we expedite NEPA [National Environmental Policy Act] compliance on this project?”

This question is often posed in relation to a highly visible, critical project, in which the Corps, or one of our partners, has limited time to deliver. This is usually a project where the project delivery team has already wrestled with the intricacies of their plan and milestones and then recognizes they need to perform a NEPA analysis. After factoring in the time needed to comply, they usually call me, hoping the environmental chief will have a magic solution. That’s when I take a deep breath and explain that by nature NEPA is a process law.

NEPA is not primarily concerned with the outcome, rather, it is focused on making sure that you take a hard look at the different alternatives available to achieve your objective and the environmental consequences of each before you make your decision on which path to pursue. Thus, it is not easily “expedited” in the sense that the question is posed. However, I explain, by thinking through NEPA and starting the process as quickly and deliberately as possible, you can ensure it moves forward smoothly.

It’s not that I mind the question. In fact, I do sympathize with the notion that there are some bureaucratic processes associated with NEPA that need to be

streamlined. USACE has actively engaged in the development of the “One Federal Decision” guidance, which has set limits on interagency review time and encourages parallel collaboration and coordination among agencies in the interest of enabling earlier completion of NEPA reviews.

Additionally, we have provided extensive input into Department of the Army and defense department reform initiatives designed to put consistent standards in place that allow us to more liberally use categorical exclusions for activities military services perform frequently and that have a demonstrated history of minimal environmental impact.

Still, whenever I am asked how to “expedite” NEPA, I’m usually concerned the premise of this question is based on the assumption that NEPA compliance efforts serve as a barrier to delivering a timely project. I’m concerned that the questioner does not adequately understand how to harness the value of a deliberate and well-constructed NEPA strategy.

Sustainable practices and environmental stewardship can be a mission enabler. NEPA is consistent and aligned with our EOPs (transparency, leveraging scientific knowledge, etc.), and when done well can enhance the effectiveness and outcomes of our project delivery. I’d like to change the paradigm and encourage us to think of NEPA as a tool that helps us to identify and mitigate risk — not just to the environment — but to the cost and schedule of a project.

Recently I gathered a group of some of the Corps’ most-seasoned NEPA



Karen J. Baker
Chief, U.S. Army Corps of Engineers
Environmental Division

practitioners, and they validated that they get the “expedite” question as frequently as I do. Here’s what they told me they wished their leadership and project managers understood about NEPA and its value:

NEPA is an enabler.

NEPA can identify and mitigate risk beyond environmental considerations. It is instrumental in identifying next steps and can help provide multiple solutions/options to a challenging problem. Additionally, the data and feedback received during the NEPA process improves situational awareness about the geographic area and public/agency concerns.

NEPA is a trust builder.

The NEPA process fosters public understanding and participation.

See ENVIROPOINTS, page 6

Lt. Gen. Todd T. Semonite
Commanding General
Publisher

W. Curry Graham
Director of Public Affairs

Karen J. Baker
Executive Editor

Gene Pawlik
Managing Editor

David San Miguel
Editor

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Submissions

The Corps Environment's editorial staff welcomes submissions with an environmental, sustainability or energy focus from USACE and Army units worldwide. Send articles, photos, events, letters or questions to the editor at CEHNC-PA@usace.army.mil.

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www.usace.army.mil/Missions/Environmental.aspx

Public and environmental agency involvement throughout the NEPA process provides the lead agency with the opportunity to explain the objectives and possible means of accomplishing a proposed action, and to understand public and agency concerns.

NEPA strengthens coordination.

NEPA enables various players to get together, identify risk, and identify the best project execution path. It is through good coordination that risks can be reduced in current and future project execution.

NEPA embraces Environmental Operating Principles.

In accordance with the EOPs, which serve as the backbone of all that we do, NEPA encompasses our guiding principles, including embracing transparency,

leveraging scientific knowledge, considering risk, and fostering sustainability.

NEPA saves time and money.

If done early, NEPA reduces project uncertainties and facilitates compliance with other environmental laws. It can serve as an early warning indicator of problems that may impact schedule. It assesses the anticipated direct and indirect environmental effects of a proposed action, which enables agencies to screen out poorly-defined proposed actions and consider alternatives that might lessen potential environmental impacts or lessen costs.

NEPA tells our story.

NEPA is not only a legal requirement, it enhances our project narratives. Decision makers use the information they receive from the public and other agencies to ensure that their “hard look” at the environmental

consequences of their decision is well informed and includes stakeholders’ views.

NEPA is a powerful tool.

It helps ensure mission success by assessing a proposed action’s environmental consequences in advance of deciding how to proceed. During this process, important data is acquired, shared, and feedback is solicited to ensure all interested parties are informed and heard. Furthermore, it ensures projects are designed and managed in ways that reduce potential environmental impacts in the present and the future.

To better enable decision makers to leverage NEPA best practices, our USACE Environmental Community of Practice has developed a short fact sheet that provides answers to the most frequently asked NEPA questions. This fact sheet can be viewed at.

<https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll11/id/3389>.

ORISE partnership enables installations’ critical scientific, research and health initiatives

By Haywood J. Perkins III
U.S. Army Installation Management Command

Though there are times when the Army must operate with reduced personnel resources and budget constraints, the mission can’t and won’t suffer.

For installation environmental staffs, accomplishing the mission under these conditions calls for ingenuity and a “unified” approach to mission accomplishment.

Partnering with agencies and organizations that can assist with this mission is a proven strategy for success, as illustrated by the decision of many throughout our environmental enterprise to take advantage of the program known as ORISE, or Oak Ridge Institute for Science and Education.

ORISE is an asset of the U.S. Department of Energy, managed by Oak Ridge Associated Universities, a nonprofit corporation comprising more than 100 major doctorate-granting academic institutions.

The program was established in 1992 by the DOE and since that time has been dedicated to enabling critical scientific, research and health initiatives by providing world class expertise in science,

technology, engineering and math, or STEM workforce development; scientific and technical reviews; and the evaluation of radiation exposure and environmental contamination.

If you’re unfamiliar with the ORISE program, one may not realize how it can benefit the organization and the nation as a whole.

For example, when an installation has short-term scientific or technical requirements and doesn’t have sufficient resources, this program can help the installation gain temporary assets to complete those requirements.

ORISE participants are acquired through interagency agreements, which identify an installation’s environmental program as a sponsor and opens the door to scientific and technical assistance.

While the focus of the program is on the education and training of the participants, who are not government employees, the participants nevertheless often work hand-in-hand with environmental staffs, so it’s a win-win scenario.

Participants also gain knowledge, experience and education related to their fields of study, while the sponsoring unit, in addition to assistance with scientific

and technical requirements, shares the organization’s knowledge and function with the broader academic community and supports the nation’s overall commitment to environmental science education.

One Army garrison that has taken advantage of this program is West Point Military Academy, which has been a partner in the ORISE program since 1996.

Its Directorate of Public Works team has mentored 23 participants, who over the years have completed projects in environmental compliance, natural resources, energy management and conservation, urban planning, public education on environmental topics and emergency planning.

For West Point, the program has been an invaluable asset, one that provided an opportunity to build mentor/mentee relationships, identify and develop skills, and promote opportunities for networking. To date, 12 of those ORISE participants have become federal employees, working throughout the West Point DPW footprint.

For more knowledge about the ORISE program, please visit:

<http://orise.orau.gov/>





(Photo by Eric Pilgrim, Fort Knox News)

Congressional and Army leaders witness the testing of Fort Knox's power grid Oct. 24. This test highlighted the installation's ability to be unplugged from the local power grid yet maintain operations through a series of combined heat and power generation.

Energy resilience enables Army readiness

By J.E. "Jack" Surash

Acting Deputy Assistant Secretary of the Army
(Energy & Sustainability)

From hurricanes to wildfires, extreme weather is unpredictable and on the rise. Natural threats, such as extreme weather can interrupt energy generation, damage energy resources and infrastructure, and interfere with fuel production and distribution systems, causing fuel and electricity shortages.

However, natural threats are just one of the growing concerns for the Army's mission. Safeguarding Army installations against vulnerabilities from physical, natural and cyber threats enable critical missions and ensure that the Army is ready to deploy, fight and win. Enhancing energy resilience mitigates risks posed by these threats and ensures critical operations continue in the event of an unexpected grid outage.

Recognizing natural, physical and cyber threats are on the rise, the Army is pivoting its energy posture from one of conservation and efficiency to resilience. Employing energy resilience as a risk management approach ensures: the Army can anticipate, recover from and adapt to changing conditions; withstand disruptions in fuel, electricity and water supplies; and mitigate new threats.

Over the past year, the Army conducted several security and resilience assessments to evaluate installations' energy posture and help prioritize mission-critical projects. Initial assessments demonstrated that installations could react to short term interruptions, but may not be positioned to continue critical operations in the event of a long-term or wide-spread power outage.

Measuring installation energy resilience against critical mission sustainment, assured access, infrastructure condition and systems operation, the Army is working to align integrated best management practices and holistic energy and water solutions to enhance energy security. Current Army guidance sets a goal for installations to be "islandable" – or independent from the commercial electrical grid – and maintain critical operations for a minimum of 14 days in the event of a grid disruption.

Recently, several installations intentionally "unplugged" from the electrical grid. Exercising an installation's energy resilience is vital to inform Army officials of shortfalls and highlight where the Army needs to modernize.

At one installation, a number of critical systems failed on backup power including the airfield boiler plant, the opening of hangar doors for launching the MEDEVAC helicopter and communication systems. These critical issues necessitated

reenergizing the electrical feeder for the airfield area after 10 minutes of downtime. While this exercise showed room for improvement, energy resilience testing highlights vulnerabilities that can be targeted for improvement during risk management and infrastructure planning.

Another resilience test showed promising results. Following a 2009 ice storm that resulted in a 10-day power outage, Fort Knox, Kentucky, worked with its utility partner to extract onsite natural gas to meet 100 percent of its critical energy needs.

In October, Fort Knox highlighted its ability to be unplugged from the local power grid and maintain operations through a series of combined heat and power generation that fed its microgrid. These exercises enhance communications with the wide variety of mission, garrison, and support staff for enhanced risk management and systems planning.

With few exceptions, Army installations rely on commercial energy and water sources to accomplish missions. However, from ammunition depots to command headquarters, strategic fueling bases and special operations, critical Army operations require 24/7 support. Thus, Army installations must have contingency energy sources, should disruptions in the local commercial utility system occur.

See ENERGY RESILIENCE, page 8



(Photo courtesy of Hawaiian Electric)

The 50-megawatt multi-fuel power generation plant at Schofield Barracks, Hawaii, enhances the resilience of the Oahu electric grid.

ENERGY RESILIENCE

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By applying careful attention during planning and design, infrastructure improvements can not only increase efficiency, but also incorporate reliability and resilience features, such as redundancy, backup components, weatherproofing and hardening.

A current project at Kwajalein Atoll on Meck Island includes a 2.4 megawatt solar photovoltaic array, lithium-ion energy storage solution, microgrid control system, and improvements to HVAC and building systems. These improvements are expected to reduce the base's diesel fuel consumption

by 55 percent and reduce wear and tear on gensets. Lowering fuel consumption at a strategic Army installation reduces logistical burdens and decreases vulnerabilities while enhancing the installation's energy resilience.

In another project, led by the U.S. Army's Office of Energy Initiatives, improvements at Schofield Barracks, Hawaii, include a 50 MW biofuel plant. The project can provide Schofield Barracks, Field Station Kunia, and Wheeler Army Airfield with secure resilient energy generation during emergencies. As the only firm power generation facility on Oahu located above the tsunami inundation

zone, this project provides a "black start" capability and enhances grid resilience to benefit the Army.

Energy resilience is a critical component to building and enabling Army readiness at installations while risk assessments inform the Army where modernization efforts are needed. Employing energy resilience as a risk management approach against natural, physical and cyber threats strengthens installations' ability to withstand and maintain critical operations during grid disruptions, enabling a ready and resilient force.

Sustaining the Mission – Securing the Future

By Jenn Miller
USACE, Headquarters

Engaging with a diverse crowd of students, alumni, professors and local veterans, Karen Baker, chief of the U.S. Army Corps of Engineers Environmental Division, discussed the value of, and successful initiatives in sustainability within USACE during Arizona State University's Salute to Service program earlier this month.

Participating in forums across the country, Baker aims to foster understanding of USACE's environmental mission and the progress being seen nationwide.

For her recent engagement at Arizona State University, she focused on why sustainability principles are important to national security and USACE's recent successes in energy efficiency, water conservation, sustainable acquisition and fleet management.

"By implementing sustainability principles and practices, the Army is decreasing future mission constraints, increasing operational flexibility and resilience, and safeguarding human health and the environment," explained Baker. "Sustainability ultimately improves the quality of life for Soldiers and local communities."

This is the first year she has participated in the Salute to Service program, an annual event held in honor of Veterans Day that includes panel discussions, along with military appreciation athletic events and activities sponsored by student clubs.

"We are honored to have Karen spend time at ASU to give us USACE's perspective on sustainability," said Benjamin Freakley, special advisor to ASU President Michael Crow and retired U.S. Army lieutenant general. "As the leading sustainability school in the nation, this is an excellent engagement for ASU students to learn about USACE's global impact and to explore possible careers with USACE. We are grateful to have this unique

opportunity with USACE during Salute to Service, which is when we set extra time aside each year at the university to honor all the women and men, military and civilians, who have served our nation."

In an interactive classroom lecture-style format, Baker shared some insights into her personal journey as one of the architects of the Army Strategy for the Environment, the first-ever federal sustainability strategy, issued by the Secretary of the Army and Chief of Staff of the Army in 2004. The strategy was recognized by the White House Council on Environmental Quality with a Closing the Circle Award in the "Sowing the Seeds of Change" category in 2007.

Baker explained that the strategy titled "Sustain the Mission, Secure the Future" set out to change the paradigm in which environmental compliance was seen as an added cost or burden to the mission.

She discussed how the Army, through a series of collaboration within all functional areas, developed and adopted its own "triple bottom line" framework in which "Mission, Community and Environment" were considered holistically when approaching complex problems.

The strategy explicitly stated, "It is our obligation to ensure our Soldiers today – and the Soldiers of the future – have the land, water and air resources they need to train; a healthy environment in which to live; and the support of local communities and the American people."

Baker mentioned that as she led the Armywide efforts to develop this sustainability strategy, there was a key group of experts who had already led the way in this mindset. They were the representatives from the U.S. Army Corps of Engineers.

She explained that USACE first adopted its Environmental Operating Principles in 2002, a few years ahead of the Department of the Army strategy.

EOP #1 is "Foster sustainability as a way of life throughout the organization."

"Here we were thinking we were doing something really innovative, and our USACE partners were saying to us, 'We've already embraced sustainability,'" Baker said. "Now that I work for USACE, I understand that this is part of our DNA. Our team understands that every one of our projects and mission lines has an impact on the environment, the economy, and the well-being of the communities we serve."

Baker explained that the EOPs reinforce USACE's role in, and responsibility for, sustainable use, stewardship and restoration of natural resources; and emphasize the importance of leveraging scientific, economic, and social knowledge and exchanging this information through a collaborative process.

She talked about the continued evolution of thought that has led to thinking "beyond compliance" and simply "balancing" the environment against mission needs as USACE continues on its sustainability journey.

"The one thing that has evolved— and that I try to stress every day— is that we now recognize environmental considerations can also be an enabler," Baker said. "It is about ensuring Soldiers and other service members have the air, water and land they need to train. It is about cleaning sites to a level that allows us to revitalize and develop infrastructure. It is recognizing that protecting an ecosystem may have economic benefits; and it is about learning how to use natural approaches as we continue to build infrastructure the nation needs."

To demonstrate the challenge of moving a large organization toward sustainable performance, Baker discussed how USACE has transitioned from all red on its first Sustainability Scorecard in fiscal year 2010 to mostly green in fiscal year 2017. With a reported 23 percent reduction in building energy intensity over fiscal year 2015 to fiscal year 2017, it has now moved from the lowest ranking agency in the government on its energy intensity scores to the current federal leader.

This past fiscal year, USACE received its best ever sustainability performance ratings by the White House Office of Management and Budget. The OMB scorecard for Efficient Federal Operations/Management rated USACE green scores showing progressive improvement in facility energy efficiency, efficiency measures/investment, renewable energy use and transportation/fleet management.

