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The Corps Environment

24 Park ranger leads charge to conserve lake's natural resources

Environmental Operating Principle #1

Foster sustainability as a way of life throughout the organization.

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Environment

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Send articles, photos, events, letters or questions to the editor, at Corps-Environment-Magazine@usace.army.mil.

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

ENVIROPOINTS

Sustainability: Ensuring mission success in the present, future

By Maj. Gen. Jeffrey L. Milhorn
Deputy Commanding General for Military and International Operations
U.S. Army Corps of Engineers

At the U.S. Army Corps of Engineers, we always keep an eye toward the future to ensure the actions we take today will be sustainable in the future.

Taking into consideration long-term effects when developing near-term solutions serves as a mission enabler. It enables continuity of operations, while setting conditions for the future.

As USACE's Deputy Commanding General for Military and International Operations, I oversee our more than $24 billion design, construction, and environmental programs that are executed for Department of Defense (DOD) and non-DOD agencies as well as foreign countries on an annual basis.

Our skill sets are as diverse as the needs of our stakeholders. Whether it is providing technical support on environmental reviews or constructing multi-million-dollar facilities, quality is paramount.

In order to remain a world-class organization, we will continue to set the professional standard through our responsiveness and through our quality of work.

When it comes to delivering quality solutions, it is not just about delivering something that will address current needs, it also needs to be adaptive to future conditions as well. This capability is enabled through discipline, innovation and a strong adherence to our USACE Environmental Operating Principles (EOPs).

Environmental considerations serve an intrinsic role due to the ubiquitous nature of USACE operations, actions and activities.

The seven guiding principles outlined in our EOPs serve as the backbone for all that we do across all mission areas. They reinforce our role in, and responsibility for, sustainable use, stewardship, and restoration of natural resources.

The first guiding principle, which is also the theme of this edition of The Corps Environment, is to foster sustainability across the full lifecycle of our programs and projects.

In addition to statutory requirements, sustainability remains a priority due to associated long-term benefits that enable our world class program delivery.

We have a diverse mission set at USACE that includes military missions, civil works, contingency operations, research and development and more. Key to providing enduring support to all of our mission areas is being able to adapt and evolve to meet the ever-changing needs of our stakeholders and our nation.

Maj. Gen. Jeffrey L. Milhorn
Deputy Commanding General
for Military and International Operations
U.S. Army Corps of Engineers

This year, COVID-19 put our adaptability to the test and our entire enterprise rose to the challenge — balancing our critical mission requirements under pandemic conditions while all along exceeding national response requirements.

In coordination with the Federal Emergency Management Agency and the Department of Health and Human Services, our Army engineers created four standard plans for converting existing facilities into temporary hospitals, known as Alternate Care Facilities (ACFs). These standard plans were shared with state and regional partners to expand much needed care capacity in a rapid fashion. Nested into these plans was also the capability to adjust designs to support states/territories/Tribal nations' needs for specific site locations.

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ENVIROPOINTS

This was sustainability in action — not only supporting the immediate response activities, but also creating plans that stand ready to address future needs as well.

In addition to USACE being the federal government's lead public works and engineering support agency during emergencies, we also have one of the largest environment restoration and environmental compliance roles in the federal government.

Our more than 4,000 multi-disciplined, highly specialized environmental professionals support the execution of our programs across the enterprise.

Under our environmental programs, we are ensuring that our Soldiers, Sailors, Airmen and Marines have the air, water and land needed to train — improving readiness and agile response daily.

We are cleaning up sites, enabling revitalization and development of infrastructure. We are providing ecological and economic benefits through protection of our ecosystems. We are maximizing collaboration and innovation to deliver solutions faster and we are leveraging natural approaches to address present and future needs.

What do all these activities have in common? Sustainability.

This edition of The Corps Environment highlights sustainability initiatives across the Army environmental community.

This includes the heroic efforts of Mike Pomeroy on page 42, the Detroit Dam power plant operator who in addition to single-handedly keeping the plant in a safe status for 30 hours while a wilderness wildfire engulfed the area, took additional action to protect the water supply for Salem, Oregon.

This edition also highlights the innovative efforts of our drill crews to sustain critical operations during COVID-19 on page 35, the publication of sustainability resource guides on page 6, and award-winning solutions for beneficial use of dredged material on page 32.

The collective actions highlighted in this issue showcases how fostering sustainability as a way of life not only ensures mission success in the present, but in the years to come as well.

Extraordinary Results from Extraordinary People!

Environmental Operating Principles

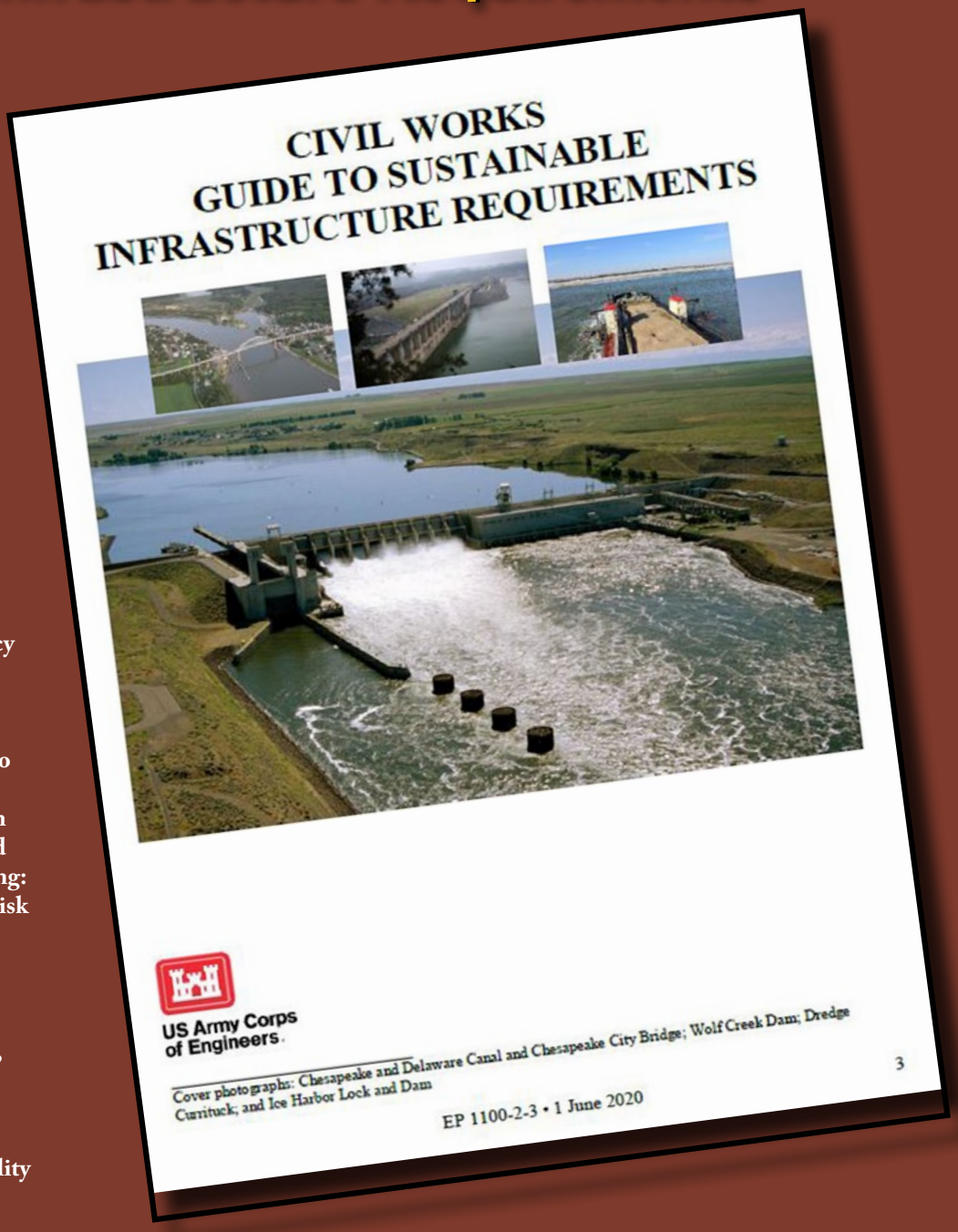
1. Foster sustainability as a way of life throughout the organization.
2. Proactively consider environmental consequences of all USACE activities and act accordingly.
3. Create mutually supporting economic and environmentally sustainable solutions.
4. Continue to meet our corporate responsibility and accountability under the law for activities undertaken by USACE, which may impact human and natural environments.
5. Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
6. Leverage scientific, economic and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.
7. Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

Learn more about the EOPs at:

www.usace.army.mil/Environmental-Operating-Principles

USACE issues Guide to Civil Works Sustainable Infrastructure Requirements

By Kathleen White
and Christian Manalo
USACE Headquarters



The U.S. Army Corps of Engineers (USACE) published the Civil Works Guide to Sustainable Infrastructure Requirements (Engineer Pamphlet (EP) 1100-2-3) in June 2020. The Requirements Guide is for use by USACE Civil Works staff during the planning, design and construction of horizontal infrastructure projects to help ensure activities are performed in a sustainable manner.