Baker also talked about how through its global engagements, USACE contributes to national security.

She described that by providing technical assistance to partner countries to address water, energy and other resource challenges, USACE supports all three instruments of U.S. power—defense, diplomacy and development—in its support to combatant commands, state department and USAID around the world.

Throughout the 90-minute presentation, the audience engaged Baker in lively discussions, asking thoughtful questions, even challenging a few of her key statements, outcomes she said she had hoped for during her interaction with the ASU students.

"I think I gained much more than I received today," Baker said. "One of the key actions in our USACE Campaign Plan is to 'Grow Future Sustainability Leaders.' Engagements like this give us a sense of what our future workforce is going to demand of us. We are looking for opportunities for more of our current USACE workforce to benefit from what is being taught from sustainability curriculum like that at ASU, and we seek partnerships with universities who are leading the way in this field. Of course, we also seek to give their current students a deeper understanding of the USACE mission, and hopefully attract them to come help us solve some of the nation's toughest challenges."

Additional information on USACE's Environmental Operating Principles and Sustainability initiatives available at:

www.usace.army.mil/Missions/Environmental/

Hybrid renewable energy project garners Secretary of the Army award

By Christine Luciano

Directorate of Public Works, Fort Hood, Texas

Championing innovation and commitment, Fort Hood was recognized for its achievements to improve energy security and increase the installation's capacity of renewable energy produced. Jordan Gillis, principal deputy assistant secretary of the Army for installations, energy and environment, who was serving as the acting assistant secretary of the Army, recognized the Texas-based installation with the 2018 Secretary of the Army Energy and Water Management Award for On-Site Energy Generation at a ceremony Aug. 23 in Cleveland, Ohio.

"The entire team is very deserving of this award, as this was the first and currently only, garrison to combine two sources of renewable into one hybrid project," said Bobby Lynn, the post's chief, Energy Management Branch.

Installations, small groups and individuals from the Army, Army Reserve and Army National Guard were recognized for their achievements in energy efficiency, energy management and water conservation.

"The accomplishments of these awardees are truly impressive," Gillis said. "Across the federal government, you are helping lead the way – improving energy resilience,

advancing energy efficiency, deploying renewables and alternative energy solutions and improving water management and utility infrastructure."

Lynn highlighted how his team's can-do attitude contributed to its successes.

"The Energy Branch operates both in a proactive and reactive mode," Lynn said. "In a reactive mode, we ensure the implementation of regulatory compliance, and in a proactive mode, we provide strategic planning and long-term commitments to improving the efficient use of energy."

After four years of planning efforts by a team of engineers and subject matter experts in contracting, federal acquisition regulations and financing, the hybrid renewable energy project was operational in 2017, and has provided substantial benefits for the climate, community and economy.

"It significantly reduces emissions and provides jobs and other economic benefits," Lynn said. "Partnering with commercial energy service companies not only provides access to an in-depth knowledge base on renewables, but it also provides access to capital funding that the government doesn't have quick access to, thus being able to study, design and construct a project much quicker and provide savings much sooner than using federal funding."

Lynn and his team collaborated with the Office of Energy Initiatives and Defense

Logistics Agency Energy to develop a comprehensive project to be installed with no upfront cost to the Army. The long-term commitment enabled the contractor to finance, build and operate the solar and wind sites and deliver power to Fort Hood that is less expensive than conventional power.

"Great leadership and support from OEI and the outstanding contract support from DLA created a hybrid solar and wind project, which is the largest renewable energy project in the Army," Gillis said.

A field of 63,000 solar panels, spanning over 132 acres on West Fort Hood and 21 wind turbines in the panhandle of Texas saved \$2.5 million in energy costs in the past fiscal year, while providing 39 percent of the installation's total energy from renewables.

The onsite solar field is micro-grid capable for future enhancements that will enable securing and sustaining critical missions.

If the wind energy generation goes off-line, Fort Hood will continue to receive power from the solar field as well as conventional commercial energy from the grid.

"Fort Hood will continue to research and seek out innovative technologies to continue striving toward the Army's energy reduction goal to reduce energy use, reduce energy cost and to increase use of renewable energy," Lynn said.



(Courtesy photo)

A solar field consisting of 63,000 solar panels, situated on 132 acres on West Fort Hood, is micro-grid capable for future enhancements that will enable securing and sustaining critical missions.



Buffalo District employs risk management, systems approach to restore Braddock Bay ecosystem

By Jess Levenson
USACE, Buffalo District

Two years ago, the U.S. Army Corps of Engineers, Buffalo District began a \$10 million project to restore the Braddock Bay ecosystem in Greece, New York. Erosion had washed away emergent wetlands and invasive species dominated the marshes.

Today, species-rich native communities blossom with emergent aquatic meadows, and restored beach habitats are visited by a variety of shorebirds, including the black-bellied plover, Baird's sandpiper, and the federally endangered piping plover.

USACE's Environmental Operating Principles are vital to the success of projects like Braddock Bay. These principles ensure the USACE's missions include totally integrated sustainable environmental practices and that

contribute to its success as a national leader in proactive environmental restoration.

Buffalo District successfully executed the Braddock Bay ecosystem restoration project by implementing EOP #5: Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.

"The project tackled two major issues affecting the Braddock Bay ecosystem: the loss of wetland habitat caused by wave driven erosion, and degradation of the existing habitat due to invasive species," said Joshua Unghire, Buffalo District biologist. "We adopted an Adaptive Management Plan to deal with uncertainty that comes with addressing these issues over the long term."

Adaptive management is doing while learning in the face of uncertain outcomes.

According to the U.S. Department of

the Interior's Technical Guide to Adaptive Management, adaptive management is a formal science-based approach to undertaking goal-directed actions with uncertain outcomes and evaluating their results in order to direct future actions.

According to the project's feasibility report, its planning objectives are:

1. Restore wetland and habitat diversity in Braddock Bay to improve its suitability for fish and wildlife, including northern pike, American mink, and the state listed black tern during the planning period of 2015-2065.

2. Protect Braddock Bay wetlands from erosion during planning period of 2015 – 2065.

"We reconstructed a historic barrier beach in the mouth of Braddock Bay to successfully complete our objectives," Unghire said. "At first, we were concerned how the barrier beach would affect nutrient accumulations in the bay. By

taking an adaptive management approach, we decided to alter the barrier beach's placement to create an open water area that could be excavated to increase water flow into and out of the bay."

"Thinking about solutions in an adaptive management framework allowed us to make a small change that was easy to implement and provided additional flexibility in managing the project over its lifecycle," Unghire said. "It also didn't add materials or cost to the project."

The Braddock Bay ecosystem restoration project is a collaborative effort between USACE, the U.S. Environmental Protection Agency, the New York State Department of Environmental Conservation, and the town of Greece.

The Braddock Bay adaptive management plan was developed by Buffalo District's planning and environmental analysis teams, with input from non-federal partners including

the EPA, the U.S. Fish and Wildlife Service, the Braddock Bay Advisory Committee, The Rochester Area of Concern Remedial Action Committee, SUNY Brockport and the Nature Conservancy.

"The Adaptive Management Plan is a tool we're now handing over to our project partners," Unghire said. "It will continue to guide us as we move on with the project's monitoring and adaptive management phase."

Additional information on the USACE Environmental Operating Principles: <https://www.usace.army.mil/Missions/Environmental/Environmental-Operating-Principles/>.

Additional information on the Buffalo District Braddock Bay ecosystem restoration project: www.lrb.usace.army.mil/Missions/Civil-Works/District-Projects/Braddock-Bay/.

Sustainability clause tool helps expedite contract processing

U.S. Army Engineering & Support Center

What is the U.S. Army Corps of Engineers Sustainability Clause Tool and why is it award winning?

The USACE Sustainability Clause Tool is a Microsoft Excel-based tool which uses a series of 33 yes or no questions to ascertain which Federal Acquisition Regulation sustainability clauses are applicable to a contract. It is designed for individuals that develop and write the scope of work or performance work statement, as they best know the contract requirements.

Taking roughly 5-10 minutes to complete, it provides not only the correct clauses for inclusion in the contract, but also provides the correct selections for contracting personnel to report the award of the contract when filling out the Contract Action Report.

The Sustainability Clause Tool came about because of the statutory requirements to include sustainability in all government contract actions as codified in the FAR Parts 23 and 52. The clauses in the FAR part 23 are collectively known as the sustainability clauses, and dictate when the clauses in FAR part 52 are to be inserted into a contract.

The sustainability clause requirement in contracts was established by Executive Order 13423 issued by President Bush on Jan. 24, 2007 and added to by EO 13514 on Oct. 5, 2009 and EO 13693 on March 19, 2015 by President Obama, and most recently EO 13834 issued by President Trump.

The current regulatory requirement is that 100 percent of all contract actions of all contract types should have the applicable sustainability clauses included. The metric federal agencies are currently measured against is whether or not any sustainability clause is included in the contracts issued by that agency. Even with this low bar for success, in 4th quarter of fiscal 2016 USACE was only at 79 percent compliance out of the required 100 percent target.

This poor performance caused leadership to take notice. Sustainability Acquisition was added to the bi-weekly Corpswide Contracting E-Business Meetings, regional

chiefs of contracting conducting on-the-job training at all districts and centers. The U.S. Army Engineering and Support Center, Huntsville contracting looked within its engineering directorate for a subject matter expert on sustainability. It identified Larry B. Woodroof who boasted an extensive knowledge of project management, the contracting process, the roll of engineering and

the project management and contracting workflows as a mandatory item for it to have any effect.

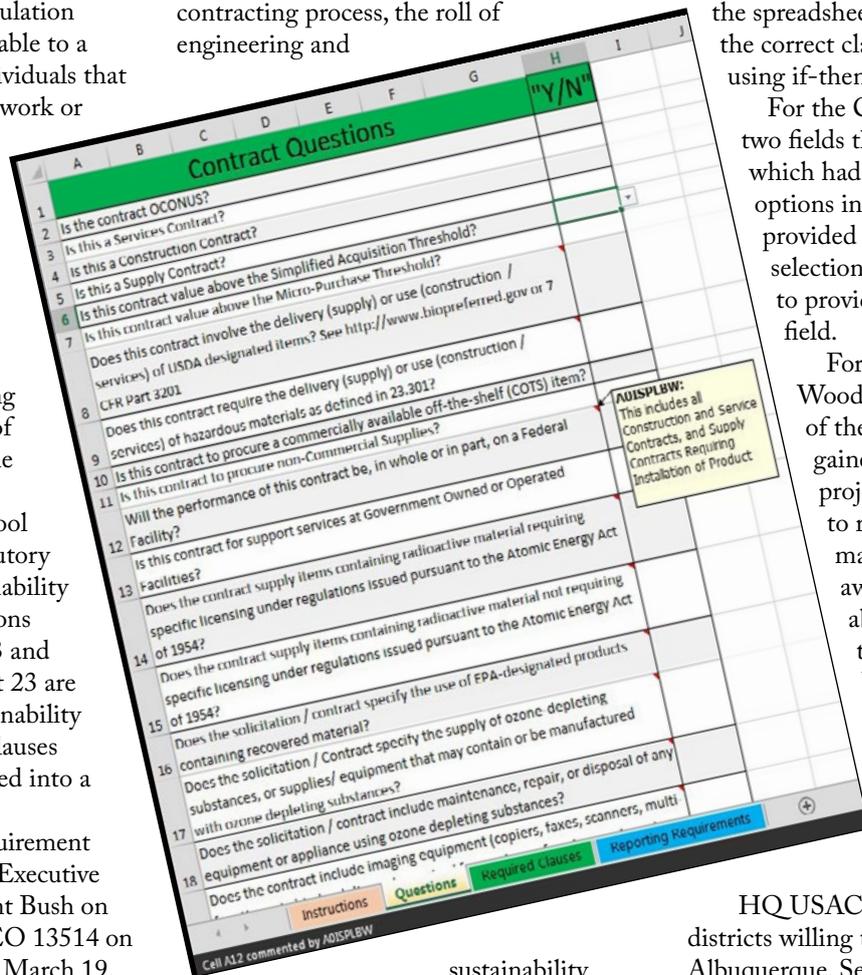
For the FAR clauses, Woodroof realized that the conditions under which each clause was applicable could be pared down into a series of yes or no questions. Then it was a simple matter of coding the logic into the spreadsheet such that it would output the correct clauses based on the answers, using if-then statements.

For the CAR reporting, there were two fields that needed to be filled out, which had a number of drop-down options in each. Using the answers provided from the FAR clause selection, Woodroof coded the logic to provide the best choice for each field.

For the workflow issue, Woodroof used his knowledge of the contracting process gained during his time as a project and program manager to recommend making it a mandatory part of the pre-award process. After hearing about the tool during the development phase, USACE Headquarters had him further develop it for use USACE-wide. This included creation of a short webinar on the tool.

In fiscal year 2017, HQUSACE polled for USACE districts willing to pilot test the tool, and Albuquerque, Seattle and Portland put it through a validation process at 2017 fiscal year-end. The effectiveness of the tool was analyzed by pulling reports at the HQ level from the CVE-BI system to verify the effectiveness of the tool. The results? A 100 percent accuracy rate. The tool's full implementation Corpswide is currently underway.

In short, this easy to use, MS Excel-based tool has allowed USACE to significantly improve its compliance with statutory requirements of sustainability clauses in contracting, with minimal additional burden upon those putting the contracts in place, and with the potential to improve its compliance to the required 100 percent level.



sustainability.

Woodroof stepped up to the plate and analyzed the issue, realizing that whatever solution was created needed to be a tool more than just a cheat sheet. It needed to be something that was not only easy to use but was something that everyone in the Corps had access to. This guided his decision to create the tool in Microsoft Excel.

Woodroof quickly identified that there were multiple parts to the problem: one was the selection and/or inclusion of the appropriate FAR clauses, another was the reporting of contracts in the Contract Action Report filed upon issuance of a contract. He also found that the highest priority need was that whatever solution was created needed to be inserted into



Sacred Reburial Ceremony held at Presidio of Monterey's post cemetery

By Laura Prishmont Quimby
U.S. Army Garrison, Presidio of Monterey

In a first for the Army, senior leadership from the U.S. Army Garrison, Presidio of Monterey, California, and Army National Military Cemeteries hosted four sovereign Native American tribal nations for a sacred reburial ceremony, Oct. 22.

Included in the reburial were the remains of 17 Native Americans and over 300 associated funeral objects discovered at the Presidio between 1910 and 1985.

The ceremony represented the culmination of two years of coordination, in accordance with the Native American Graves Protection and Repatriation Act, between the Presidio, the Office of the Assistant Chief of Staff for Installation Management, the Installation Management Command Headquarters, ANMC, Office of the General Council, Picayune Rancheria of Chukchansi Indians, Tule River Indian Tribe of the Tule River Reservation, Table Mountain Rancheria, Santa Rosa Indian Community, Santa Ynez Band of the Chumash Mission Indians of the Santa Ynez Reservation, and the Monterey area state recognized Ohlone/Costanoan-Esselen Nation.

This was the first time that ANMC has authorized the burial of repatriated Native American remains at an Army cemetery. This sets a precedence for other installations in circumstances similar to the Presidio's, as such burials guarantee long-term protection of the reburial site with zero impact on military training and future sites for mission expansion. Prior to the ceremony, Army leaders and tribal representatives drafted and signed a reburial agreement, another "first" for the Army, requiring close coordination between the Presidio, OACSIM, OGC and ANMC.

Prishmont Quimby worked with the tribes and Army chain-of-command to reach agreement on the terms required to repatriate and rebury the Native American remains and associated funerary objects at the Presidio's cemetery.

The remains were buried with honors in a private ceremony closed to the public at the request of tribal leaders. Louise Miranda Ramirez, chair of the Ohlone/Costanoan-Esselen Nation, presided over the ceremony.

"This is my family. This is where I come from," Ramirez said. "Without them I could not be here."

The remains, along with offerings of sage, tobacco and glass beads, were lowered on a redwood plank under a flag raised to half-mast. Taps was played at a respectful distance, but the plaintive notes of the flute set the tone for the ceremonial rites.

Showing their respects were Karen Durham-Aguilera, ANMC executive director; Luis Alejo, Monterey County supervisor District 1; Mary Adams, Monterey County supervisor District 5; Mary Ann Carbone, mayor

of Sand City; Ruben Barrios, chairman of the Santa Rosa Indian Community; and Joseph Garfield, council member and spiritual leader of the Tule River Reservation.

"This cooperative effort has resulted in appropriate respect being rendered to these long-departed American Natives and is now the model for other Army installations across the country," said Col. Lawrence Brown, garrison commander, Presidio of Monterey. "These remains have found their final resting place in hallowed ground and now take their rightful place among the honored to be protected throughout history."

Col. Lawrence Brown, Command Sgt. Maj. Marshall-Rosales and Army National Military Cemeteries staff participate in the Native American traditions of placing offerings of sage, tobacco and glass beads with the remains while members of the Native American Veterans Color Guard, Louise Miranda Ramirez and other tribal members look on through the cleansing smoke from burning sage.



Engineering With Nature delivers triple wins

Since 2017, Drs. Jeff King, Burton Suedel, Tosin Sekoni and Brandon Boyd at the U.S. Army Engineer Research and Development Center have been implementing an Engineering With Nature research and development effort that utilizes tools from landscape architecture.

The ERDC team, along with U.S. Army Corps of Engineer district offices, identified opportunities in Florida and Texas to integrate EWN techniques and practices into USACE repair, replacement and rehabilitation projects. The team will work with members of the Dredge Research Collaborative, a network of landscape architects in academia and private practice focused on infrastructure and sediment management.

The EWN initiative and landscape architecture both consider many of the same opportunities related to infrastructure design and performance, such as the re-imagining of existing infrastructure to meet more diverse and functional engineering criteria, providing greater ecological value and delivering recreational opportunities as well as aesthetic benefits.

Given the complimentary nature of these two disciplines and mutual interest in infrastructure enhancement, the research project was initiated to further promote those shared design principles and precedent knowledge. These principles and knowledge can be integrated into EWN approaches that are collaboratively pursued by engineers, hydrologists, biologists, ecologists and landscape architects.

EWN has stimulated new practices in engineering and ecology that are creating a powerful new paradigm for how projects can get built, ultimately seeking to build layers of economic, environmental and social benefits into projects through collaborative efforts across disciplines.

While EWN engineers and scientists bring a knowledge of natural processes and an understanding of how these processes get integrated, landscape architects are formally trained to think about how people interact with a design.

Landscape architects also translate the conceptual stage of a project directly into a specific drawing, using a visual vocabulary for communicating how natural processes can be integrated into traditional engineering projects.

See EWN, page 18



Example of a Galveston Studio rendering by Cornell University landscape architecture student, Yiren Du. The rendering, which is similar to those that will be executed for this project, was part of a collaborative effort with USACE Galveston District by Auburn and Cornell University landscape architecture students and faculty. The illustration shows the potential seawall concept and its integration with dune habitat features.



For this research and development effort, prioritization and ranking of projects was based on criteria, including — but not limited to — review of a proposed project; potential for incorporation of EWN practices, including human use benefits; potential applications of designs and techniques; and project type and location.

Working collaboratively with USACE districts, the ERDC/DRC project delivery team will develop project renderings and offer a report to the districts that illustrate integration of EWN concepts with an explanation of added benefits the designs will deliver.

The Jacksonville District is one USACE district with projects that are being evaluated as part of this R&D effort. One of those projects will take place at the W.P. Franklin Lock and Dam Recreation Area South, located in Alva, Florida.

“For fiscal year 2018, Jacksonville District received funds to close the W.P. Franklin swimming beach, which covers approximately one half acre of shoreline,” said Nelson Colón, natural resource program manager, Jacksonville District.

“The design work, which has begun, will entail replacement of approximately 60 cubic yards of beach sand with suitable fill material and topsoil, removal of buoys, planting of native estuarine vegetation and implementation of other water recreation opportunities, such as for fishing or a paddle craft launch for canoes and kayaks,” he said.

“The goal,” Colón added, “is to develop an environmentally friendly waterborne recreation feature for the park.”

In another part of the project, at the W.P. Franklin South Entrance, former dredged material disposal sites located on both sides of the access road to the park and covering approximately 13 acres of land are slated for restoration.

“These sites are mowed regularly to prevent them from becoming overgrown with invasive vegetation,” he said. “The goals of implementing a managed reforestation are to prevent the establishment of invasive species, promote use by pollinators and local wildlife and reduce the maintenance burden.

“The scope would include re-grading for contour variation, planting native vegetation and creating interpretive trails,” Colón said. “An initial funding request for this proposal was included in the fiscal year 2020 budget.”

“Applying EWN techniques and practices offers more possibilities to fully integrate an infrastructure project with elements of the natural environment,” said Carol Bernstein, chief of the Operations Division, Jacksonville District.

For many of the infrastructure projects being evaluated this year, the proposed R&D support may also result in additional insight specific to maximizing engineering, environmental and human-use benefits; enhancing or prolonging the maintenance cycle; and incorporating biological approaches and materials that

could potentially offer innovative ideas or strategies for assimilating infrastructure with the aquatic environment.

Bernstein is excited to see the future report and project renderings for the two Jacksonville District projects.

“EWN offers a win-win process where a district can leverage design services coupled with landscape architecture renderings that will help to communicate ideas and engineering concepts; manage stakeholder expectations related to potential outcomes; and increase process transparency to see the results of this R&D initiative — all of these play a role in managing risk,” Bernstein said.

If you are interested in sharing your ideas about new USACE infrastructure projects for future consideration and working with the EWN PDT, then please contact King at Jeffrey.K.King@usace.army.mil.

For more information about the EWN initiative, please visit:

www.engineeringwithnature.org

For information about the Dredge Research Collaborative, visit:

www.dredgeresearchcollaborative.org

Contributing writers include Dr. Jeff King, U.S. Army Engineer Research and Development Center; Prof. Rob Holmes, Auburn University; and Holly Kuzmitski, U.S. Army Engineer Research and Development Center, Public Affairs Office.



(Photo by Prof. Rob Holmes, Auburn University)

The swimming beach at the W.P. Franklin Lock and Dam, Recreation Area South, will be decommissioned and replaced with environmentally friendly waterborne recreation features.



(U.S. Army photo)

Siphoning operations were conducted as part of the Boardman River Dams Ecosystem Restoration Project in Traverse City, Michigan, during summer 2017, allowing the river to flow through the siphons while the new river channel is dug out.

Boardman River project to restore cold-water aquatic ecosystem, reconnect Great Lakes tributary

By Emily Schaefer
USACE, Detroit District

Construction teams have been actively engaged and moving dirt since 2017 to remove two dams on the Boardman River in Traverse City, Michigan.

The Boardman River Ecosystem Restoration Project is one of the most comprehensive dam removal and restoration projects in the state's history and one of the largest such projects in the Great Lakes Basin, according to The Boardman, A River Reborn, <http://theboardman.org/>.

The multi-phased project will “help restore the Boardman River to its natural historic conditions and result in significant ecological benefit throughout the watershed,” said Carl Platz, Great Lakes program manager, U.S. Army Corps of Engineers. “As a result of the strong partnership and collaboration of several federal, state, tribal and local stakeholders all focused on this common goal, an amazing transformation of the lower Boardman River is becoming a reality.”

The project involves the removal of the Brown Bridge, Boardman and Sabin dams,

and replacement of the Union Street Dam. The Brown Bridge Dam was removed through a locally-led effort in 2012, while USACE facilitated the Boardman and Sabin dam removals.

The purpose of the restoration project is to reestablish the cold-water aquatic ecosystem of the lower Boardman River and to reconnect up to 211 miles of the Great Lakes tributary to enhance populations, diversity and movement of native fish species between the Boardman River system and Grand Traverse Bay of Lake Michigan, while also restoring over 250 acres of wetlands.

Implementation of this initiative is made possible through federal funding provided by the Great Lakes Restoration Initiative and by leveraging significant non-federal funding from various entities. For the Sabin Dam removal project, the Grand Traverse Band of Ottawa and Chippewa Indians is serving as the non-federal project sponsor under the USACE Great Lakes Fishery and Ecosystem Restoration Authority, and is providing 35 percent of the total project cost as required by the program.

Working in close partnership with

USACE, the Great Lakes Fishery Commission is facilitating the final phase of the project, involving replacement and upgrading of the Union Street Dam.

The existing dam will be replaced with a FishPass system that will serve as an experimental site to test and develop new selective fish sorting technologies. This project is the first of its kind and has garnered national and international interest, as it seeks to ensure sea lamprey and other invasive species are prevented from moving upstream, while simultaneously allowing both upstream and downstream passage of desired native fish species.

Once the best techniques and technologies are determined, the experimental facility will be converted into a permanent fish passage structure and lessons learned can be shared regionally, nationally and even globally. Project design is underway and is scheduled for implementation to begin as early as 2020.

Learn more by visiting the Implementation Team website: <http://theboardman.org/> and the U.S. Army Corps of Engineers, Detroit District, website: <https://www.lre.usace.army.mil/>.

Honolulu District finalizes ordnance cleanup at former WWII bombing range

Story & photo by **Dino W. Buchanan**
USACE, Honolulu District

FORT SHAFTER, Hawaii - The U.S. Army Corps of Engineers, Honolulu District has completed the final cleanup of unexploded ordnance at the Kanahena Point Bombing Target area just north of the southern tip of Maui, a Formerly Used Defense Site.

The clean-up was completed more than seven decades after the first U.S. Navy practice artillery rounds landed during World War II.

Working closely with the State of Hawaii Department of Land and Natural Resources and the State of Hawaii Department of Health, the USACE project team delivered a solution that achieved the overall remedial action objective to reduce occupational worker and recreational user exposure to explosive hazards to acceptable risk levels. The completed response ensures that exposure to munitions and explosives of concern pose an “unlikely” or a “negligible” hazard to the public.

According to the ‘Ahihi-Kina’u Natural Area Reserve Draft Management Plan dated, May 2012, the former bombing target is located within the reserve’s boundaries and is protected under the State of Hawaii’s highly regarded natural area reserve system. It is home to young lava flow, healthy marine life, Hawaiian cultural sites, endemic plants and arthropods, and anchialine pools, which are unique to this location and are important to Hawaii’s heritage and the global scientific community. The reserve is the third-most visited outdoor site in Maui, with an average of more than 2,000 residents and visitors passing through daily to snorkel, swim and hike along the scenic rocky shoreline.

This remedial action is the conclusion of more than eight years in characterizing the nature and extent of the potential explosive hazards, analysis of remedial alternatives, and selection and implementation of a remedy to address public exposure to potential explosive hazards. The remedial action was accomplished as part of the Department of Defense’s FUDS Program that is executed by USACE.

Following the Comprehensive Environmental Response, Compensation, and Liability Act process and FUDS program policies and guidance, USACE



A team of 17 trained UXO technicians scours rocky terrain to locate and safely remove more than 100 pounds of munitions debris, along the perimeter of the ‘Ahihi-Kina’u Natural Area Reserve.

coordinates the remedial actions with the state regulatory agencies, landowners, stakeholders and community members, taking into consideration archaeological, ecological, safety and a myriad of stakeholder views.

In March and April of 2018, a team of 17 trained UXO technicians scoured more than 200 acres of rocky terrain to locate and safely remove more than 100 pounds of munitions debris and 700 pounds of trash from publically accessible areas, along hiking trails, around anchialine pools, in the right-of-way of Makena Alanui Road, and along the shoreline and perimeter of the ‘Ahihi-Kina’u Natural Area Reserve.

A former bombing target containing World War II-era barbed wire fencing, miscellaneous construction debris and garbage was also cleared of munition items, hauled off-site for disposal, and thereby

returning an otherwise abandoned area to use.

A state biologist was present throughout the remediation field effort monitoring the UXO team and to help minimize inadvertent impacts to the native ecosystem species and the ongoing habitat restoration efforts being conducted by the ‘Ahihi-Kina’u Natural Area Reserve managers.

“The completion of the Remedial Action is the culmination of many years of collaboration between the U.S. Army Corps of Engineers, the State of Hawaii Department of Land and Natural Resources, and the State of Hawaii Department of Health,” said Lori Wong, USACE project manager, who worked on the project since 2010. “We are delighted to have achieved the goals of the remediation efforts, returning the reserve to safe and educated use.”



USACE provides Pakistan humanitarian water resource expertise

By Joe Macri
USACE, Middle East District

As recent media reports highlight water shortages around the world, it becomes apparent that good stewardship of water resources is more than an environmental issue. It's a humanitarian one and one that can impact regional stability. It's also an area where the U.S. Army Corps of Engineers can make a difference.

For decades, USACE has managed many of the water resources within the United States through its operation of levees, dams, dredging operations and flood control management.

More recently, it has been granted the opportunity to share its water resource expertise with the Pakistan government through an interagency agreement with the U.S. Agency for International Development.

Pakistan is one of the world's most water-stressed countries. Approximately 95 percent of its water is used for agricultural purposes, with 80 percent of its exports based on these sectors. Additionally, one-third of the nation's energy generation is from hydropower generation. Coupled with a rapid population growth, inefficient use of existing water resources, low water-storage capability, and impacts due to future climate change, the potential water crisis is threatening to severely impact the country's future security, stability and sustainability.

The initial concept was conceived in 2013 when Jim Balocki, then USACE's chief of Interagency and International Services and Ambassador Robin Raphel, a senior advisor on Afghanistan and Pakistan at the State Department, were engaged in a series of strategic meetings that recognized the importance of water as a factor of regional stability in Southeast and Central Asia. The discussion

turned to the need for expertise both to advise the U.S. government on technical and policy aspects of water resources and to provide direct technical assistance to Pakistan.

"This led to the further development of the concept among USACE, Department of State, and the U.S. Agency for International Development and the establishment of an interagency agreement to fund the USACE expertise. Key to the program's success would be identifying the right combination of water resources expertise, deployment experience, and diplomatic skills from within the USACE enterprise. Fortunately, the deployments of hundreds of USACE civil works personnel to Afghanistan, Iraq and disaster recovery zones over the past decades has created a cadre of expeditionary experts who have relevant experience and diplomatic ability to effectively perform a variety of missions within an interagency organization as well as bring the unique technical

water resource expertise that only USACE can provide," said Lindy Wolner, then USACE senior program manager and liaison to USAID.

William Doan, a senior water resources engineer, USACE Northwestern Division, and Mamie Brouwer, a senior program manager, USACE Seattle District were selected to provide expertise. They were supported by the Middle East District which has logistics and deployment expertise in the region.

There, Doan performed similar work in Kabul, Afghanistan from 2009 through 2011, where he was essentially on-loan to the State Department and USAID, providing technical support to Afghanistan's Ministry of Water and Power and Embassy Mission to help develop and implement water policy for Afghanistan.

See PAKISTAN, page 23



"I briefed the ISAF commander and U.S. ambassador to Afghanistan on water resources development and management on numerous occasions," Doan said. "I had really enjoyed the work and challenges in Afghanistan and looked at this new potential opportunity in Pakistan as a natural progression of my previous work. One of my major assignments was to work on regional collaboration between Afghanistan and Pakistan on the joint development and operation of infrastructure on the shared Kabul River."

The overall goal of the program is to promote regional stability through the development and management of major water resources in Pakistan and, in the long term, regionally.

USACE's role is to help Pakistani engineers and scientists develop the technical capabilities and tools to evaluate and manage the Indus River Basin as an integrated system of irrigation, hydropower, flood risk management and environmental water supply.

It is hoped these efforts will help Pakistan mitigate some of the effects of climate change and rapid population growth and help optimize the allocation of water resources for food security, disaster prevention and preservation of the environment.

In addition to working closely with water resources personnel in Pakistan, Doan attended several training venues in the United States including a regional climate modelling class at the National Center for Atmospheric Research in Boulder, Colorado, and a class in water and sediment management at USACE's IWR Hydrologic Engineering Center in Davis, California.

The 10 Pakistan ministerial engineers accompanying Doan represented a broad cross section of country's federal and provincial water management, including: Federal Flood Commission, Water and Power Development Authority, Pakistan Council for Research in Water Resources, Ministry of Climate Change Global Impact Study Centre, Punjab Irrigation Department and Sindh Irrigation Department.