The guide identifies key sustainability requirements within specific USACE documents, including engineer regulations, policy alerts, operations orders and policy memoranda. A checklist form is also provided for use by project delivery teams during project execution and to facilitate reviews.

USACE publications referenced in the requirements guide are organized by civil works business lines, including: navigation; flood and coastal storm risk management; ecosystem restoration; environmental stewardship; hydropower; recreation; and water supply.

Although intended for civil works, the guide contains some useful information applicable to military programs. USACE military projects, however, primarily follow sustainability requirements specified in Unified Facilities Criteria 120002 High Performance and Sustainable Building Requirements, Change 4, published October 2019.

The Civil Works Guide to Sustainable Infrastructure Requirements follows two other recent publications, including the USACE Sustainability: Definition and Concepts Guide (EP 1100-1-3), July 2018, and the Civil Works Sustainable Infrastructure Practices Guidebook (EP 1100-2-2), December 2019.

The combination of the three recent USACE publications are key to understanding infrastructure sustainability within the organization. Sustainability is often viewed as an abstract concept that is difficult to see and feel. The new guidance provides greater clarity and tangibility to practitioners responsible for project execution.

For more information on infrastructure sustainability at USACE, please visit USACE's civil works sustainability website at https://www.usace.army.mil/Missions/Civil-Works/Engineering-and-Construction/Sustainability/.

New England District, partners sign Memorandum of Understanding for Cape Cod Bridges

By Ann Marie R. Harvie
USACE, New England District

As one of his last acts as commander of the U.S. Army Corps of Engineers, New England District, Col. William Conde joined federal and state partners in signing a Memorandum of Understanding between USACE and the Massachusetts Department of Transportation (MassDOT) regarding the future of the Bourne and Sagamore Bridges, July 7. The signing took place during a virtual ceremony.

The MOU states that the commonwealth of Massachusetts will lead the design and construction of two replacement bridges. At the same time, USACE will operate and maintain the current Bourne and Sagamore Bridges until the new bridges are in place and open to the public.

Sens. Elizabeth Warren and Ed Markey, Rep. William Keating, Gov. Charlie Baker, Lt. Gov. Karen Polito, Massachusetts Transportation Secretary Stephanie Pollack, MassDOT Undersecretary Scott Bosworth, and Scott Acone, deputy district engineer for programs and project management participated on the call.

Jonathan Gulliver, highway administrator, MassDOT, hosted the event. He discussed the positive partnership that the commonwealth has had with the New England District.

"MassDOT has enjoyed a very productive relationship with the Army Corps of Engineers over the last couple of years and we have been working hard towards getting to this point," he said. "The MOU that is going to be signed today between MassDOT and the Army Corps is formalizing this partnership and will not only provide access to one of the commonwealth's most beautiful areas, but will also support the over $1 billion in annual tourism."

Gov. Baker thanked all the players that made the MOU signing possible.

"I think the path that we have developed is a terrific bridge to the future," he said. "The MOU will serve as a living document and that should reassure residents, the businesses, community and visitors that the current bridges will be maintained while we look toward their successors."

Sen. Warren expressed her delight at the partnership between MassDOT and the district.

"Everyone understands that these bridges are vital lifelines in supporting the regional economy and ensuring public safety," she said. "They're the only bridges that are there to serve as the designated evacuation route for these communities, and we all know that these 80-year-old bridges badly need to be replaced."

Sen. Markey agreed that signing the MOU is an important step towards getting new bridges.

"I'm very excited about what this agreement means in terms of the progress that it represents and how much the citizens of Cape Cod and Massachusetts are going to benefit from this incredible project," he said.

The Massachusetts senator thanked Conde for all his great work throughout his career and wished him the best on his pending retirement.

"I have met with you so many times on so many different projects and you are a 'can do' guy," he said. "You are a problem solver. You are someone that always tries to figure out a way to get to 'yes.' I want to thank you for your service to our country and thank you for what you are doing for Massachusetts today with this Memorandum of Understanding."

Unable to attend the ceremony, Rep. Keating sent his videotaped remarks.

He said that the benefit of the MOU will result in better efficiency, less duplication, less waste and should result in a shorter time frame from completion.

"These are more than bridges," he said. "These are lifelines that result in public safety needs, the need to evacuate. They are lifelines for our economic vitality. They are lifelines for our basic quality of life."

Pollack signed the MOU and wished Conde well on his upcoming retirement.

"We've been working closely with the Army Corps to lay out the framework for moving from where we are now, to two beautiful new bridges that will serve the commonwealth well and the Cape for decades to come," she said.

Conde signed the MOU and looked toward a continued partnership, moving to the next several steps and eventually a really good solution for our 84-year old bridges.

Under Secretary Bosworth rounded out the speakers by expressing his gratitude for a productive partnership.

"Extraordinary work has gone into this, not just getting to the MOU, but getting to this point," he said. "We are embarking now on a journey that's going to be extraordinarily difficult, but we can get it done and together we will build bridges that will last another 80 years."

Team uses geospatial technology to support informed land management decisions

By Lauren Schatz
U.S. Army Environmental Command

The U.S. Army Environmental Command's (USAEC) Geospatial Information & Services team uses geographic information systems and technology to support Army installation operations worldwide, helping units and Soldiers stay trained and ready.

By providing support across the command's four main environmental pillars of compliance, conservation, restoration and pollution prevention, the team efficiently captures, stores, updates, manipulates, analyzes and displays data to support informed decision-making and land management.

The GI&S office is located within the Environmental Solutions Division, Acquisition & Technology Branch of the U.S. Army Environmental Command. This office supports the command and installation staff with environmental intelligence and spatial information to assist in providing educated management decisions on environmental issues.

The GI&S mission is to "enable the USAEC and stakeholders of environmental programs to more effectively meet organizational goals and objectives in promoting the use of environmental intelligence to improve installation management decisions at the headquarters, region and installation level," said Tony Davis, the USAEC geospatial information manager. GI&S also works behind the scenes, helping the command carry out its mission to deliver cost-effective environmental services globally.

GI&S consolidates and focuses Army efforts in using geospatial technology.

In other words, GI&S integrates GIS to produce analytical geospatial products, thus increasing information accessibility, improving accountability and heightening the level of credibility of GIS technology. This integration makes these already useful tools even more effective for environmental management decisions.

According to Davis, this capability is also helpful to assist installations with GIS support for their quarterly data calls and data layer upkeep required by Army Deputy Chief of Staff G-9 Installation Geospatial Information & Services (IGI&S) office for installations

This authoritative spatial information ensures "everybody's on the same sheet of music," Davis said. "It provides better transparency for funding and accountability."

GIS technology encompasses multiple data-producing technologies: sensors, mapping software, analysis tools, satellite imagery and more — all focused on physical properties.

The technology aids in pinpointing the precise spatial relationship between the installation and its natural characteristics.

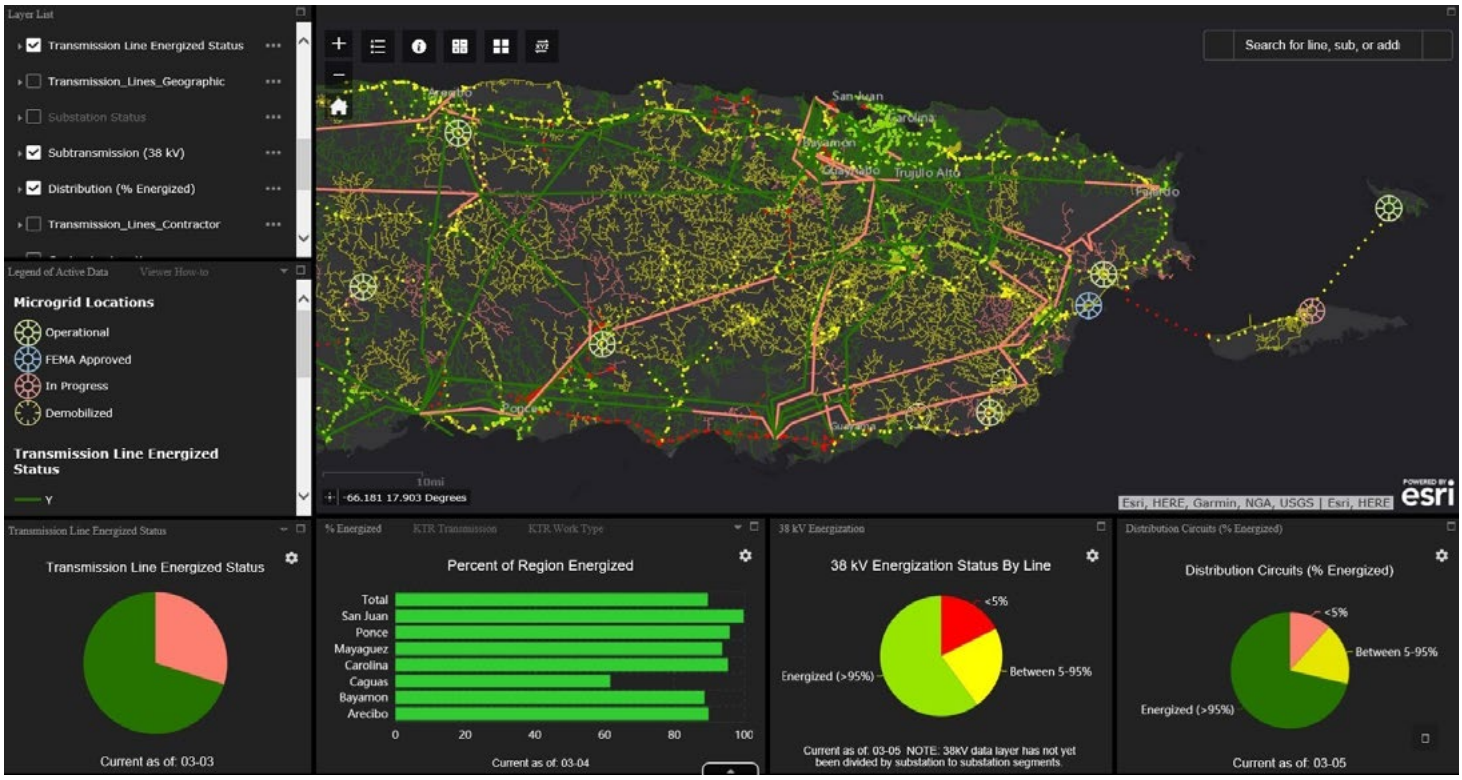
Usage of GIS technology is widespread across the Army and is heavily relied upon in environmental management.

As a form of environmental intelligence, GIS sheds light on the various attributes of geographic areas and helps in solving many complex and interrelated issues faced by the Army.

One example is its involvement in working with various entities in the development of a map service tool.

This tool enhances the tracking of wildfires and prescribed burns and aids in management decisions concerning assets integral to government agencies.

See GIS TECHNOLOGY, page 9



(Illustration courtesy of the U.S. Army Environmental Command)

Geospatial technology provides leaders with the environmental and spatial information they need to make educated management decisions on environmental issues.

Army Environmental Command welcomes new commander

By Troy Darr
U.S. Army Environmental Command

The U.S. Army Environmental Command welcomed its new commander during a change of command ceremony July 10 at the Fort Sam Houston Theatre in San Antonio, Texas.

After commanding the USAEC since 2018, Col. Isaac C. Manigault relinquished command to Col. Alicia M. Masson.

Lt. Gen. Douglas M. Gabram, commanding general, Installation Management Command, presided over the time-honored tradition and the official passing of the colors.

According to Gabram, Manigault's efforts as USAEC commander helped ensure training lands remained available for Army use, helped installation commanders around the world reduce the environmental impact of Army operations and ensured their staffs complied with the countless state and federal environmental laws and regulations.

"At each installation in the world, USAEC's team of professionals is making a difference every day. Helping commanders and staff with everything from clean drinking water to pest management," Gabram said. "Ike's team of scientists affected almost every aspect of installation life and Army operations."

Manigault goes on to serve in the Army's Office of the Inspector General.

(Photo courtesy of Patty Ryan)

Col. Alicia M. Masson, incoming commander, receives the command's colors from Lt. Gen. Douglas M. Gabram, commanding general, Installation Management Command, during a change of command ceremony held at Fort Sam Houston in San Antonio, Texas.

Masson last served as a branch chief with the Human Resources Command.

"Col. Allie Masson… brings with her a wealth of experience from multiple deployments to Iraq and Afghanistan, and the challenging assignment as commander of Radford Army Ammunition Plant," Gabram said. "Without a doubt, her perspective will serve her well as the commander of Army Environmental Command."

Masson becomes the 22nd in a long line of leaders stretching back to 1972 when the unit originally stood up as the program manager for demilitarization of chemical materiel to destroy the nation's stockpile of toxic chemical agents and munitions.

GIS TECHNOLOGY

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Through this effort, GI&S also exemplifies its dedication to the environment by protecting ecosystems, focusing on air quality and threatened and endangered species, such as the red-cockaded woodpecker.

An example of how GI&S strongly supports business systems is through the Installation Status Report, or ISR.

According to the GI&S support document, an ISR "assesses the condition of installation support services, infrastructure and environmental programs using established Armywide standards."

GI&S aids this assessment by providing visual reviews of the land and locations of real property assets.

GI&S support of business systems helps the Army determine more accurate funding needs and navigate financial decisions.

Janice Sterling, geographer, said that the Army has decreased its use of land, and therefore, management must weigh decisions carefully.

"The Army has tried to minimize its footprint, so it's trying to use less land, and because of that… every time we want to construct something, every time a new piece of equipment comes to an installation, every time a new species is identified as an endangered species, the land has to be managed much more carefully than it was when the Army had an almost unlimited supply of land," Sterling said.

The management of GIS has also changed.

"Back when I started about 17 years ago, you could go on an installation and you could find three or four different sets of geospatial data, and not one of them matched the other," Davis said.

The GI&S team plans to further expand and raise awareness of its efforts.

Two of GI&S's current goals are to provide direct support to the installations and create a unified GIS committee within the USAEC, which would further streamline efforts, Davis explained.

The Installation Management Command G4 offered a class for installation IGI&S managers in February in part to generate awareness of geospatial efforts within the command.

The IGI&S managers were surprised to find out the availability of GI&S to support their needs for data layer management. Since then, GI&S has increased its focus on education to the installations and within USAEC.

To learn more about GI&S's current efforts and benefits, visit **https://aec.army.mil/index.php?cID=335**.

Louisville District adopts virtual technology to conduct FUDS mission

By Shatara Riis
USACE, Louisville District

For environmental cleanup projects, public involvement is required at specific stages of response actions by the Comprehensive Environmental Response, Compensation and Liability Act, or CERCLA, provisions.

Traditionally, this stipulation is met by holding in-person public meetings, where the U.S. Army Corps of Engineers' project managers, subject matter experts, along with the contractor, make a presentation and allow stakeholders the opportunity to ask questions and provide comments.

With restrictions on travel and public gatherings due to the COVID-19 pandemic, the project delivery team (PDT) for the Kincheloe Air Force Base Formerly Used Defense Site had to come up with an alternate solution to meet this requirement to present the proposed plan.

According to Clayton Hayes, Louisville District project manager, initially, there was some resistance and uncertainty, but following many discussions and guidance from USACE Headquarters, the project delivery team came to a resolution and began coordinating a virtual public meeting in lieu of meeting in person.

"Having a virtual public meeting seemed to be the only way we could meet this requirement, and for the project to remain somewhat on schedule," Hayes said. "Being this was the first virtual public meeting in our Formerly Used Defense Sites program for the Louisville District, it was difficult at first."

While the district was treading new ground, for the contractor, it wasn't out of the ordinary.

"Jacobs has successfully hosted multiple virtual meetings for other clients, and those experiences would easily translate for a FUDS virtual meeting," said Kim Amley, Jacobs project manager.

Yet, it wasn't jump in feet first. Appropriate coordination and collaboration had to be done.