"The two weeks spent in Davis were very beneficial in that HEC worked on 'team-building' between federal and provincial levels of water management as well as technical aspects," he said. "I believe this will really pay off as it strengthens some of the relationships across ministries and organizations here in Pakistan."

Doan added that the staff at HEC was excellent at relaying technical aspects of

will be used to evaluate the current ongoing drought situation in Pakistan and will give it the tools to evaluate drought mitigation measures scenarios.

Additionally, a follow-on action to previous short-term hydrologic workshops, the chairman of the Federal Flood Commission has requested that USACE initiate a series of in-depth hydrologic and hydraulic modelling workshops to reach an even broader cross-section of Pakistani ministerial engineers. USACE Hydrologic Engineering Center in partnership with Omaha District led the workshops in the Fall/Winter of 2018.

Doan stated that team building promotes more cross cooperation with neighboring countries.

"Rivers do not respect political boundaries. If we're going to solve some of these problems, cooperation on a regional scale is critical.

This is also the views of State Department's South and Central Asia Bureau and Oceans and International Environmental and Scientific Affairs Bureau as well," Doan said. "USACE works closely with these two State Department bureaus through coordination provided by John Daley of Interagency and International Services at USACE Headquarters.

"Thus far we've collaborated with researchers in both Pakistan and Afghanistan on the latest techniques for rainfall/snowmelt/runoff modelling for watersheds that are shared between both countries," he said. "Eventually, we'd like to see some regional cooperation with India as well as Afghanistan on shared river basins."

Doan adds that he's thankful for USACE and the Middle East District for all their administrative, logistical and contract support as well as those other districts who've arranged short-notice site visits, and provided insight and training.

"I'm really grateful to the Army Corps of Engineers for allowing me to do what I'm doing," he said. "This is such an important mission both diplomatically and environmentally, I'm thrilled I'm allowed to be a part of it."



their software, particularly Joan Klipsh for HEC-ResSim (Reservoir Simulation) and Stanford Gibson for HEC-RAS (River Analysis System - Sedimentation), as well as making their Pakistani colleagues feel comfortable and welcomed.

Pakistan has the largest contiguous irrigation system in the world. It is a complex hydraulic system comprising of three major dams, 19 barrages (low-head dams), 12 inter-river links, 45 major irrigation canal command covering 60,000 square miles, and 120,000 canals delivering water to individual farms.

According to Doan, this is one of the reasons USACE is providing the technology it has successfully developed to operate their vast inventory of large dams and reservoirs to the Pakistan government.

Following the Water and Sediment Management Class at HEC, the joint USG/GOP team has begun to develop the Indus River Basin HEC-ResSim Model to give Pakistani water managers state-of-the-art tools to manage their water resources in a long-term planning mode as well as a real-time reservoir operational mode.

The currently developed Provincial-Level Indus River Basin HEC-ResSim model



Historic landmark receives long overdue restoration, repair

By Bill Godby

White Sands Missile Range

In 2017, the historic McDonald Ranch house at White Sands Missile Range, New Mexico received overdue restorations and repair. A contributing element of the Trinity National Historic Landmark, the ranch house was utilized by the Manhattan Project scientists to assemble the plutonium hemispheres of the atomic bomb in July 1945 and was the site of the weapon's first detonation.

Built by Franz Schmidt, a German immigrant, in 1913, the house was acquired by George McDonald in the 1930s.

McDonald's brothers owned the nearby ranch utilized as the base camp for the atomic test. Both ranches were occupied until approximately 1942, when all the ranchers were vacated to allow the area to be utilized by the Alamogordo Bombing Range for target practice.

Following the Manhattan Project, the ranch was abandoned, suffering major deterioration. In 1982, Maj. Gen. Niles Fulwyler visited the ranch house, recognized its historic value and by 1984 had completed its restoration.

In 1995, the 50th anniversary of the atomic test, efforts were made to again restore and repair the house after a decade of weathering. Since then, only minor work had been done due to limited funding resources, a problem common to historic buildings on many installations.

To stop any further deterioration, the WSMR garrison provided funding to proceed with necessary repairs.

Bill Godby, project lead, utilized the Cooperative Ecosystem Studies Units network, administered by the U.S. Army Corps of Engineers, Fort Worth District to contract CESU member, Cornerstones Community Partnerships of Santa Fe, New Mexico. Cornerstones historic restoration expert, Jean Fulton, took on the project with the assistance of Cornerstones training coordinator Nicole Kliebert.

Incorporated as a non-profit in 1994, Cornerstones preserves the historical heritage and cultural traditions of New Mexico and the greater Southwest through hands-on workshops that brings together interns, volunteers and experts to perform cost-effective restoration and repair in a learning environment.

Both Fulton and Kliebert reached out to identify support for the project between 2016 and 2017. Partners included students from New Mexico State University Department of Engineering and Survey Technology (led by Professor Sonya Cooper), providing the site drainage plan. Cottonwood Gulch Expeditions, an outdoor educational program in New Mexico, provided a single day of volunteer labor, 17 strong, to execute the drainage plan. Last, and perhaps most important to the project, were the dedicated team of interns and volunteers.

The ranch house is located several

hours north of the base cantonment and an hour from Socorro, New Mexico to the northwest. Most of Fulton's crew stayed uprange three to four days at a time through multiple range evacuations for missile tests and extreme weather conditions, including days exceeding 100 degrees and wintry snow flurries, high winds and rain.

Despite the challenges spirits remained high and the work got done.

Highlights of the 2016-17 efforts included executing the drainage plan, window reconstruction, ramp and porch reconstruction, stucco and wall repair.

According to Fulton, challenges of a project like this are multi-fold. He spent many hours going through historic photos and previous restoration records, to ensure historic accuracy for repairs, with particular attention to the stucco. Although a scope may outline a task, it's not always known just what may unfold to complicate the effort.

In the case of the stucco, Fulton successfully performed many tests to try and find a suitable color and texture match. Also knowing the extent of water damage to the adobe bricks underneath a stucco failure is not possible, until the stucco is removed.

Cornerstones staff alongside the interns and volunteers overcame all the challenges to bring this historic site back to life. Future efforts are in process for additional exterior restorations and interior work.



Cottonwood Gulch Expedition volunteers with Cornerstones crew helped bring the historic site back to life.





Program helps restore land, keeps public safe from abandoned mines

By J. Paul Bruton
USACE, Sacramento District

Abandoned mines scattered throughout the United States present potentially dangerous public safety and environmental hazards. Open mine shafts, unstable passages, acid drainage, toxic air and leftover explosive materials are just some of the hazards commonly associated with abandoned mine sites.

Mines often fill with toxic water as rains flow in and accumulate over the years, mixing with leftover explosives, chemicals or naturally occurring toxins. These accumulations of water pose a threat should they seep out or be released into local waterways.

One stark example occurred in August 2015 at the Gold King Mine in Colorado. An accidental breach of a tunnel bulkhead led to the release of nearly 3 million gallons of toxic water into the Animas River, near Silverton.

With both people and nature at risk, leaving abandoned mines in an unaltered condition is not an option. Proactive measures need to be taken to reclaim the land.

That's where the U.S. Army Corps of Engineers' Restoration of Abandoned Mine Sites program comes in.

Established in 1999, the RAMS program works in cooperation with state Departments of Environmental Quality and state Departments of Conservation, and numerous federal agencies such as the Bureau of Land Management and the U.S. Forest Service to address concerns for dealing with potential impacts of hundreds of abandoned mines in the American West. Specifically, the program's goal is to provide technical, planning and design assistance to federal and non-federal interests in carrying out projects to address water quality problems caused by drainage and related activities from abandoned and inactive non-coal mines. It's a small, little-known yet important program within USACE.

Since mines don't come with pre-written directions on how to plug a toxic leak or quickly seal off all entrances, cleanup requires teamwork between multiple agencies and, most importantly, a comprehensive strategy. The RAMS program has historically provided

funding for collaborative efforts towards the mitigation of high-priority abandoned mine sites in many states.

Safety Tips

- When approaching an abandoned mine, heed the warning: Stay Out, Stay Alive.
- Whether it's an old quarry filled with placid water, or a labyrinth of miner's tunnels lurking would-be adventure seekers, keep out! Abandoned mines are death traps!
- Stay Out, Stay Alive video: <https://youtu.be/xIymNGqvLf4>

According to project manager Bryon Lake, there is no one-size-fits-all method for restoration of abandoned mine sites.

"Restoring these sites requires a systematic and team-based approach that starts with a solid plan," he said.

"The interdisciplinary team can include support from the state and other federal agencies working collaboratively to prioritize project locations and activities that include developing plans and procedures that can be used to reduce potential impacts to public health, livestock and adjacent lands caused by abandoned mines," Lake said.

Once a comprehensive strategy has been drawn up and finalized, field work such as soil sampling/testing, chemical analyses of water, and in some cases geophysical investigations must be done.

This information provides the data needed to complete a recommendation report for mitigation activities, which the partnering agency can then perform. While the RAMS authorization allows for the transfer of information to determine an appropriate course of action, it doesn't include execution of the work.

Historically, funding for the RAMS Program has been \$2 million annually USACE-wide, and has primarily been utilized

in the western United States. The USACE, Sacramento District is currently involved with work and planning at seven mines, including the Mount Diablo Mercury mine in California, and is working collaboratively with the USACE, Albuquerque District (the RAMS Program lead district) at the Brooklyn Mine (precious metals mine) in Colorado. Other USACE districts currently managing and executing RAMS projects include Los Angeles and Alaska.

With many of USACE's most visible missions centered on flood risk management, it might seem unusual to hear USACE is involved in restoring abandoned mines. However, one of the USACE's main edicts includes reducing risks from disasters.

"Abandoned mine sites present some of the most challenging environmental problems today," said Linda Dreeland, RAMS Program manager for USACE. "By providing technical, planning, and design assistance to federal and non-federal partners, the RAMS Program is an excellent supplement to the limited funding that many agencies face when attempting to address their abandoned mine sites."

With the law now requiring all mining operations to be reclaimed when work is finished, you might think the RAMS mission would be shrinking but miners weren't required to return the land to a condition similar to before mining until the late-1970's. That means hundreds of mines were closed long before cleanup was required. It also means the responsibility to clean up these abandoned mines now falls to either the current property owner or to the government.

"Mine sites are scattered across federal, state and private lands, and some agencies are just now beginning to organize their records on the locations and truly understand the extent of their abandoned mine sites," said Dreeland.

According to Dreeland, word of mouth has resulted in increased interest in the RAMS Program, nationwide, and there is an ever-growing list of funding requests as a result.

"USACE has tremendous technical resources, and a long, successful history working on environmental remediation projects."

DETS proves versatile, effective

By Victor Medina

Engineer Research and Development Center

On June 27, 2017, the normally quiet parking lot of the Environmental Chemistry Building at the Army Engineer Research and Development Center in Vicksburg, Mississippi, buzzed with activity.

Large military vehicles, muddied from travels along dirt roads, moved through the lot where they were washed and the process observed by a team of researchers from organizations like Joint Program Manager-Protection, the Defense Threat Reduction Agency, the Army Maneuver Support Center of Excellence, and the Environmental Protection Agency Homeland Security Research Center. The process included collecting the wash water then spiking it with bleach, cesium and Malathion, an insecticide. And all of this focused around a trailer mounted system of water treatment processes called the DETS.

DETS stands for the Decontamination Effluent Treatment System, and is a water treatment system designed by ERDC to specifically treat highly contaminated water, whether it be vehicle decontamination, mass personnel decontamination, or wide area decontamination. It will treat chemical warfare agents, improvised toxic industrial chemicals, radioisotopes and biological agents.

According to Dr. Victor F. Medina, who envisioned DETS and led the program that developed it, the system is designed to take any water source using any decontamination method and remove any agent so that the water can be safely disposed or reused.

The DETS consists of physical filtration through the use of a sand column, ion exchange resin column to remove excess hardness that can result from some sources of bleach commonly used for decontamination, granular activated carbon column, and reverse osmosis membrane filtration. These are trailer mounted and a chemical resistant, self-priming peristaltic pump provides the fluid transfer. The system has its own generator so it provides its own power, although a transfer switch allows it to be plugged into grid power when available. The system is sized to treat 10 gallons per minute, which is more than 14,000 gallons per day. This is enough to treat the wash water from a medium to large event of 200 people and 10 or 20 large military vehicles.

The DETS has the ability to extend water resources while reducing waste.



The Decontamination Effluent Treatment System, or DETS, is designed to treat contaminated water, including chemical warfare agents, improvised toxic industrial chemicals, radioisotopes and biological agents.

The six-stage RO system is capable of 90 percent recovery, so if 10 gallons are treated, 9 gallons of treated water are returned with one gallon of concentrate. Studies have shown that the concentrate can be re-treated, perhaps two or three times. This allows for very high water recovery while minimizing waste.

According to the Scott Waisner, a research engineer who built the DETS, if you had 500 gallons of water for decontamination, the system could allow that water to be reused to supply 10,000 gallons of usable water, and the concentrate could be contained in a 5-gallon bucket or two.

The first field evaluation indicated that the DETS removed 100 percent of the chemical simulant (Malathion) and 100 percent of the added cesium.

A second evaluation focused on a simulation of mass personnel decontamination, and once again, the target chemical and radiological simulants were effectively removed.

A road test was conducted in July 2017, and the DETS was driven over 1,000 miles at speeds up to 70 miles per hour

on interstate highways and state roads, including windy mountain roads in northern Arkansas and southern Missouri.

The DETS concept is proving to be very versatile. The ERDC team began a project in fiscal year 2019 focused on adapting the DETS to treat perfluorinated compounds, or PFCs and perfluorinated alkyl substances, or PFAS collected in holding ponds and tanks, which are commonly found at military installations with firefighting training areas.

The new system will be called the PFAS Effluent Treatment System, or PETS. The ERDC team is also investigating other uses for DETS-like systems, including the treatment of drilling fluids, fracking waters, and for water and energy supply after disasters.

A remarkable piece of engineering, the DETS has won several awards, including the 2018 USACE Team Innovation Award. It has proven effective in the challenging task of treating decontamination wash water, and its concept is proving versatile to address other critical water treatment challenges.

Multi-agency agreement supports Atlantic salmon recovery efforts

Joint Press Release

The U.S. Army Corps of Engineers, New England District, the U.S. Fish and Wildlife Service and the Maine Department of Marine Resources signed the Atlantic Salmon Restoration and Conservation Program In-Lieu Fee Instrument Sept. 20.

The program advances the improvement of aquatic resources in Maine that are, or have the potential to be, habitat for Atlantic salmon. It also provides a form of compensatory mitigation for individuals and firms seeking a Corps permit for impacts to Atlantic salmon.

"This program is a great example of state and federal agencies partnering together to develop innovative solutions which not only protect and enhance our environmental resources but also streamline the permitting process," said Col. William Conde, commander, USACE New England District.

"We are pleased to have the opportunity, through this program, to advance our Atlantic salmon restoration efforts in areas with the greatest potential for recovery,"

added Patrick Keliher, commissioner, Department of Marine Resources.

According to Deane Van Dusen, mitigation and special projects manager at the Maine Department of Transportation, the program mirrors the highly successful Maine Natural Resource Conservation Program sponsored by the Maine Department of Environmental Protection.

"This in-lieu fee program for wetland impacts has dramatically reduced the time necessary to receive a project permit and the resulting wetland compensation has far exceeded those mitigation projects built prior to the program's formation," Van Dusen said. "I expect to see the same results to Atlantic salmon critical habitat from this new program."

The concept is to allow Corps permittees to compensate for their project's unavoidable impacts, by making a monetary payment in-lieu of or in addition to doing the required mitigation themselves.