"Timing was everything. We had to first cancel the original public notice, then determine what platform/technology we could use (what was acceptable to meet the government security requirements, and did our contractor have that capability?)," Hayes said. "We had to revise the specific language for the new public notice, which we wanted to give 45-days advance notice and determine the logistics of how we would present the same information in a virtual environment.

"We had to revise the slide presentation and hold several practice runs, in advance of the scheduled meeting, to make sure everything worked, since we would have to rely 100% on technology," Hayes said.

The team faced many challenges to bring the virtual public meeting together.

"Anytime you cut new ground, it's a challenge with many unknowns. Everyone had different ideas on what we should do. The PDT had to sort out what was important and organize the presentation to fit a virtual environment," he said. "Also, not to mention, our contractor was very patient and cooperative. Jacobs had to adapt to using an acceptable government platform for the virtual meeting, which they did not already have."

Amley agreed with Hayes on the limitations the platforms USACE allows for the meetings, along with long-lead advertisement, and limitations on confirming public attendance.

Even with the challenges, the team worked to come to a successful end.

Conducting internal dry runs to establish the narrative for each meeting, determine procedures for introducing project team members, and establish protocol for technology failures is what made the virtual public meeting for Kincheloe Air Force Base a success, Amley said.

So, while there are no handshakes to establish rapport, and nonverbal body language is nonexistent to aid in communication, the content — words — play a huge part for a virtual public meeting.

According to the Environmental Protection Agency, holding public hearings and meetings virtually aid in continuing to provide meaningful public participation and engagement during the current circumstances.

So, for now, the virtual public meeting setting has become the new "norm," replacing in-person meetings for projects in the Louisville District FUDS program.

Army rehabilitates military training lands to ensure Soldier readiness

By Jacquee Minor
U.S. Army Environmental Command

The Army's mission is to deploy, fight and win our nation's wars. To ensure mission success, it must conduct tough, realistic and dynamic training on designated lands.

Most Army installations were established in sparsely populated areas in the 19th and early 20th centuries. Decades of commercial development and urbanization have encroached on training land boundaries, putting constraints on the training requirements of some installations.

In what can sometimes be conflicting and competing interests, the Army nevertheless finds ways to be a good neighbor while meeting its training and testing requirements.

The Army Compatible Use Buffer, or ACUB, Program was established to mitigate encroachment on its installations from forces inside and outside their boundaries. Military installations by their nature create lots of noise, dust, smoke and other irritants that can disturb neighboring communities while, on the other hand, the lights and noises of mass development can interfere with military training and testing.

Coral Eginton, ACUB team lead, U.S. Army Environmental Command (USAEC), said the goal of the program is to keep the surrounding community at a safe distance, enable Army readiness through conservation of the natural landscape, and protect habitats and preservation of working lands. Under ACUB, installations work with partners to encumber off-post lands to establish buffer zones that benefit all parties involved.

Overall, the Army's 40 ACUB programs have protected 390,903 acres to date. ACUB transactions total more than a billion dollars, including the cost of the land or conservation easements and a host of other costs associated with managing the land. There are 50 ACUB partners, which combined have contributed funds or services to cover approximately 45% of total program costs.

"The most dynamic thing about this program is not just that it preserves the natural landscape," Eginton said. "It offers landowners the flexibility to sell their land or to continue to use their land for their purposes under a conservation easement. It's not just a benefit to the Army or the habitat, it's a benefit to the landowner as well. Everybody walks away happy."

USAEC oversees up to 25 active ACUB cooperative agreements that allows the Army to develop partnerships with land trusts and other conservation entities. These partners establish conservation easements or acquire land in their name, then manage and maintain it in perpetuity to ensure it remains an effective buffer. The Army funds the partner to accomplish the common goal of preserving open spaces, habitat and working lands, but doesn't hold title to any of the properties.

"There are passionate environmentalists in the Department of Defense, working towards Army readiness," said Eginton. "I had very little understanding of what the military services did to steward the environment before I worked for one.

"As an installation archaeologist with the National Training Center at Fort Irwin, (California) I saw firsthand how invested and interwoven these programs are on the ground. My respect for the Army's environmental stewardship has only grown since entering into the ACUB world," Eginton said. "Military installations manage some of the most well-preserved habitats in the country, and they engage those habitats to train Soldiers effectively. It's a beautiful partnering of conservation and use."

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Fort Bragg has a long history of training on state game lands, which also benefit from the North Carolina post's ACUB land protection efforts. (Fort Bragg courtesy photo)

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Take, for example, several installations that have mastered the ACUB program.

Habitat preservation

Fort Benning sits on 182,000 acres of pristine Georgia land between the Piedmont Mountains and coastal plains.

Brent Widener, technical cooperative agreement manager for the Benning ACUB program and wildlife biologist, said their highest priority is buffering a one to three-mile zone on the eastern edge of the installation that hosts a suite of threatened and endangered species.

In 2005, the base realignment and closure, or BRAC, initiative moved the U.S. Army Armor School from Fort Knox, Kentucky, to Fort Benning, triggering a huge impact on the red-cockaded woodpecker, an endangered species. When it became apparent the installation's mission would not provide a safe environment for the species, ACUB sought to reach a balance.

"As the mission expands and grows, the intent is to secure off-post properties through our partners that can broaden the landscape upon which all those species depend," Widener said. "So instead of having land that can support those species, the intent is to help establish those same habitats outside the boundaries that can support the species that are in many cases only on Fort Benning."

To date, the post has protected more than 35,000 ACUB acres. Partners maintain the land that supports endangered species like the gopher tortoise and red-cockaded woodpecker, building habitats the species depend on outside and inside the installation boundaries.

Widener points to significant progress made, in which they've reached 75% of the goal to protect the gopher tortoise. Red-cockaded woodpeckers are dependent on mature pine trees. The conservation partners are working to grow more pine trees outside the installation that can support the woodpecker population over the long term.

The wildlife biologist expects a new cluster of woodpeckers to come online over the next several years.

According to Widener, the longleaf pine ecosystem at the installation needs to burn.

"It needs to be set on fire with prescribed controlled burns that are managed and maintained to make sure it doesn't adversely affect the habitat," he explained. Prescribed fires every few years, help prevent catastrophic wildfires and, in the event of a wildfire, reduces its intensity so that it's easier to control.

Old restricted training signage is all but gone from the Fort Bragg landscape due to rehabilitation of the RCW population. (Photo courtesy of The Nature Conservancy)

Fort Benning's partners include the Georgia Nature Conservancy, Georgia Department of Natural Resources, Georgia Forestry Commission, U.S. Fish and Wildlife Service and the Natural Resources Conservation Service.

Grandfather ACUB Program

The ACUB program at Fort Bragg, North Carolina, "the grandfather ACUB," started in 1999 with the acquisition of 550 acres. Since that time, the installation, in conjunction with its partners, has acquired close to 25,000 acres of buffer, mostly to the south and southwest of its borders.

The sprawling installation sits on about 170,000 acres of the North Carolina sandhills, a once vanishing longleaf pine ecosystem, now flourishing and recovering under the faithful stewardship of the North Carolina Sandhills Conservation Partnership group. The post is host to a population of approximately 55,000 military personnel and another 8,000 civilians working on the installation.

"We've done a good job so far on the southern boundary pushing out to about a mile to a mile-and-a-half in most areas," said Barry Hull, Fort Bragg ACUB coordinator. "It gives us enough of a buffer that we can do what we need to do and not negatively impact our neighbors." Most of the eastern edge of the post is metropolitan Fayetteville.

The program protects five endangered species.

When the endangered red-cockaded woodpecker came under the protection of the U.S. Fish and Wildlife Service in 1990, the post was forced to shut down its operations to preserve the woodpeckers' habitat. All that's been resolved through the ACUB program.

"By 2006, we reached our recovery population, and by 2009, we had relieved a majority of the restrictions on the installation related to the woodpecker," Hull said. "We'll always have some restrictions to be compatible with our neighbors' endangered species and their habitats."

A retired military officer, Hull knows firsthand how a conservation program can enhance not just the environment, but the Soldiers' experience.

As a young Soldier training at Fort Bragg in the 1980s, Hull said that he was often under siege by ticks. The insects were so bad, tick inspection stations were set up around the camp.

"One of the great things we've learned here," Hull observed, "is that 90% of what's good for the habitat is good for the Soldiers." He said managing the land with the science of prescribed burns has not only improved endangered species populations, it's meant fewer tick bites for the Soldiers.