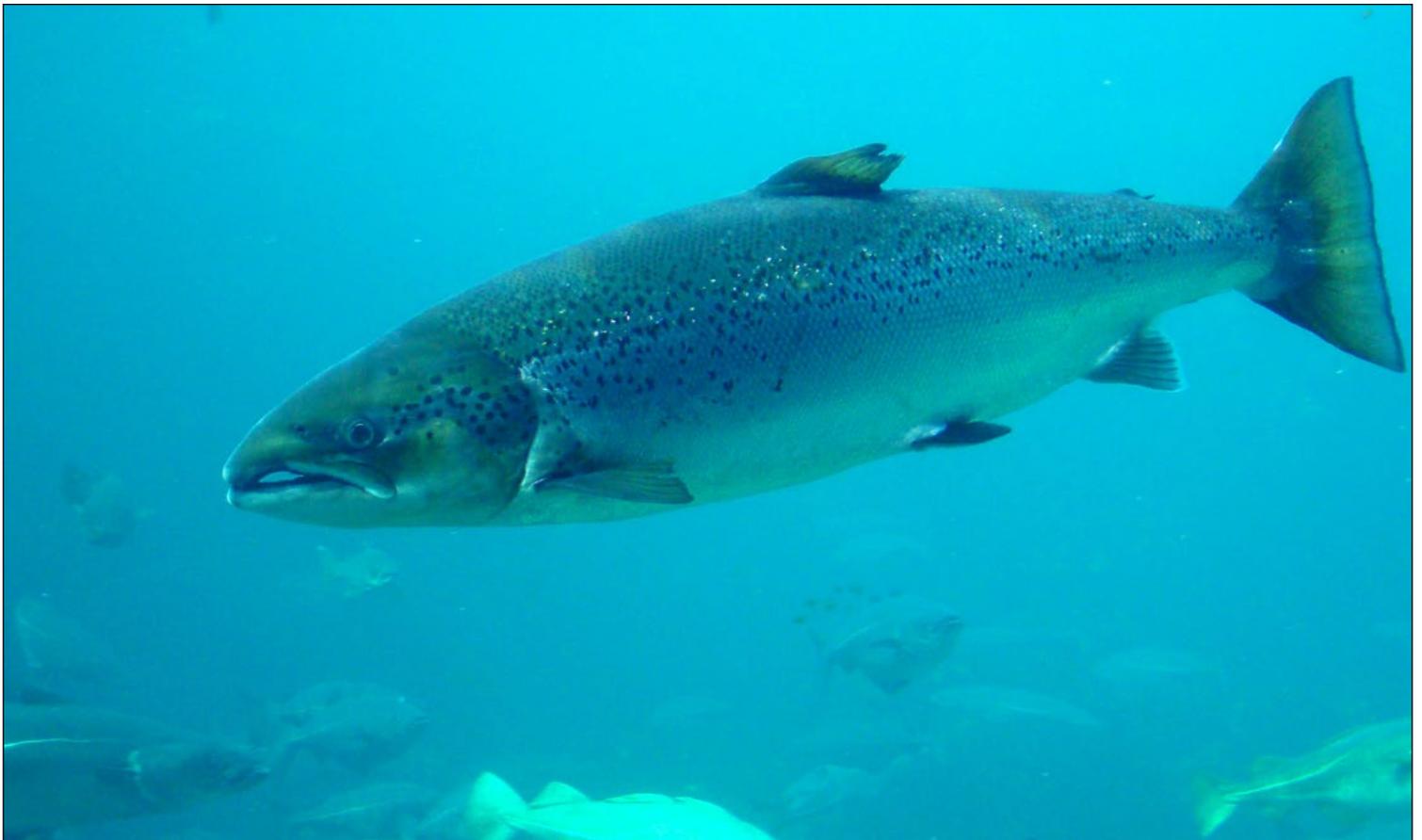
Eligible projects are activities authorized under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

The in-lieu fee payments will be administered by Maine DMR who, in turn, assumes legal responsibility for implementing the required compensatory mitigation, which it will accomplish by aggregating and expending the in-lieu funds received from Corps permittees or other federal agency permittees for mitigation projects.

By aggregating the fees from multiple permitted impacts, the program can use the fees to compensate project impacts in a strategic and efficient manner offering greater ecological benefits towards recovery of Atlantic salmon.

This ability to aggregate funds will facilitate mitigation projects that better contribute to recovery efforts to protect and restore salmon habitats throughout the critical habitat areas in the state of Maine, said Patrick Keliher, Maine DMR commissioner.

For more information on In Lieu Fee programs in New England visit the website at: <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/In-Lieu-Fee-Programs/>.



(Photo by Hans-Petter Fjeld)

The multi-agency agreement will help protect and enhance environmental resources for species such as the Atlantic salmon.

Post adopts 'gold standard' solution to improve efficiency, protect environment

By Brian Faber
Jeffrey Schulmann

USAG, Fort Knox, Kentucky

Officials at the Directorate of Public Works, Environmental Management Division at Fort Knox, Kentucky, have introduced a simple, inexpensive solution to an operations problem that is already paying dividends.

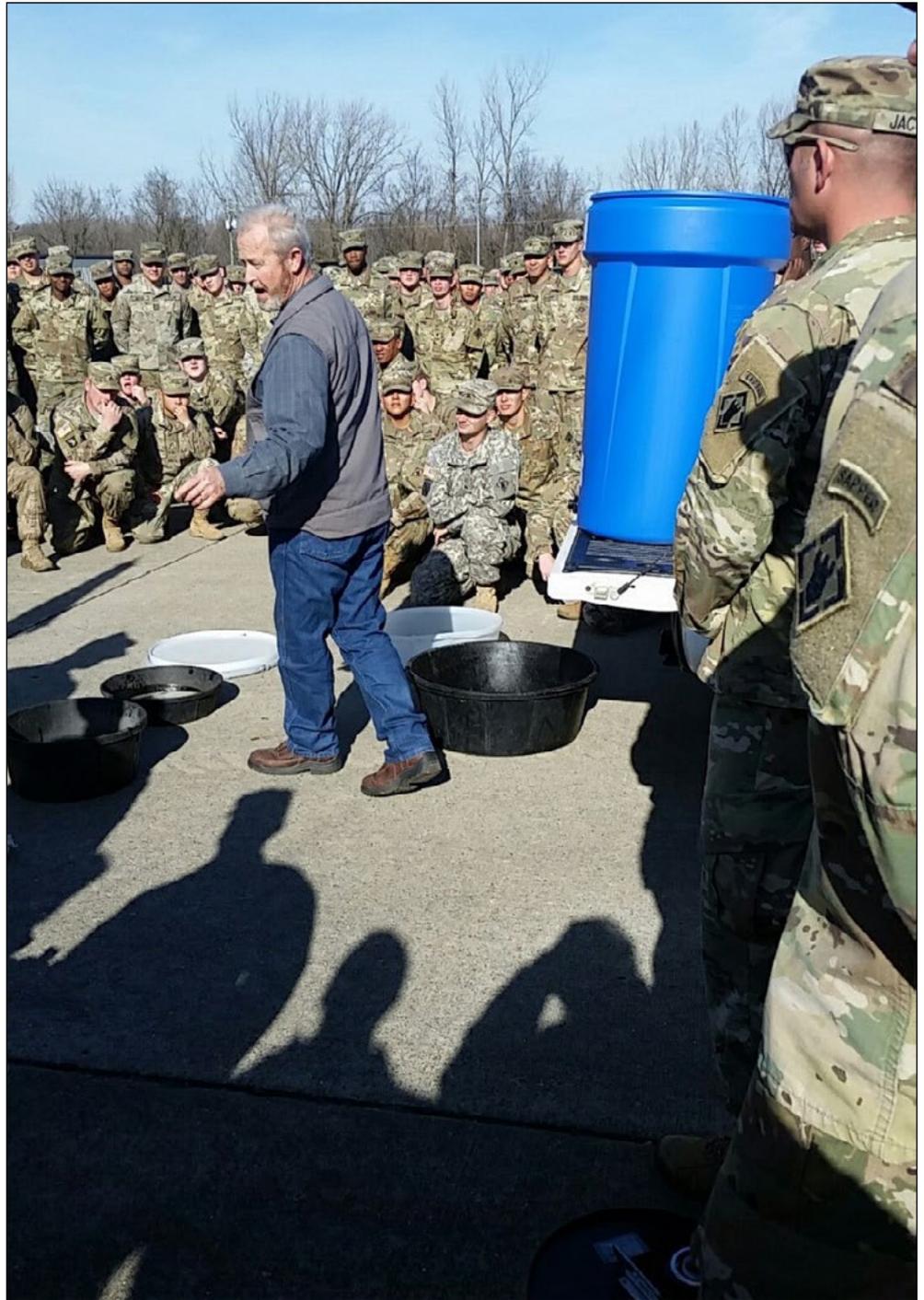
The problem: Identifying an efficient, cost-effective way to dispose of oily water from drip pans, a contributor to storm water pollution on the installation.

The background: Soldiers regularly use drip pans to contain fluids dripping from equipment. The drip pans are effective, however if not maintained regularly, they fill with rain water and overflow, creating a spill on the ground. The EMD team recognized that Soldiers needed an improved way of disposing the drip pan contents in lieu of transferring them to an oil water separator or a holding tank. They worked with the Soldiers and identified a solution to this problem.

The "Gold Standard" solution: The Oily Water Filter System. This simple system is a plastic drum with replaceable filter media and a drain valve at the bottom. Soldiers empty the drip pans into the filter, capturing the oil and grit. The water that is discharged can then be reintroduced to the environment. Once the filter media reaches the saturation level, and there are no free flowing liquids, the replaceable filter media is properly disposed of and new replaceable filter media can be installed. One bonus is the system's size and simplicity, making it mobile for field operations.

The EMD team has demonstrated and supplied the system to several military units throughout the installation. EMD continues to evaluate the system, identifying additional improvements based on the Soldier's input. Some of these include a ball valve to control the flow of clean water from the bottom of the system and methods to make the system mobile (mounted on carts, etc.). The mobile version would allow Soldiers to move it throughout the motor pool during maintenance and completely service all of the drip pans in less time.

The EMD team has provided six systems to units on the installation and has many more in the planning. Recent feedback from Soldiers and commanders has been very



Brian Faber demonstrates the use of the Oily Water Filter System to a battalion of Soldiers. The system was introduced to the post as a simple, inexpensive solution to dispose oily water and protect the environment.

positive and points to the ease of use and training for the system.

The Oily Water Filter System has resulted in an improved efficient method of maintaining and controlling the traditional drip pans used throughout the maintenance areas.

The simple system reduces the struggle of removing and disposing of the drip pans

full of oily rainwater. The system aids in avoiding the dumping of rainwater drip pans into holding tanks resulting in penalty costs from used oil vendors for disposal of water instead of recycling used oil.

This Pollution Prevention activity will continue to provide a long-term solution in an easy to use and cost effective package.

STEM program teaches importance of water

By AnnMarie R. Harvie
USACE, New England District

Most children take safe drinking water for granted, but not the seventh-graders at the Strong Middle School in Durham, Connecticut. Their school is only steps away from the superfund site that has contaminated their drinking water.

In the near future, thanks in part to the U.S. Army Corps of Engineers, New England District, a new, clean water solution will be in place and their drinking water will be safe.

Steve Dunbar, project manager of the Durham Meadows Superfund Site, and Dave Heislein, technical lead, joined their contractor and partners in hosting two educational sessions Sept. 4 at Monitoring Well 3 to teach the children about groundwater contamination and how the New England District plans to provide them with clean water. Each session – one in the morning and one in the afternoon – took approximately a half hour each.

The Durham Meadows Superfund Site centers around the Durham Manufacturing Company, which is still in operation, and the remnants of the Merriam Manufacturing Company, which was destroyed by a fire in 1998.

Both companies used chemicals such as trichloroethene, 1-trichloroethane and methylene chloride to make metal cabinets, boxes and other items. Groundwater contamination occurred because of past disposal of wastewater in lagoons or sludge drying beds as well as spills at both sites and poor drum storage at Merriam Manufacturing.

As part of the Environmental Protection Agency's cleanup process, the New England District will be constructing a water distribution system for the lead agency, including bedrock monitoring wells.

During the science, technology, engineering and math, or STEM event, representatives from EPA Region I, the Connecticut Department of Energy and Environmental Protection, and district contractor Koman Government Solutions were introduced to the students.

A representative from Koman's geophysics subcontractor, Hager-Richter talked to the students on the importance of clean water.

"We explained why we're installing the testing wells," Heislein said. "The water in town is contaminated and there is a long-term plan to install a new water distribution system, including a new water storage tank and over five miles of new pipe.

"The presentation included showing the students the bedrock cores from our drilling, the ongoing geophysics work via computer screen in a \$250,000 Hager-Richter van and groundwater tools being used in the well," he added. "They were very excited to take back to the classroom some of the bedrock cores to study further."

Heislein said that after the event, the team sent the students additional site figures and plots of the geophysics work for classroom study.

"The students are working to support the town's Sustainable CT Certificate Initiative which includes their study of water quality testing, investigations into impact and remediation on their community and plans to protect their water supply," he said.

In addition to showing students all the technology the team uses, Dunbar, Heislein and the other representatives made it clear how much education is required to use the equipment and problem solve the water quality issues.

"We emphasized the importance of taking math, science, writing and public speaking classes to pursue these careers," Heislein said. "They will carry forward what they learn in school and in jobs and apply it to new challenges and situations."

If the impact of these presentations were ever in doubt, concerns were laid to rest when a surprise revelation occurred during the STEM event.

"We found out between presentations that the Koman Government Solutions representative was from Vermont and actually got interested in geology from hearing one of these same presentations at the Elizabeth Mine Superfund Site in Stafford, Vermont," Dunbar said, who is also project manager for that site.

Heislein agreed that participating in events like the one for Strong Middle School is valuable.

"We show students that they can pursue what really interests them and apply what they learn in class towards a career," he said.



Steve Dunbar and New England District partners talk water quality with Strong Middle School students during the STEM presentation. (Photo by Dave Heislein)



Mike Nye with the Environmental Protection Agency sorts contaminated waste from recycling collected from Fort Riley's family housing.

Study helps post identify ways to reduce waste

Story & photo by Gail Parsons
Fort Riley, Kansas

While members of the Environmental Protection Agency separated trash from a recycling bin on one side of building 1982, on the other side, the U.S. Army Corps of Engineers was separating trash into several distinct piles.

“We are required to do waste characterization studies as part of our solid waste plan,” said Christopher Otto, recycle and solid waste coordinator, Directorate of Public Works, Environmental Division.

The USACE staff went through a handful of pre-selected dumpsters at various building locations. Trash was collected from administration buildings, motor pools, retail stores, barracks and more.

They went through the dumpsters, collecting 100 pounds of trash at a time and weighing, bagging and tagging to record the amount of recycling material collected and at what location. This material was then emptied and separated into one of several blue buckets identified by

type, i.e. plastic, paper, metal, steel, aluminum and more.

The data collected allowed Otto to identify where material is more likely to be thrown out with trash rather than separated for recycling.

For example, a roll-off eight-foot trash dumpster at one of the brigade headquarters was full of recyclable items, which could have been sold. Instead, because of the trash thrown in, the installation had to pay to have it removed.

“They are analyzing the total non-hazardous waste stream coming out of Fort Riley,” he said. “Anything that is not hazardous — that we throw away or recycle; maybe there’s something we’re missing that’s a recyclable commodity.”

He said he already knows that the installation is throwing away a lot of cardboard. This study breaks it down and shows them how much is actually being thrown away and compares that with how much it would cost to take it to the transfer station.

Abigail Brake, a research biologist with USACE, said they can use this data to make some recommendations for ways to reduce waste.

Unsurprisingly, her crew reported finding many interesting items while conducting the study.

From the barracks, they found new and like-new items like USB drives, Xbox games and Fitbits still in their original packaging.

“We found a lot of MREs and MRE heaters which are actually hazardous waste,” she said. The heaters have been known to explode and cause dumpster fires at other installations.

“We found a bunch of meat — packaged meat, unopened like someone was going to have a barbecue and then they just threw it all away,” Brake said. “Soldiers can only take so much with them when they move, so whatever they can’t take, they toss.”

Other common items thrown in the trash include clothing and electronics — stuff that could be taken to the thrift store.

“We will address those things in our plan,” she said. “That’s the point of doing these studies — to see if maybe they need a thrift store bin right next to their dumpsters. These are the kinds of things that we are looking at.”

USACE, EPA join forces to reshape steel's impact on communities

Story & photo by Jeff Hawk
USACE, Pittsburgh District

There is no doubt that steel has shaped the Pittsburgh region. One only has to look at the name of the six-time Super Bowl Champions, the Steelers, to see the influence.

Although steel has built the region and much of the country, not all of the impacts have been positive.

The Environmental Protection Agency has designated several Pittsburgh area locations as superfund sites, requiring long-term responses to clean up steel-era pollutants and hazardous materials left in the environment.

This summer, the EPA enlisted the U.S. Army Corps of Engineers, Pittsburgh District to assist in remediating one of these sites, the Sharon Steel Corporation Farrell Works Disposal Area, located in the cities of Hermitage and Farrell, Pennsylvania. The district awarded a \$9.2 million contract on July 26 for the Sharon Steel remediation to Cape Environmental Management, Inc.

The Pittsburgh District and EPA Region 3 are partnering to remediate the Sharon Steel Site. The Pittsburgh District's interagency partnership with EPA Region 3 is part of the Corps' Interagency and

International Services program in which USACE provides technical assistance to non-Department of Defense federal agencies, state and local governments, tribal nations, private U.S. firms, international organizations, and foreign governments.

The Corps' role entails engineering and construction services, environmental restoration and management services, research and development assistance, management of water and land-related natural resources, relief and recovery work, and other management and technical services.

For the Sharon Steel project, the IIS program allows the government to capitalize on the EPA's expertise in environmental remediation and the Corps' expertise in contract and construction management. This is the district's first EPA superfund site remediation, which leverages the agency's multi-discipline workforce to assist with the cleanup.

The remediation project at the 300-acre Sharon Steel location addresses the northern 50-acre portion of the site, where slag and other waste liquids were disposed of during the manufacturing of steel projects at the Sharon Steel plant.

Founded in 1900, the plant remained in operation until 1992 when the company declared bankruptcy.

In 1993, steps were taken to place the site on the National Priorities List which designates and aids in prioritizing sites eligible for funding under the Superfund program.

Six years later, the EPA initiated a Remedial Investigation and Feasibility Study. Its purpose was to consider appropriate remedial actions. The selected remediation is included in the Record of Decision published November 2006.

The Sharon Steel Site has been characterized as having slag and sludge on-site. These materials contain high concentrations of metals which present risks to people who might breathe dust from the soil/slag and adversely impact ground water and the surrounding area.

To address the threat of infiltration and mobility, the remediation action includes the application of a bio-solids cap of the slag and sludge materials. The remediation action includes large amounts of earthwork and river bank stabilization.

Cape Environmental Management, Inc., headquartered in Norcross, Georgia, is scheduled to begin site work this spring with a completion in early 2021.

The Pittsburgh District is honored to work with their partners in the EPA to remediate this site, and ultimately restore the environment.



The \$9.2 million project will remove slag and sludge deposits and stabilize the river banks near Hermitage and Farrell, Pennsylvania.

USACE ecologist helps agencies strike balance between missions, environment

Story & photos by Sarah Lazo
USACE, Baltimore District

Dan Cockerham doesn't bring much with him when he ventures out into the field; often it's just a notepad, a global positioning system and bug spray.

His real tools are intangible — an impressive species recall and bird-calling abilities, which he has continued to sharpen since childhood.

It is through these instruments that Cockerham, a U.S. Army Corps of Engineers, Baltimore District ecologist, helps determine essential strategies to manage plants and animals

at military installations and other unique locations across the Chesapeake Bay region.

"I support our partners in defining multi-disciplined approaches that balance both military and natural resources missions," he said.

Department of Defense agencies are required to have some form of an integrated natural resources management plan. Through Baltimore District's Installation Support Branch, Cockerham performs tailored fieldwork surveys to assist with plan development in Maryland at Aberdeen Proving Ground, Adelphi Laboratory Center, Fort Meade and Blossom Point Research Facility, as well as at U.S. Army Reserve sites.

"I canvass the area to determine what resources or species are using or living on the installations," Cockerham said.

"I provide a map of where certain species are located and make management recommendations, so installations can work with the native species and not harm them, while still reaching mission goals."

Fieldwork entails separating the installation into plots, and then standing in one plot for a set amount of time and observing and documenting its sights and sounds before moving onto the next. Species like birds or frogs can be identified at a stationary point out of view just by their call and regional dialect, while animals and plants with a smaller

radius of movement — or none at all — must be met on foot.

Based on the installation's needs, Cockerham may help determine wetland boundary lines; and conduct vegetation, avian, bat, herptile (reptiles and amphibians) and rare, threatened and endangered species surveys. This information feeds into the project's wetland buffer designations and management plans for natural resources, invasive species, pests, forests and wildland fires.

"I wouldn't be able to accomplish my tasks without the help of the Corps of Engineers," said Bridget Butcher, Adelphi conservation specialist.

See **ECOLOGIST**, page 35



She explained that having the Corps as a key partner allows her to bring in a variety of expertise to help implement an integrated plan that drives natural resources projects over the course of five years.

In addition to serving military counterparts, Cockerham has supported other agencies at some pretty exceptional locations.

He spent roughly 20 weeks along the Appalachian Trail System gathering data on hawks, raptors and bats as part of an environmental impact statement to expand the easement for transmission lines at the U.S. National Park Services' Delaware Water Gap National Recreation Area. This mini "Grand Canyon" sits on the Delaware River along the border of northeastern Pennsylvania and northwestern New Jersey.

Cockerham and a team also completed survey work on James Island in preparation for a potential USACE ecosystem restoration project that would use clean dredge material to restore eroding habitat on both James and Barren islands. This project, known as the Mid-Chesapeake Bay Island Ecosystem Restoration project, received \$644,000 in 2018 for pre-construction engineering and design efforts. Once constructed, the islands would replace Poplar Island as the site for dredge material placement from the Baltimore Harbor and Channels with the capacity to contain up to 95 million cubic yards of material over the course of 40-plus years.

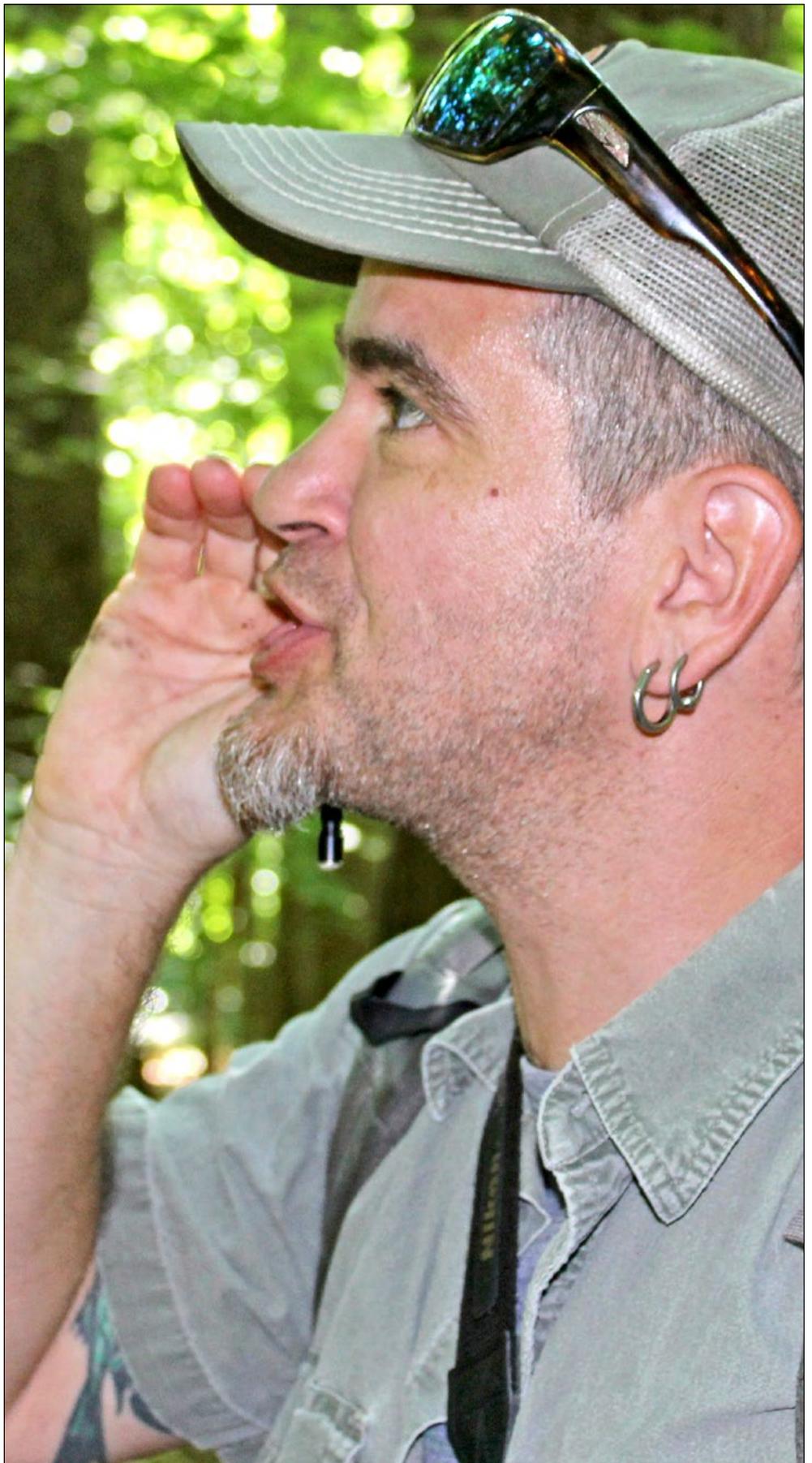
"We stayed on the island for a week, counting spawning horseshoe crabs in the early morning at high tide under a full moon, and counting nesting diamondback terrapins in the afternoon," he said. "To be able to camp in the middle of the bay and do this work...it was amazing."

This line of work, while seemingly idyllic, is not without its challenges.

"You have to deal with the elements," he said. "There are ticks, mosquitos, security concerns, and, in some cases, we have to sweep the area for unexploded ordnance prior to conducting the fieldwork. It also seems to be either extremely hot or bitterly cold."

For Cockerham, however, it's all worth it.

"I'm helping to ensure these resources can continue to thrive in their natural habitats and not be negatively impacted by development or change," he said. "As a little kid, I would run in the woods and fearlessly pick up snakes and go birding with my grandmother. Now, I'm making a difference, and I get paid for it."



Dan Cockerham conducts avian and herpetological surveys at U.S. Army Garrison Adelphi Laboratory Center in Adelphi, Maryland. The information from these surveys helps Adelphi determine natural resources management strategies.



Recent graduates of the Risk Management Program at Notre Dame lauded the benefits of training in the risk-informed decision-making process. USACE teamed up with the university to support the innovative training opportunity.

USACE, Notre Dame partnership offers increased technical competency in risk-informed decision making

By Tammy Conforti & Karen Miller
USACE, Headquarters

For many years the U.S. Army Corps of Engineers has continued to make progress of embedding risk-informed decision making in its processes.

Risk-informed decision making uses qualitative and/or quantitative risk information with uncertainty and other considerations to lead to more comprehensive, transparent and informed decisions.

The main components include risk assessment, risk management and risk communication. These three components make up what USACE refers to as its risk framework.

In order to continue to increase technical competency in risk-informed decision making throughout the agency, USACE has teamed up with Notre Dame of Maryland University to support an innovative training opportunity.

Early in 2015, USACE collaborated with the university about interest in a pilot program to advance the knowledge and understanding within USACE related to risk-informed decision making. The result was the beginning of a partnership in support of an online graduate level training program, tailored for full-time working professionals.

This training program, referred to as the Risk Management Program, includes six online classes: 1) risk management, 2) risk

assessment, 3) uncertainty, 4) quantitative risk management, 5) risk communication, and 6) ethics and risk governance.



The program, which completely aligns with the USACE risk framework, takes one year to complete with each course building upon each other providing an overall comprehensive view of how all elements of the risk framework come together for risk-informed decision making.

The program is currently in its fifth year and at present includes participation by more than 90 USACE participants from different communities of practice, such as planning, dam and levee safety, and asset management. Below is a sample of the direct feedback from participants.

“Overall, the program allows a cross-section of USACE staff to discuss how the concepts and course material are or could/should be applied to USACE efforts. Invaluable to have different perspectives

offered from USACE staff from different areas and parts of the country and working together on class teams.”

“Demonstrating different applications of risk in other industries provided a new perspective altogether.”

“Any USACE employee engaged in any aspect of flood risk management (dams, levees, channels, coastal projects, etc.) will gain tremendous insight into why we do what we do and the benefit of engagement with our partners, stakeholders and the public.”

“Gained a much better understanding of the language of risk and now having a group of individuals also trained in this same language to communicate and coordinate with to help ensure we are achieving a mutual understanding of risk and uncertainties for our studies and projects.”

With the success of the program, USACE will continue the partnership to adapt and improve the coursework to ensure the training remains current and relevant to the future direction of risk-informed decision making concepts within USACE.

In 2018, Notre Dame for the first time has added four additional optional courses to the program: 1) enterprise risk management, 2) managing together, 3) adaptive leadership, and 4) decision making under certainty.

Successful completion of all 10 courses will result in a masters degree in risk management from the university.



Historian, regulatory project manager digs into past to update critical list

Story & photo by Hank Heusinkveld
USACE, Wilmington District

Last October, when Ronnie Smith, regulatory project manager, began to update the U.S. Army Corps of Engineers, Wilmington District's list of the nation's navigable waters and a geographic information system to reflect those changes, he had no idea of how overwhelming the task was going to be.

The last time the information had been updated was in 1965, and in a span of more than 50 years names of bodies of water have changed, and in some cases, no longer existed. Multiple regulatory project managers have worked on updating the list, including a map over the last 20 years. Mapping technology and document resource availability have helped with the completion of this effort.

"I've been researching waters that are tidal in nature and that are currently used or have been historically used for interstate commerce," Smith said. "Any work in navigable water bodies needs a permit, and every USACE district is required to maintain a list of navigable waters of the United States. We have a list that is from 1965 which is based off a list from 1940 which, in turn, appears to be based off of older lists and letters from the late 1800s."

So began a tedious project of researching information from the past to match it to current information.

As easy as it is these days to simply click on a computer for instant information, Smith did not have that option. He had to gather information from a series of historic books located in the district library dated from the 1800s titled "Reports to the Chief of Engineers."

In addition, he gathered information copied from congressional documents dated from between the 1860s to the 1930s that are kept in the district office library. There were few, if any, detailed district reports from which to verify locations that he needed for the updated list. His only solution was to cross-reference all available information.

"Looking at the list from the 1960s, the letters read one thing and the other information read another," he explained. "It's very inconsistent and you don't know which information to go by. For example, the Wilmington District list doesn't contain any landmarks for reference. It only reads



Ronnie Smith looks through U.S. congressional documents to cross-reference information with Wilmington District.

'navigable for 32 miles' whereas a letter from House documents reads 'navigable for 29 miles to the bridge in Lillington.' There are a lot more specifics in the letters."

Smith said that the project is like working a puzzle. The old Wilmington District list has creek names that don't exist anymore. He said they were named in the late 1800s, but then were renamed something completely different years later.

"It's really interesting and sort of like detective work," Smith said. "You're trying to find names or other information that doesn't exist anymore. I'm going back to maps from the 1800s thinking, 'Oh! That creek used to be called this, but now it's called that.' When I look for information in the congressional documents there's a lot of good detail about the amount of commerce on these particular water bodies, the numbers of vessels that used the waterways, the width and depth. The whole point was to see if it was beneficial for commerce."

The papers and books began piling up in Smith's cubicle. He developed his own system of sorting the books and documents for cross referencing. He found that there was more detailed information in the congressional documents because they described landmarks.