The North Carolina Sandhills Conservation Partnership facilitates collaboration between various federal, state, and non-profit conservation groups, consisting of the U.S. Fish and Wildlife Service; Fort Bragg; U.S. Army Environmental Command; North Carolina Office of Conservation, Planning and Community Affairs; North Carolina; Wildlife Resources Commission; North Carolina Division of Parks and Recreation; North Carolina Forest Service; The Nature Conservancy; Sandhills Ecological Institute; and the Three Rivers Land Trust.

Great Community Involvement

Facing massive expansion of the national capital region (NCR) commuting area, Terry Banks, chief of the Environmental Division at Fort A.P. Hill, Virginia, saw the opportunity for an ACUB program during the early 2000s.

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Over its now 14-year existence, the ACUB program there has protected more than 14,000 acres of private lands, mostly through conservation easements.

Fort A.P. Hill sits on about 76,000 acres near the Rappahannock River, a significant natural and cultural feature that also hosts part of a National Park Service scenic trail. The installation harbors federally protected plants, the swamp pink, the small whorled pogonia, and two federally protected bats, the Indiana bat and the Northern long-eared bat.

Situated near Fredericksburg, Virginia, the post has seen significant population growth and light pollution from expanding urbanization and development. Focusing ACUB efforts on the north and northeastern borders, the post has reached about a third of its ultimate goal, with an abundance of willing landowners around them.

As a regional training facility for all branches of the military, the installation's ACUB program is mission driven, but has a rich assortment of natural and cultural resources that can support land protection efforts.

Jason Applegate, another ACUB program coordinator there, said it's important to manage the needs of both the mission and environment.

"We end up doing multiple levels of good, making sure we're mission ready," Applegate said.

"ACUB allows us to maintain that capability with less impacts to the community," he said. "It is still relatively rural around Fort A.P. Hill. The ACUB program is vital to ensure we can maintain that rural environmental and military mission.

"We are between the northern Virginia/D.C. metro and Richmond areas, so we're really feeling the squeeze." Applegate said, hoping to eventually amass a 35,000-acre buffer from incompatible development.

Banks, who has a biology background, appreciates the good fortune they enjoy at Fort A.P Hill.

"Our military mission has afforded us the opportunity to have these wonderful natural resources we need to protect," she said. "ACUB allows us to protect those resources and the military mission. It's really a great combination."

The Fort A.P. Hill ACUB program has earned a number of state and federal recognitions.

"It's a very rich environment for us," said Applegate.

Fort A.P. Hill is a member of the Rappahannock Land Protection Partnership, which also includes the Virginia Outdoors Foundation, The Conservation Fund, The Trust for Public Land, The Nature Conservancy, U.S. Fish and Wildlife Service, Chesapeake Conservancy, Ducks Unlimited, and Northern Neck Land Conservancy.

This partnership coordinates their efforts among members and leverages resources where possible to meet their objectives.

(Photo ourtesy of The Conservation Fund)

The Fort A.P. Hill ACUB partners, The Trust for Public Land, The Conservation Fund, and Virginia Outdoors Foundation, all work collaboratively to protect working agricultural lands and the beautiful natural landscape of the Rappahannock River.

USACE marks 22nd year of cleanup on southern Alaskan Island

"The program allows us to infuse money into rural communities with limited job opportunities while the Tribe cleans up Department of Defense impacts."

- Robert Glascott

By Rachel Napolitan
USACE, Alaska District

Nestled 20 miles south of Ketchikan, Alaska, the Metlakatla Indian Community resides on Annette Island. The Tribe opted out of the Alaska Native Claims Settlement Act when Congress passed the settlement agreement in 1971.

Today, the Annette Islands Reserve is the only Indian reservation in the state and the Tribe lives among the remnants of past military and federal use of the land.

Through the Native American Lands Environmental Mitigation Program (NALEMP), the U.S. Army Corps of Engineers, Alaska District and the Metlakatla Indian community are working together to continue environmental cleanup efforts for their 22nd year.

Reachable only by a 15-minute floatplane or 45-minute ferry ride from Ketchikan, the Annette Island Landing Field Formerly Used Defense Site (FUDS) property covers approximately 12,783 acres on the southwest peninsula of Annette Island.

Since October 2019, work by the Tribe under NALEMP has focused on three sites — an old fuel pipeline, an air warning center garrison and abandoned utility officer buildings.

"Based on funding, the Tribe concentrates on a few projects each year," said Craig Scola, project manager, USACE Alaska District. "Under this year's cooperative agreement, there is a half a million dollars of cleanup work happening."

Each of the sites has a history starting with the military and subsequent use by other federal agencies interested in the island for various purposes.

Built in 1942, the air warning center garrison, consisting of Quonset huts structures, helped detect the sound of incoming airplanes. In 1949, the huts' metal roofs and wood floors were stripped for use at other locations while the remaining structural elements were left in place. Over time, trees and vegetation had overtaken the abandoned and weathered infrastructure.

Work at the air warning center garrison in 2020 focuses on the removal of existing structures and remaining debris with similar work underway at the nearby abandoned utility officer buildings.

"When you go to these sites, you begin to see how the abandoned infrastructure is impacting native people," Scola said. "For communities that focus on subsistence lifestyles, an old building can inhibit their ability to pick berries, harvest game, cultivate the land and impact their traditional way of life."

This year also was a continuation of the removal of a fuel pipeline system. With around six miles of pipeline on the island, the removal is done in sections as the pipeline weaves through a variety of terrains and areas of the island.

Under the current cooperative agreement with the Tribe, the goal is to remove 1,200 feet and then stack the metal in a holding area until it can be removed from the island.

"Little by little we are cleaning up their island," said Robert Glascott, USACE Alaska District program manager for NALEMP. "The program allows us to infuse money into rural communities with limited job opportunities while the Tribe cleans up Department of Defense impacts."

The Tribe relocated to Annette Island from British Columbia in 1887 after receiving the land from the U.S. government following a doctrinal dispute with church authorities in Metlakatla, British Columbia.

Military interest and operations on Annette Island began in 1940 when the Metlakatla Indian Community entered into agreement with the federal government to allow for the construction and operation of the Annette Island Landing Field. Since then, facilities and uses of the island have changed numerous times to various federal agencies, with 90 sites and around 300 subsites identified for cleanup since investigations began in 1990.

The Office of the Secretary of Defense (OSD) considers human health and other factors, including impacts to traditional practices, subsistence activities and economic viability, to prioritize funding under the Native American Lands Environmental Mitigation Program. Tribal communities work with the Defense Department on a government-to-government basis to determine the best ways to mitigate the environmental impacts and are involved from project design to cleanup efforts through cooperative agreements with OSD.

"The Metlakatla Indian community can work almost 300-days-a-year, whereas up north, tribes are often limited by weather to maybe 90 days," Glascott said. "This provides employment almost all year; builds capacity, technical remediation skills and resilience; and puts dollars into rural communities that may not have many job opportunities."

Since 1998, the program has funded cleanup on Annette Island with the Alaska District administering cooperating agreements for OSD. To date, funding has totaled around $10 million through 16 separate cooperative agreements.

(USACE courtesy photo)

An individual peers into an abandoned military structure on Annette Island. Starting in 1940, military and other federal agencies used the island for various purposes, leaving long since abandoned structures and debris on the tribal lands. USACE Alaska District administers the contract under which the Metlakatla Indian community performs cleanup efforts for the Native American Lands Environmental Mitigation Program.

"A unique part of working with the Metlakatla Indian community is that they are the only tribe in Alaska on a reservation," Scola said. "We perform environmental cleanup to their Environmental Protection Agency's identified regulatory levels and work with them on right of access for contractors to the island."

This relationship was especially important this summer as COVID-19 spread across the nation. The Tribe implemented restrictions and quarantines for people entering and exiting to prevent the virus from spreading.

"We could not perform our annual visit to the sites due to travel restrictions," Scola said. "Instead, we used status reports and photographs to document progress and find virtual means to work through the challenge."

The restrictions didn't stop work on the program, but it did slow it down.

Before coming to the island, contractors needed to isolate for two weeks. But, since most of the work is in the field with limited contact and there has yet to be an instance of COVID-19 on the island, the Tribe was able to successfully continue cleanup under the program and accomplish many of the goals under the current cooperative agreement.

Next year, work will pivot to several new sites and this continuation of the program will help with the ongoing efforts needed to restore the land.