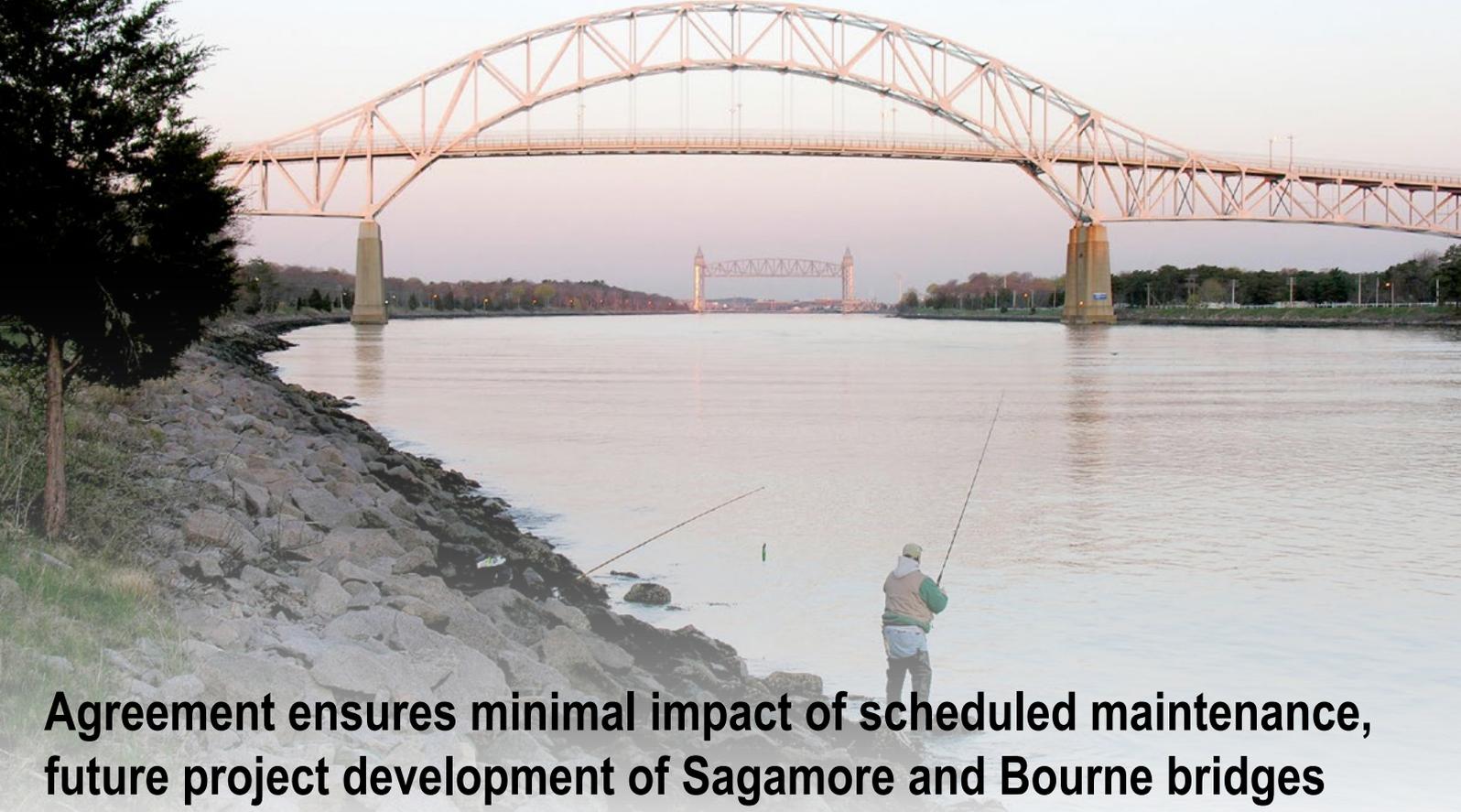
"One document read that the head of a navigation point was at '32 miles at the railroad bridge near a town.' I then determined that the list was referencing the document because they both have the same mileage number. Now I had an identifiable location," he said. "I could then go back and look at old maps and use GIS to trace the water body and map the water to a point that was written in a letter, document or annual report."

Smith said that the accuracy of the information from existing technology used in the past tended to be off by as much as 10 miles, but that some areas were right on the mark.

"I couldn't imagine going out on a boat and stringing along waypoints to measure the length and width of a river. For the tools that they had back then some were pretty accurate," he added. "It's impressive."

The end result will be an up-to-date map and accurate list of all navigable waters within the boundaries of the Wilmington District.

"The project had to be done," Smith said. "Now, we'll be current, and all we have to do is click a mouse to make our work easier and get accurate information."



Agreement ensures minimal impact of scheduled maintenance, future project development of Sagamore and Bourne bridges

By Timothy J. Dugan
USACE, New England District

The U.S. Army Corps of Engineers, New England District and the Massachusetts Department of Transportation announced that scheduled maintenance on the Bourne Bridge over the Cape Cod Canal is being shifted to the 2019 spring season.

In addition, the two organizations have formalized an agreement to continue facilitating ongoing conversations and the sharing of information and collaborative decision-making regarding the inspection of the Sagamore and Bourne bridges, scheduled maintenance and future project development.

“We’re pleased to have signed a Memorandum of Understanding with the U.S. Army Corps of Engineers so we can continue to have regular conversations to support the Army Corps’ plans for the Sagamore and Bourne bridges,” said Stephanie Pollack, transportation secretary and CEO.

The MOU helped the business community when USACE shifted intensive maintenance work on the Bourne from the fall to the spring to accommodate the tourist season.

This decision benefited visitors, residents and members of the business community who need the Bourne and Sagamore bridges both open when so many people needed to use them, Pollack said.

“The New England District is continuing our close collaboration with

MassDOT as we work together on the long term plan for the Cape Cod Canal bridges,” said Col. William Conde, commander, USACE New England District.

“MassDOT has been pleased to support efforts by USACE during necessary maintenance work on the Bourne and Sagamore bridges,” said Jonathan Gulliver, highway administrator. “These bridges are essential to the economic livelihood and quality of life for the commonwealth’s residents, business leaders and visitors.”

Gulliver added that the formalized agreement will afford ongoing conversations and information-sharing about maintenance, nearby transportation infrastructure needs and how best to plan for future Cape Cod Canal crossings.

The MOU, signed June 27, acknowledges that under the Cape Cod Canal Federal Navigation Project, the Bourne and Sagamore bridges are owned by USACE to operate and maintain while it is MassDOT’s responsibility to operate and maintain the state highway system, including the highways and infrastructure approaching these bridges.

USACE and MassDOT further agreed to engage in a collaborative approach to discuss and exchange information concerning a coordinated public process for future projects, including public outreach, environmental permitting, identification of financing and funding sources, evaluation of project delivery methods, and ongoing repair and maintenance.

The first example of collaboration under

the MOU was the announcement to delay the scheduled comprehensive maintenance on the Bourne Bridge to lessen the impact on travel during the tourist season. An extensive several-week long maintenance is now scheduled to occur in this spring.

The new timeline is in keeping with the MOU which states, in part, that the USACE and MassDOT will “coordinate their respective designs, project schedules, maintenance/construction activities, and traffic management to enhance efficiency and minimize impacts to the traveling public to the maximum extent possible.”

In addition, the USACE and MassDOT agree to share information and work cooperatively during construction projects, particularly when activities are scheduled to be performed concurrently, and agree to make the best possible effort to coordinate and minimize impacts to the traveling public, including but not limited to, identifying efficiencies and cost savings related to traffic setups, lane closures, access restraints, police details, labor, equipment and materials.

In addition, the USACE and MassDOT will continue to have conversations concerning the finalization of two important reports: USACE’s Major Rehabilitation multi-year study on the bridges and MassDOT’s Cape Cod Canal Area Transportation Study.

For more information about Mass DOT’s study visit the website:

<https://www.mass.gov/cape-cod-canal-transportation-study>



(Courtesy photo)

Viola Bramel, park ranger, West Hill Dam, presents an advanced graduate junior ranger with his leadership award during National Public Lands Day.

New England District celebrates Public Lands Day

By AnnMarie R. Harvie
USACE, New England District

Hundreds of participants took advantage of the fine New England weather and came out to help clean up and improve four New England District projects to celebrate National Public Lands Day.

Buffumville Lake, Hodges Village Dam, the Cape Cod Canal and West Hill Dam all held celebrations.

The Cape Cod Canal and AmeriCorps Cape Cod held their annual clean up in the fall.

Canal team members were joined by 121 volunteers who picked up trash along the canal as well as carried out some small maintenance projects, to include gardening

and pollinator habitat improvements.

Altogether, the group removed 688 pounds of trash from the canal's south side.

In addition, local partners from the Buzzards Bay Coalition and the Mashpee Middle School Honors Society held activities and games, educating participants on the effects of marine debris on the canal.

West Hill Dam and a local automotive sponsor also took advantage of beautiful weather for their event.

Many of the 114 participants, aside from volunteers representing the hosts, were scouts and students from local schools.

Two Eagle Scouts made the most of their time at West Hill by completing their eagle projects while helping with the cleanup.

Work included installing benches, planting a pollinator garden, sealing benches, wheelchair pads and beach glides, litter removal and other improvements.

Projects aplenty were getting done by 91 volunteers at Buffumville Lake and Hodges Village Dam - 13 to be exact.

Seven New England District team members also rolled up their sleeves and pitched in – all in the name of environmental stewardship.

Work at the projects included parking lot rehabilitation and cleaning, invasive plant removal, opening up trails, painting, sanding park tables, pollinator garden improvements and water sealing the pirate ship, just to name a few.

CP-18 migrates to Army Career Tracker

The Army Career Program-18, or CP-18, for Engineer and Scientists (Resources and Construction), has migrated its information and primary form of communication from Engineering Knowledge Online to Army Career Tracker.

If you have not already, please log in at <https://actnow.army.mil/> to sign up. You'll want to sign up to continue receiving information about training and developmental opportunities within CP-18.

While you are logged into ACT, take some time also to build your individual development plan.

The IDP is a tool to assist employees in planning their career and personal development goals.

Its primary purpose is to help

employees reach short and long-term career goals.

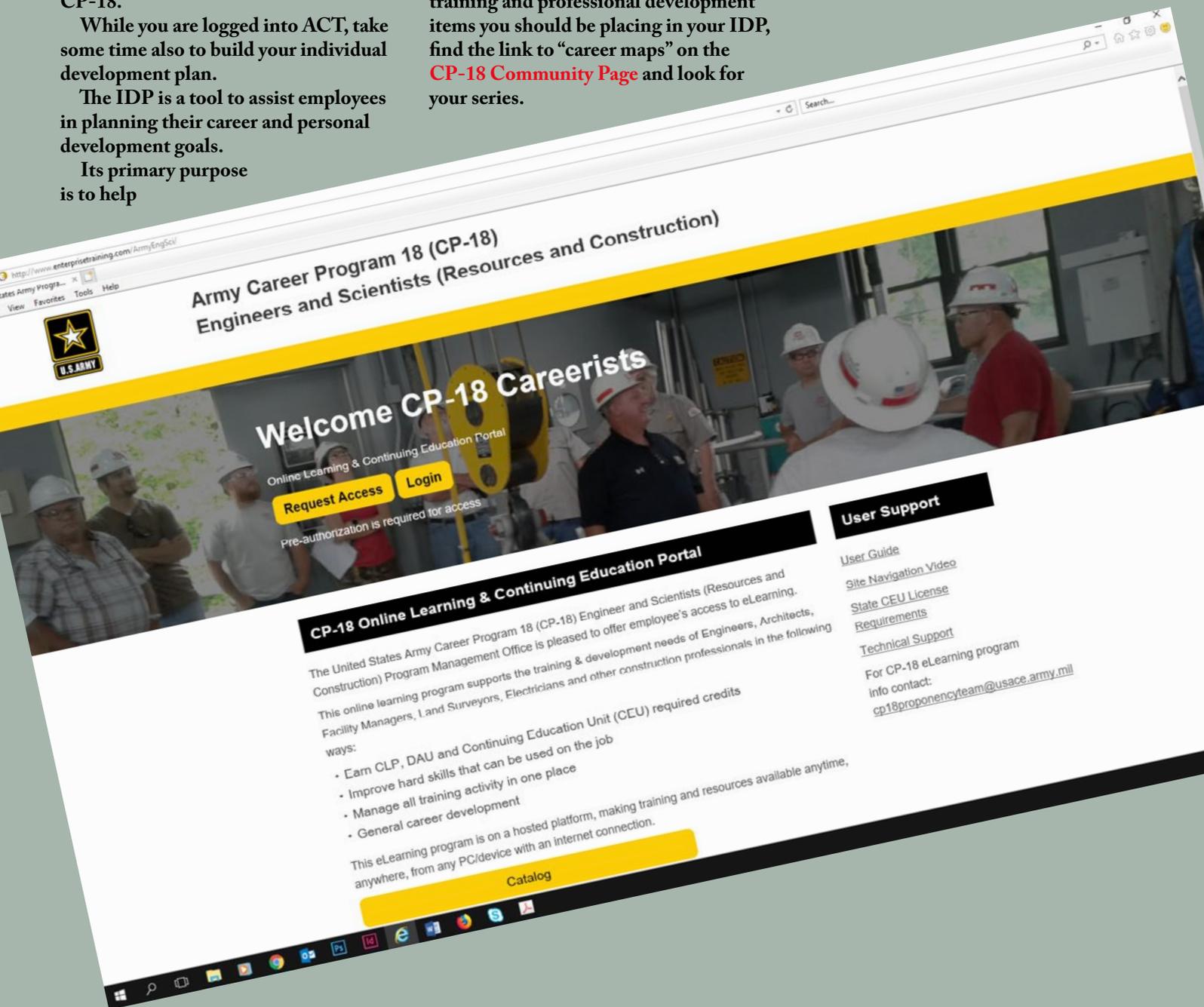
An IDP is not a performance evaluation tool or a one-time activity. It represents the partnership between the employee and the supervisor, and involves preparation with continuous feedback.

It also ensures that you have a plan in place to take advantage of key training opportunities when announced.

If you are wondering what kind of training and professional development items you should be placing in your IDP, find the link to "career maps" on the [CP-18 Community Page](#) and look for your series.

Over the past several years, the Army environmental community of practice has been building the career maps for the Environmental Engineer (0819), Environmental Protection Specialist (0028) and the Natural Resources Manager (0400) series.

Use these maps as a guide to see what skills, experiences and education you should be seeking to achieve at each grade level of your career.



USACE, partners unveil first DoD mitigation banking instrument

Story & photos by Sarah Lazo
USACE, Baltimore District

Over the summer, a small group of representatives from federal, state, private and non-profit agencies gathered to celebrate the launch of a pioneering tool for the state of Maryland — a tool that assists essential military development, while benefiting the environment.

The U.S. Army Corps of Engineers, the U.S. Air Force, the Maryland Department of the Environment, GreenTrust Alliance and GreenVest LLC announced the completion of the first Umbrella Mitigation Banking Instrument for the Department of Defense in Maryland during an event held at Joint Base Andrews, Sept. 6.

“This instrument acts as an advanced solution and will help facilitate timely permit issuance and meet requirements outlined in permits for essential planned capital improvement projects,” said Col. Andrew Purath, commander, JBA 11th Wing. “We are the backdrop for some of the most important pieces of American history. We have an obligation to maintain the airfield and our mission, and this bank is historic for the base, the state and the community.”

The first site to be restored under the UMBI is Mattawoman Creek in Pomfret, which is in Charles County. The entire project yields nearly 38 wetland credits and almost 1,600 stream credits to provide potential mitigation for planned construction efforts on JBA, such as runway repairs.

Agencies with projects potentially impacting wetlands or navigable waterways in

Maryland must first receive a permit to start construction from USACE Baltimore District, or MDE depending on the size of the project. A permit is issued when it is anticipated the project benefits will outweigh the impacts, and, many times, includes special conditions that the applicant must follow to reduce harmful impacts to the environment. An applicant must ensure there is no net loss of wetlands resulting from the project; therefore, as part of the permit, the applicant must agree to protect, create or restore the number of acres they are impacting.

“Having a bank of pre-approved suitable land to pull credits from for mitigation requirements reduces the costs and time commitments associated with having to find mitigation elsewhere,” Purath said.

More than 80 acres of land at the Mattawoman Creek mitigation site is now permanently protected via a conservation easement held by GreenTrust Alliance.

“Our team of in-house experts assisted Joint Base Andrews in identifying and investigating potential areas to perform the wetland mitigation,” said Dave Morrow, deputy district engineer, USACE Baltimore District.

“Through a Corps of Engineers contract, our team managed the efforts of GreenVest and Princeton Hydro to complete the design; engineering and modeling; and permitting of the Mattawoman site,” he added. “This is a true public-private partnership success with everyone pitching in and working together.”