"I get to see the good this program does in communities," Glascott said. "It is a crossroads of environmental cleanup and helping people in rural communities continue their traditional subsistence way of life in Alaska."

During 2020, the Alaska District will administer $7 million in funding through 20 cooperative agreements for the Native American Lands Environmental Mitigation Program, the most in the country.

The Autonomous and Robotic Remote Refueling Point (AR3P) ruggedized system delivers fuel as a ground-based autonomous unmanned robotic arm refueling capability system that is rail mounted and deployed from a standardized shipping container. *(U.S. Army Photo)*

Defense Center announces 2021 technology projects

By Jennifer Rawlings
U.S. Army Environment Command

The National Defense Center for Energy and Environment (NDCEE) announced six technology projects selected to receive grants for demonstration and validation beginning in 2021.

They include:

- **Greywater Reuse Pretreatment Module** for the Lightweight Water Purifier.
- **Direct Current Power Distribution** to improve efficiency of distributing small unit power.
- **Honey Badger 50 Fuel Cell System - 50 W Reformed Methanol Wearable Fuel Cell Power System.**
- **Immediate Response Force Soldier Offload** to reduce paratrooper injuries.
- **Autonomous Robotic Remote Refueling Point System Objective Field Prototype.**
- **Improved Riveting Hammer** to maximize worker performance and health.

NDCEE provides a direct funding process for Department of Defense agencies seeking to demonstrate, validate and transition commercially available off-the-shelf as well as hot off-the-lab bench innovations for military application.

Funded projects typically range from 1-2 years with an average annual cost of $100,000 to $400,000. A support agreement is signed by the DOD agency willing to demonstrate the technology, and a DOD transition partner is required to ensure the successful project is implemented DOD-wide.

Proven technologies that are beyond the research stage are considered strong project candidates. Projects must meet the basic eligibility requirements and clearly address four scoring criteria: mission/readiness, technical quality, transition potential and modernization/innovation.

Innovative technologies are demonstrated and validated at active installations for military application. Proven technologies are transitioned to the services, other federal agencies and to the public.

Implementing technologies to enable the Army to fight and win our nation's wars are in accord with the Assistant Secretary of the Army for Installations, Energy and Environment (ASA IE&E), the Honorable Alex Beehler, directive that "the Army needs to build a 'technology-enabled' force by 2028."

The Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) is designated by the ASA IE&E as the NDCEE DOD lead agent. The U.S. Army Environmental Command provides NDCEE program management. Transitioned projects will ensure the NDCEE program remains an enabler in accomplishing the DOD mission with an emphasis on "achieving dominant capabilities through innovation and technical excellence."

The NDCEE serves as a national resource for advancing technologies and processes that address high-priority environmental, safety, occupational health, and energy (ESOHE) challenges. Created by congressional mandate in 1991, the NDCEE works to integrate ESOHE innovative technologies decisions into the life-cycle planning of DOD activities.

The National Defense Center for Energy and Environment (NDCEE) is a Department of Defense program whose mission is to demonstrate and transition technology solutions in support of the DOD as it strives to enhance readiness, meet sustainability goals, and support warfighters at home and abroad.

The fiscal 2022 call for NDCEE project proposals is from March 1 through April 1, 2021. For additional information on the NDCEE projects or how to submit a nomination package, please visit **https://www.denix.osd.mil/ndcee/index.html**.

(Photo by Blanca Krouse, North Wind Portage)

U.S. Army Corps of Engineers, Buffalo District, and contract employees pose in front of 5,000th truckload of FUSRAP-related material to leave the Luckey Site for disposal in Belleville, Michigan.

Luckey FUSRAP site meets 5,000th truckload milestone

By Arleen Kreusch
USACE, Buffalo District

On July 31, the 5,000th truck left the Luckey Formerly Utilized Sites Remedial Action Program (FUSRAP) site loaded with material contaminated with beryllium, radium-226, thorium-230, uranium-234, uranium-238, and lead.

According to Steven Vriesen, Luckey site project manager, this marks 725,000 truck miles traveled; safely transporting 83,839 tons of contaminated material off-site for disposal in Belleville, Michigan.

"This is a prime example of the Corps of Engineers 'moving dirt' safely and effectively, while overcoming the adversities of COVID-19," he said. "Despite all the challenges that each of us has faced since the beginning of this pandemic, the project delivery team is as resilient as ever, and continues to deliver the program uninterrupted."

"I'm incredibly proud of our team's safe execution of the FUSRAP mission at this major milestone in the Luckey project" said Lt. Col. Eli S. Adams, commander, USACE Buffalo District. "Our top priority during the cleanup continues to be the protection of human health and safety for the community and the workforce as well as protecting the environment.

Adams added that the district actively monitors the evolving COVID-19 situation to safeguard employee health and welfare while working during the pandemic.

"We communicate regularly with our personnel and contractors to emphasize the importance of taking appropriate actions, such as social distancing, wearing appropriate protective equipment, temperature screening of individuals before entry into the site," he said.

From 1949 to 1958, the site, which is located near the Village of Luckey, Ohio, was operated as a beryllium production facility under a contract with the Atomic Energy Commission, resulting in beryllium, radionuclide, and lead contamination of site soils and groundwater.

Beryllium is a brittle, light-weight metal used in a wide variety of applications in the aerospace, nuclear and manufacturing industries; and is a highly toxic carcinogen that can result in acute and chronic lung damage.

The Buffalo District remediation contractor began shipping FUSRAP-related material from the Luckey Site in June 2018. With truckloads averaging approximately 16.5 tons, typically 70 truckloads of material are shipped from the site each week.

Since the cleanup contract was awarded in 2015, the contractor has worked over 370,000 hours without a lost time accident. Cleanup of the site began in the Phase 1 excavation area on April 16, 2018, and the remediation contractor began excavation in the Phase 2 area on July 23, 2020.

"Moving tons of contaminated soil from the Luckey site is an accomplishment for USACE and a success story for the community, but to me, having moved this much contaminated soil by truck with no incident is truly an amazing feat," said Frank D'Andrea, FUSRAP contracting officer. "Thanks goes out to the USACE field team (John Thierry, Tychsen Yager and Luis Rivera Diaz, civil engineers from the Ohio area office; and Marc Graham, health physicist, environmental health team) for overseeing the contractor and managing this with the utmost attention to detail."

During March 2017, USACE released an Explanation of Significant Differences for the Record of Decision for the Soils Operable Unit that adjusted the cost estimate for the soils remedy to $244 million, which was a significant change over the initial estimated cost of $59.4 million in the 2006 Record of Decision for Soils Operable Unit.

Since the current contract for the cleanup is close to reaching its $100 million capacity, the contracting office advertised a request for proposals in June 2020 for the next contract to complete remediation of the site. A separate cost reimbursable contract is in the process of being awarded to deconstruct the former beryllium production building on the site.

"We are looking forward to removal of the production building, which will be another great accomplishment for the community!" D'Andrea added.

During the cleanup, groundwater at the site is sampled every six months. Once the contaminated soil is removed from all six phase areas, concentrations of these contaminants in groundwater will decrease naturally in the subsurface. Groundwater wells will then be sampled annually for beryllium, lead and uranium until sampling results show a progressive trend that indicates safe drinking water standards have been met.

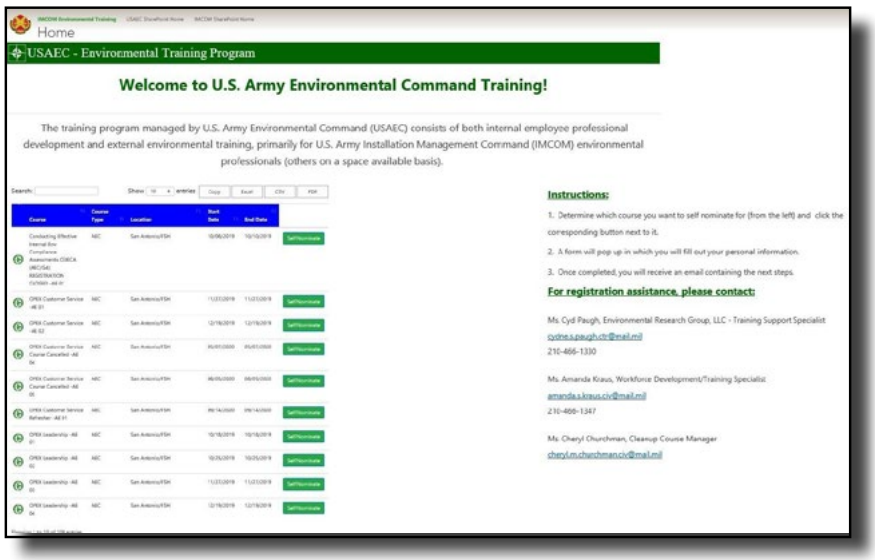
Workforce development team improves training through distance learning

By Cathy Kropp
U.S. Army Environmental Command

The U.S. Army Environmental Command offers courses to ensure environmental professionals worldwide remain trained and mission-certified during COVID-19.

Environmental work on Army installations must continue to avoid noncompliance, violations and penalties associated with more than 100 environmental laws, statutes and executive orders.

Keeping up-to-date on certifications and environmental requirements is a constant challenge made even more difficult after health protection measures were put in place as a result of the pandemic.



USAEC's workforce development, or WFD, team routinely looks for ways to improve the environmental training program to ensure it meets the needs of environmental professionals throughout the Army.

Surveys of garrison environmental professionals showed there was a consistent percentage of staff that just could not travel for training.

Typically, the demands of the job were cited as the reason. All this, plus budget cuts and travel budget caps had the WFD team looking for solutions to minimize environmental training travel and costs.

The USAEC WFD team purchased licenses for Adobe Connect online hosting service and began transitioning USAEC-provided training to distance learning in 2019.

"What we set out to do was modernize and expand our reach through distance learning," said Amanda Kraus, USAEC's WFD team lead and Adobe Connect coordinator.

Distance learning enabled courses to be broken down into smaller, and often more focused pieces, she added. Those who could not break away from work to attend a 5-day course, find multiple smaller distance learning alternatives more appealing.

"At the end of the day, distance learning allows us to reach a much bigger percentage of our population," said Dave Giffin, G-4 environmental division chief, Installation Management Command.

"We began switching to distance learning where possible more than a year ago to reduce travel costs associated with training so the Army could better fund its modernization efforts," Giffin said. "That early transition really set us up for success and allowed us to continue to train our environmental staffs across the globe during COVID-19."

"Our distance learning efforts have been tested by recent events and far surpassed goals for this year with more to come," Kraus added. "The online platform allows us to offer live, and with recording features, on-demand training that learners can access from any internet-enabled device wherever they are in the world from home or the workplace."

USAEC is the Army's program manager for the environmental restoration program known as cleanup.

Since some training courses were developed by the USAEC staff, the cleanup program management training, environmental and disposal liabilities course, and Army Environmental System training for reporting cleanup status and costs to complete were the first courses to transition to the new platform.

Since then the WFD team has worked with other contracted training providers to plan and prepare more environmental training for the distance learning platform.

From one distance learning class in 2018, that number has grown to 19 scheduled distance learning and 41 onsite courses this year.

With COVID-19 travel restrictions, distance learning classes became the only available source of training; and since March 17, USAEC has scheduled and conducted 40 distance learning courses.

"COVID-19 became a forcing function to ramp up our distance learning portfolio," said Janet Kim, USAEC's deputy to the commander. "While distance learning is a great alternative for now, there are cases where in-person instruction is most effective.

"Once personnel are allowed to travel, we plan to balance the training catalog between distance learning and in-person classes to provide the most effective learning environment for our workforce," she said.

IMCOM centrally funds, and USAEC manages the training program for environmental staff at 67 Army installations in the U.S. and overseas.

This training consists of both internal employee professional development and external environmental training, primarily for IMCOM environmental professionals, but offered to all military environmental professionals when space is available.

Now that IMCOM has become a subordinate of Army Materiel Command, the WFD team includes the much broader AMC industrial base workforce into the environmental training program. The distance learning option also helps integrate the AMC environmental professionals with the IMCOM team.

Environmental staff at industrial base locations are typically limited to one individual at the plant, arsenal or organization, so travel is often constrained.

"As we continue to refine our courses and adapt to student needs, an employee in Korea, who's unable to participate in the training live, could easily receive a URL from us and watch a pre-recorded, two-hour distance learning session on an emerging technology solution and still receive the relevant professional instruction offered in person," said Giffin.

Shawn Andrews, health physicist, USACE Buffalo District, logs in the time of placement for a radon flux canister at the Tonawanda Landfill Vicinity Property. *(Photo by Lisa Berta)*

Buffalo District completes remedial action at FUSRAP vicinity property

By Arleen Kreusch
USACE, Buffalo District

On July 7, members of the U.S. Army Corps of Engineers Buffalo District team performed radon flux sampling at the Tonawanda Landfill Formerly Utilized Sites Remedial Action Program (FUSRAP) Vicinity Property to verify that the record of decision cleanup goals were met.

Validated data gathered from the 108 radon flux canisters that were placed over the excavation areas of the vicinity property indicate that the cleanup goals were indeed met.

"It was very rewarding to be able to complete the cleanup fieldwork for this property in less than a year," said Mark Legeza, health physicist, Environmental Health Section.

Implementation of the selected remedy for the vicinity property was performed from June through December 2019.

"During the targeted shallow removal, 4,345 cubic yards of radioactive-contaminated soils were removed to a depth of five feet using precision excavation techniques guided by rigorous field scanning and laboratory analysis," said Bill Kowalewski, chief, Special Projects Branch. "Additional coordination was required because a separate contractor was used to transport and dispose of the excavated FUSRAP-related materials, exceeding cleanup goals at a permitted out-of-state disposal facility in Belleville, Michigan."

The vicinity property is located in the Town of Tonawanda, New York, and backs up to a line of houses within the city.

"The team was successful in keeping local partners engaged throughout the project including community leaders, residential property owners whose homes were located just yards from the site and an elementary school nearby," Kowalewski said. The New York State Department of Environmental Conservation and local elected officials were kept informed regarding upcoming work and progress being made.

"The Corps' highest priority was to be protective of human health and the environment, and ensure that work was conducted in a safe and efficient manner," said Jeff Rowley, the site's project manager.

Final grading and seeding of the vicinity property was completed in May. During the radon flux sampling and the final grading and seeding of the vicinity property, actions were taken to protect the workforce and mitigate potential impacts of COVID-19. Regular communication was maintained with site workers to emphasize the importance of taking appropriate precautions, such as social distancing, wearing appropriate protective equipment and personal hygiene measures to safeguard their health and welfare.

During 2017, a record of decision was signed for the Landfill Operable Unit of the vicinity property. The selected remedy in the record of decision targeted shallow removal and off-site disposal to address FUSRAP-related material.

"The cleanup goals for the Landfill Operable Unit were set so that a recreational user would have unrestricted use of the site with respect to the FUSRAP-related contamination," said Stephen Buechi, chief, environmental project management section.

The Tonawanda Landfill Vicinity Property was designated into FUSRAP in 1992 when early Department of Energy investigations around the Linde Site detected elevated levels of FUSRAP-related radionuclides in the landfill. The vicinity property consists of two operable units, or OUs: the 55-acre Landfill OU and the 115-acre Mudflats OU. The Buffalo District completed work at the Mudflats OU in 2008 with a no-action record of decision.

USACE will prepare a site closeout report for the vicinity property to document completion of the site cleanup. Once the site closeout report is complete, it will begin the process of transferring the Tonawanda Landfill Vicinity Property to the Department of Energy Office of Legacy Management for long-term stewardship.

For more information on the vicinity property visit **https://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/Tonawanda-Landfill/**.

The Wiesbaden Outdoor Recreation Center received a LEED Silver certification by the Landesbetrieb Bau und Immobilien Hessen at Lucius D. Clay Kaserne, Aug. 11. *(Photo by Alfredo Barraza)*

Wiesbaden Outdoor Recreation Center earns LEED Silver certification

By Alfredo Barraza
USACE, Europe District
Anna Morelock
U.S. Army Garrison-Wiesbaden, Germany

About a dozen attendees witnessed the awarding of a Leadership in Energy and Environmental Design (LEED) Silver award during a ceremony held Aug. 11 at Clay Kaserne, Wiesbaden, Germany.

U.S. Army Garrison Wiesbaden's newly opened Family and Morale, Welfare and Recreation Outdoor Recreation Center was certified LEED Silver by the U.S Green Building Council.

LEED is a worldwide certification program that provides third-party verification of green buildings. Standards help guide building owners and operators to be environmentally responsible and to use energy efficiently.