Mattawoman Creek is classified by the Maryland Department of Natural Resources as highly significant for biodiversity conservation

to support critical species and habitats. At this site, more than 65 acres of wetlands will be restored, created, enhanced or preserved, which is estimated to capture approximately 75 tons of carbon per year. Streams will be restored along nearly 3,800 feet through re-establishment of historic floodplain. More than 28,500 native trees and shrubs will also be planted, creating habitat for the state-threatened Selys’ Sundragon insect species.

“Mattawoman Creek is a very highly valued tributary to the Chesapeake Bay,” said Lynn Buhl, MDE assistant secretary. “I applaud JBA and this team for voluntarily setting up this sort of savings account. Maryland is strident and motivated to protect the bay, and this project blazed the trail for all Department of Defense agencies. With this bank, the environment wins, we win, and DoD wins.”



David B. Morrow, USACE Baltimore District, deputy district engineer, speaks at a commemoration ceremony for the first wetlands mitigation banking instrument at Joint Base Andrews, Maryland, Sept. 6. The entire project yields nearly 38 wetland credits and almost 1,600 stream credits to provide potential mitigation for planned construction efforts on JBA, such as runway construction or expansion.

(Photos by Airman 1st Class Michael S. Murphy)



Representatives from the U.S. Army Corps of Engineers, the U.S. Air Force, the Maryland Department of the Environment, GreenTrust Alliance and GreenVest LLC gather for a photo following the ceremony, announcing the completion of the first Umbrella Mitigation Banking Instrument for the Department of Defense.



(Courtesy photo)

Elizabeth Decelles (standing in the middle) enjoys a moment with her community development group in Jamaica. She served in the Peace Corps from 2003 to 2005, helping with environmental projects and community development.

New England District employees recall Peace Corps service

By **AnnMarie R. Harvie**
USACE, New England District

There are those at the U.S. Army Corps of Engineers, New England District who have always wanted to make a difference in the world. They are people of action, people who will travel any distance and endure any environment to bring comfort and assistance to others.

People like that join the Peace Corps. The planning division is home to four former volunteers – Elizabeth Decelles, Kevin Foster, Sharon Pailler and Mike Penko. Each served in different parts of the world before joining the New England District.

Decelles, a biologist, served from 2003 to 2005, traveling to a rural fishing village in Jamaica to help with environmental projects and community development.

“I was assigned to work as an environmental volunteer with a small community development group in a town

which was comprised of the justice of the peace, the primary school principal, the head fisherman, a local shop owner and a small hotel owner,” she said.

“My group planned and ran fundraisers such as a hook-n-line fishing tournament and off-road triathlon,” she said. “The proceeds of which all benefited the local primary school.”

Her group built a three-room addition to the school and started an environmental club that continues to win national recognition.

“The environmental club projects included composting, planting native trees and vegetation around the school, field trips to the local estuaries, and making art from recycled materials that would normally be burned as trash,” she said.

Many traveled to Jamaica for a tropical vacation, but after a monster storm ripped through the island, she and the villagers found themselves in a paradise lost.

“Hurricane Ivan decimated Jamaica and

my community,” she said. “Almost everyone lost their roofs, and fishermen lost all their traps. We were without power for months.”

Her community development group began recovery efforts, and with assistance from the U.S. Agency for International Development, they were even able to provide the fishermen with fish trap lines.

Highlight of her tour was the people’s positive outlook and resilience in the face of poverty and struggle.

Foster, who is also a biologist, served from 1982 to 1985.

“I served as both an aquaculture specialist and a community development advisor during my three years as a Peace Corps volunteer on the island of Kosrae, Federated States of Micronesia,” he said. “I also served as a Peace Corps volunteer leader in my third year. I served two years in the remote village of Utwa and my third year in the main population center of Lelu.”

See PEACE CORPS, page 46

His initial assignment began by starting several aquaculture projects, but like Decelles, his projects were also curtailed to support more urgent needs.

“We encountered the first major El Nino event from 1982 to 1983,” he said. “Our annual rainfall fell from more than 300 inches of rain per year to less than 40 inches over a nine-month period.”

As the situation continued to deteriorate, Foster helped refurbish the village water pipe and dam system to provide water from upland sources to his village.

“There was no drinking water, so we drank coffee, coconut juice, beer or soda,” he said. “We took baths in the ocean. The mortality rate escalated among the elderly and children and disease was rampant. We suffered.”

Foster helped refurbish the village water pipe and dam system to provide water from upland sources to his village.

“I solicited funds from my home church in Bedford, New Hampshire, and purchased materials to construct 500- and 800-gallon water catchments,” he said.

He also worked with a squad of Navy Seabees based on the island to build 12 catchments for his village.

During his third year, Foster moved on to another assignment where his efforts turned to recycling in an effort to address the littering of the mangrove forest along the circumferential road.

“With start-up funds from the Kosraen government, we employed two Kosraens to crush the cans into wafers and filled a Matson container,” he said. Once full, the containers were shipped off to Japan.

“Funds from the first shipment began a cycle of collecting cans, crushing them and shipping them,” he said. “Kosraens were paid five cents a can, so the island was cleaned up quickly.”

In 1985, it was the first recycling effort in the U.S. Pacific. Today the recycling project is run as a private business on the island, Foster said.

Pailler is an economist who volunteered to serve from 2001-2003 in rural Guinea.

“My role was to work with farmers to integrate ‘sustainable’ agricultural approaches, like live fencing, compost, water conservation, etc.,” she said. “I also did some reforestation projects along the Niger River and some sensitization efforts to discourage bush fires. I ended up working with the health center a lot because it was gravely understaffed and I had experience working as a nursing assistant through high school and college.”



(Courtesy photo)

Kevin Foster served with the Peace Corps from 1982 to 1985 on the island of Kosrae.

Pailler, who says she entered the Peace Corps because she wanted to save the world, encountered some communication challenges due to the different language and communication culture.

“There weren’t cellphones in Guinea when I was there. The land lines were only accessible in large cities, and they didn’t work well,” she said. “During my whole first year, I wasn’t able to speak with my father, which was really challenging. My grandfather passed away and I didn’t find that out until months later in a letter from my mother. It was very isolating.”

There, Pailler learned that despite her best efforts, she could only do so much.

“My biggest challenge was realizing that my relative impact on the world was pretty darn small,” she said. “I remember my first visit to a nearby gold mine, which was a massive kilometers-wide-open-pit mine.”

Pailler explained that the company had moved an entire village and cleared thousands of acres of forested land to accommodate their operations.

“It was very discouraging to think while I was trying to teach villagers in rural Guinea how to improve the environment; there was a huge foreign company less than 100 kilometers away that was destroying it,” she said.

Despite its challenges, Pailler said she had many good experiences serving with the Peace Corps.

“The people were wonderful,” she said. “Guinea’s population is predominantly Muslim; an important part of their religion and culture is to treat strangers in their communities as guests. As such, I was very well taken care of and was protected wherever I went.”

“I made some life-long friends that I stay in touch with,” Pailler said. “It’s really magnificent the moment you make your first genuine friendship with someone from another culture, religion and background.”

Penko, a biologist was too modest to remark about his time with the Peace Corps. He served as a forester in Burkina Faso during the 1980’s.

No doubt, the people they encountered and worked with benefited from their selfless service; yet, when asked, the team members said they also got much out of their experiences.

“The best part about being in the Peace Corps was learning that I was stronger than I thought I was,” said Decelles.

“My best memory is my Peace Corps family,” said Foster. “I lived with the district judge and his 10 children who helped me learn the language, spear fish, paddle my outrigger canoe, walk bare foot in the upland jungle, climb coconut trees and fall in love with coral reefs, which I later pursued as a career, starting with the University of Guam Marine Laboratory.”

“I learned more from my Peace Corps experience than any other experience, and perhaps all my prior cumulative experience,” said Pailler.

“It is the strangest thing,” he said. “At the time, you may not feel like you are learning, but you come away with this deep understanding of things and how they work or don’t work; things you never thought about before or didn’t even know existed. It’s really hard to explain, but I think anyone who has done Peace Corps would know exactly what I’m talking about.”

Editor’s note: Pailler has moved on to a position with the American Society for the Prevention of Cruelty to Animals and Penko has retired from the Corps with 33 years of federal service.





(Photo by Pak, Mun Kyu)

Yongsan's In-house Asbestos Removal Team has saved the post more than \$3.2 million, making available more funds to spend on projects to improve the quality of life for Soldiers and Families stationed at the South Korean-based installation.

Yongsan's asbestos removal team saves time, money

By James C. Hamilton, III
Scott Weber
USAG, Yongsan, South Korea

U.S. Army Garrison Yongsan, like most Army facilities built before the 1980s, used asbestos for its cheap and effective fire and chemical resistant properties.

Despite the protective benefits, asbestos was discovered to cause lung disease, necessitating its safe removal and encapsulation as required by local laws and Army regulations.

The presence of asbestos at the Seoul, South Korea-based installation is no different than that found in the continental U.S. Its presence is found in pipe insulation, flooring, roofing, and transite fascia and soffit boards.

To mitigate the threat, the Yongsan Directorate of Public Works In-house Asbestos Removal Team went to work.

The team comprised of a local nationally trained force of seven individuals, including

team supervisors who maintain full-time jobs yet volunteer to work overtime evenings and weekends to remove the asbestos.

The team's occupational background is diverse. Some are carpenters, plumbers and electricians by trade, and others have graduate degrees in environmental engineering and environmental sciences.

Pak, Mun Kyu, USAG Yongsan environmental protection specialist, is the team's program manager.

One of its earliest members, Pak helped organize the critical mission support function. He coordinates DPW projects and ensures that all volunteer team members are trained, medically examined and respiratory fit tested annually in accordance with the U.S. Forces Korea Environmental Governing Standards.

Since its founding, team members have been trained to remove asbestos in small to medium-level abatement projects, striving to conduct the work effectively and safe.

In addition, the team uses data collected

from asbestos surveys conducted in 2000 to 2003 to ensure that, if a project is likely to encounter asbestos, the team will be ready to identify and remove it in the projects' early stages.

The team's effort has not gone unnoticed. Since its founding, USAG Yongsan team has saved more than \$3.2 million and reduced the asbestos removal requirement from 30 to 60 days per project to less than a week, when compared to contracting out the work.

Cost savings and avoidance as well as accelerating projects allow the DPW to do more and spend funds on projects that improve the quality of life for Soldiers and Families in these resource constrained times.

Through this team's dedicated efforts, USAG Yongsan can provide timely and cost-effective asbestos abatement work, ultimately providing a safer environment and peace of mind for its community members.

2019 brings changes to Environmental Advisory Board

By Sheri Moore
USACE, Headquarters

The Environmental Advisory Board has supported and provided invaluable guidance to the Chief of Engineers for almost 50 years, and 2019 will represent a big change for the historic EAB.

In fiscal year 2019, the EAB will close out its tenure as a U.S. Army Corps of Engineers Federal Advisory Committee, and will see its functions re-established as subcommittee of the U.S. Army Science Board.

The EAB has operated as a “discretionary” FAC, meaning that it was not established per a mandate from Congress, but at an agency’s own discretion to meet a specific need.

USACE and other federal agencies have both discretionary and non-discretionary federal committees in operation.

In FY18, the Army looked to streamline operations and decided to “terminate” the EAB as a separate FAC, but, because of the value the EAB has continued to provide over its history,

the Army decided to maintain the EAB’s responsibilities as a permanent subcommittee on the ASB.

The closeout of the EAB and initiation of the Environmental Subcommittee of the ASB will occur over the remainder of FY19 and the start of FY20, respectively.

Each individual who has served as a member of the EAB has provided significant contributions to both USACE and the nation.

Since April 1970, when then Chief of Engineers Lt. Gen. Fredrick Clark established the EAB, its members have helped steer USACE into more sustainable and environmentally-sound practices.

Most notable of those accomplishments is the establishment of USACE’s Environmental Operating Principles. The EOPs are a part of everything USACE does; even this publication uses the EOPs to guide its themes.

Beyond the EOPs, the EAB has provided advice and recommendations to the chief of engineers on a wide range

of USACE-related environmental topics, including, but not limited to providing environmental flows at USACE projects, improving recruitment of STEM talent in USACE, prioritizing ecosystem restoration projects, and developing a nationwide permit for low-head dam removal in the regulatory program.

EAB members, who are volunteers from academia, non-federal agencies, private companies, or non-profits, will continue to meet and work on current work topics in 2019, as the transition to ASB is formalized.

The public can expect one more public meeting with the chief of engineers, likely this summer, and the new subcommittee will be formed in the fall of the new fiscal year.

The USACE EAB support team will provide updates on the transition and on the content of the EAB’s work in each edition of this publication.

More information on the EAB and how the public can participate in future public meetings is available on the USACE homepage at:

www.usace.army.mil.



(USACE, New York District)

The Environmental Advisory Board participated in an inspection of New York Harbor alongside partners and stakeholders on September 20, 2018.

GREENING

the **FORCE**

By Marti Sedgwick
USACE, Headquarters

The U.S. Army Corps of Engineers needs to think about normal operations differently in order to “green” the Corps fleet. Everyone knows the “chicken or the egg” paradox, but do you know the paradox concerning electric vehicles and charging stations? This paradox exists at the district level when trying to “green” the local fleet.

What happens if the vehicles arrive before infrastructure is in place?

Project managers must make the decision to lease EVs first or buy charging stations. GSA's Blanket Purchase Agreement can be used to purchase vehicle charging stations easily. The GSA BPA includes five charging station manufacturers and 76 equipment configurations, including Level 1, Level 2 and DC fast charging options. EV technology and vehicle selection has vastly improved in recent years. These higher-tech vehicles operate more efficiently than ever.

There are two basic types of EVs: all-electric vehicles and plug-in hybrid electric vehicles. Both types are offered

on GSA's leasing program. In addition to charging from the electrical grid, both types are charged in part by regenerative braking, which generates electricity from some of the energy normally lost when braking. These new EVs cost less to run (roughly 20 percent lower) and use better technology to increase efficiency.

AEVs run only on electricity. Most have all-electric ranges of 80 to 100 miles which fit into several Corps mission needs. When the charge is depleted, it can be re-charged in 30 minutes with DC fast charging. If the mission dictates a longer range, a PHEV may be a better choice. PHEVs run on electricity for shorter ranges (6 to 40 miles), then switch over to an internal combustion engine running on gasoline when the battery is depleted.

The flexibility of PHEVs allows drivers to use electricity as often as possible while also being able to fuel up with gasoline if needed. Powering the vehicle with electricity from the grid reduces fuel costs, cuts petroleum consumption, and reduces tailpipe emissions compared with conventional vehicles.

When driving distances are longer than the all-electric range, PHEVs act like hybrid electric vehicles, consuming less fuel and producing fewer emissions than similar conventional vehicles.

Electric vehicles typically cost more than conventional gasoline vehicles, but EV leasing options have greatly improved each year as the price of leasing has reduced. GSA is offering a variety of sedans and light duty EV trucks in fiscal year 2019 at very competitive monthly leasing rates and mileage.

Although USACE has more work to “green” its fleet, there has been successful implementation of EVs at a few pilot locations. The first location to implement a type of electric vehicles was the Washington Aqueduct. WAD purchased 15 Polaris GEM® vehicles to replace leased GSA conventional vehicles and gas-powered golf carts.

Historically, WAD has not been able to meet the GSA minimum mileage standard due to the low mileage mission mainly on the WAD reservation, but these vehicles are not dependent on GSA standards. The all electric GEM® vehicles, depending on the configuration, will serve as passenger vehicles or as operation vehicles with a truck bed and toolbox.

Each vehicle is “street legal” and may be driven outside the reservation as long as it has a license plate.

USACE Rock Island District has two EVs at Saylorville and Coraville lakes. Saylorville Lake exchanged a pickup truck for an EV.

Although exact numbers are not known, Saylorville managers estimate that operational costs are pennies on the dollar compared to the pickup truck. Coraville Lake managers calculate an operational cost of \$0.44 per mile. An additional benefit is that lake visitors are fascinated by the vehicle!



GSA's Blanket Purchase Agreement can be used to purchase vehicle charging stations like those illustrated on the right, including Level 1, 2 and DC fast charging options.



(Photos by Jeff McCrery)

USACE Rock Island District has two electric vehicles being used by park rangers at Saylorville and Coraville lakes. Although exact numbers aren't known, it is estimated that the operational costs are pennies on the dollar as compared with conventional vehicles.