According to Ron Locklar, chief of the FMWR's Community Recreation Division, these standards guided the design process regarding efficiencies, but in some areas the design team went above and beyond to ensure the new space would meet the needs of the staff and community.

For instance, Locklar said, more used lobby and warehouse areas have different types of heating to provide constant, low heat, while the lesser used classroom areas have wall radiators that can be turned on and off as needed.

The team didn't just want to meet the LEED standard, he said, but instead wanted to ensure efficiency. Not having wall radiators in the lobby and warehouse also allowed for space efficiencies.

Completed in 2020, the USACE, Europe District oversaw construction of the $8.5 million, 12,510 square foot recreation center. This facility consolidated activities and storage areas from more than four different locations throughout the Wiesbaden community, and will save 42% on energy costs relative to code requirements.

"The Corps is always exploring techniques in the construction of buildings to promote energy efficiency and sustainability, and this project is another example of building cost-effective and efficient facilities," said Col. Patrick Dagon, district commander.

Besides the energy savings under LEED, simply being consolidated in one building also created efficiencies for outdoor recreation staff and community members, Locklar said.

The staff previously would have to drive to retrieve items stored at different locations or would have community members meet them to pick up rental items at other locations.

"Having everything in one site, having it designed to be everything we need, where we need it, and how we need it — that's what's great about this facility," Locklar said.

The Outdoor Recreation Center features many amenities including a wide variety of rentals such as barbecue grills and inflatables, as well as equipment for biking, camping, canoeing and kayaking, and summer and winter sports activities. The center also has an air-conditioned training classroom for meetings, plus a state-of-the-art maintenance shop for bicycles, skis, snowboards and other recreational equipment.

USACE, Europe District, together with the contractor and the Landesbetrieb Bau und Immobilien Hessen, constructed the award-winning building by incorporating the following energy efficient systems and sound green building practices:

- Construction activities diverted 93% of non-hazardous construction waste from landfills.
- Water conservation features incorporated into this project will consume 30% less water than code requirements.
- 50% of the project site's native and adapted vegetation was protected and kept intact.
- 13% of building material content was manufactured from recycled materials.
- 20% of building materials were manufactured and extracted from within 500 miles of the project site.
- Low volatile organic compounds were specified and installed, including paints and flooring systems, to improve indoor air quality.

The new outdoor recreation center, located on Clay North, is now open for business and offers details on upcoming trips, educational classes, hunting and fishing opportunities and other programs.

Team to sample excess Reserve centers for lead dust contamination

By Shatara Riis
USACE, Louisville District

Indoor firing ranges may pose a setback in the disposal process of multiple Army Reserve properties nationwide. Some 50 such properties are slated for lead dust sampling.

The U.S. Army Corps of Engineers, Louisville District Environmental Branch team recently collected samples at the former Trembley-White Army Reserve Center in Kansas City, Kansas, which has been vacant since 2017 and was previously used for administrative and training purposes.

"These excess properties are no longer needed by the Army Reserve, so they need to be disposed of," said Rhiannon Ryan, environmental scientist with the Environmental Branch. "We have an obligation under CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) to let the new owner know the environmental condition of the property and possible contamination."

While the team completed sampling at Trembley-White, the results are pending.

According to the Environmental Protection Agency, lead is a naturally occurring element found in small amounts in the earth's crust. While it has some beneficial uses, it can be toxic to humans and animals.

Daniel Allgeier, project manager, Environmental Support Section, explained that lead was emitted into the air and settled from the repetitive use of firing weapons in those centers with indoor firing ranges even though they featured dedicated air handling systems designed to remove lead dust from the interior of the building.

"There may be some residual lead dust that doesn't get picked up by the air handling unit, which is why we are currently investigating the buildings with the sampling effort," said Evan Willett, environmental engineer, Environmental Branch. "Lead is dense and does settle onto floors, walls and other horizontal surfaces."

Traces of lead can remain in dust on floors and windowsills despite activities to clean areas to make them safe for children.

The EPA announced June 17, 2020, a proposal to lower the amount of lead that can remain in dust on floors and window sills after lead removal activities, from 40 micrograms per square foot to 10 micrograms per square foot for floors, and from micrograms per square foot to 100 micrograms per square foot for window sills.

"We need to know if we have lead dust present at the decreased lead dust hazard standards," Willett said. "This is why we are going into numerous facilities nationwide to sample some new locations and resample some other locations that were previously assessed based on the higher standards."

According to the EPA, the proposed, tighter standards increase the effectiveness of lead-based paint removal in pre-1978 homes and childcare facilities, known as abatement, and lower the risk of lead exposure by ensuring that lead-based paint hazards are effectively and permanently eliminated following completion of the work.

"We support our customer, the Army Reserve. We provide review and oversight of work done by contractors, making sure the job they do in characterizing these facilities for lead dust is complete, taking it to the next step if abatement is required – we continue with that oversight," said Cynthia Esterle, Environmental Branch geologist.

(Photo courtesy of USACE, Louisville District)

Evan Willett, Louisville District environmental engineer, collects a lead dust sample from the storage room floor.

New processes to remove potentially harmful lead means making these structures safer for future use, experts said.

"We are helping by performing lead dust samplings at multiple facilities across the country in order to fully characterize the extent of lead dust contamination throughout the facilities," Willett said. "If there are concentrations that exceed the action limits, we will pursue lead dust abatement at those sites (on behalf of our Army Reserve customer)."

Rendering Reserve centers safe, gets them back to work as repurposed facilities for their communities.

The Louisville District is the Center of Expertise for Army Reserve center construction. It is the nationwide program manager for construction of new Army Reserve centers in the U.S. and its territories.

Edward MacDowell Lake Dam celebrates 70th anniversary

By Sally M. Rigione
USACE, New England District

July 31 marked the 70th anniversary of the completion of the U.S. Army Corps of Engineers, Edward MacDowell Lake Dam. The project was completed in 1950 at the cost of $2,014,000.

Named after the late composer, Edward MacDowell, the dam, located on Nubanusit Brook in Peterborough, New Hampshire, east of Keene, still provides flood protection primarily to Peterborough, but also to the downstream communities of Hancock, Bennington, Antrim, Deering, Hillsboro and Henniker, all located on the Contoocook River.

Edward MacDowell Lake consists of an earth-fill dam with stone slope protection 1,100 feet long and 67 feet high with a capacity of more than four billion gallons of water and has prevented damages of about $20.8 million to date.

There is a conservation pool at the lake that covers 165 acres, and a maximum depth of about seven feet.

The flood storage area of the project totals 840 acres and covers parts of Hancock, Dublin and Harrisville. The lake and all associated project lands cover 1,469 acres. This is equivalent to 5.4 inches of water covering its drainage area of 44 square miles.

More than 146,000 visitors annually enjoy the picnic areas, swimming areas, hiking trails, boating, fishing, hunting and snowmobiling available at Edward MacDowell Lake.

Due to COVID-19 there was no on-site celebration. A video to commemorate the occasion was produced by the Edward MacDowell Dam team as they celebrated 70 years in the Peterborough community: https://www.facebook.com/EdwardMacDowellLake/. Historic information on the Edward MacDowell Lake can be viewed at: https://www.nae.usace.army.mil/Missions/Civil-Works/Flood-Risk-Management/New-Hampshire/Edward-Mac/.

(Photo by Rob Jordan)
Joshua Houghtaling, Lewisville Lake park ranger, plants aquatic vegetation inside a wire cage enclosure as part of the fisheries restoration project.

Park ranger leads charge to conserve lake's natural resources

By Trevor Welsh
USACE, Fort Worth District

Passion drives efforts to restore wildlife habitats

When you think of the U.S. Army Corps of Engineers, Fort Worth District, what comes to mind?

While USACE has several missions, including: civil works, military construction, water sustainment, emergency management and energy sustainment, just to name a few, the one mission that probably draws the most public attention is recreation.

USACE, Fort Worth District manages 25 lakes across Texas, and while its main mission is flood risk management, recreation is what it's primarily known for, i.e. parks, campgrounds, boating, fishing, hiking, hunting, etc., and also the uniformed personnel who are the face of these opportunities, park rangers.

Park rangers, also known as natural resource specialists, are stewards of these public lands, charged with conservation and management of natural resources.

The natural resources management philosophy is to manage, conserve and improve these natural resources and the environment while providing quality public outdoor recreation experiences to serve the needs of present and future generations.

In all aspects of natural and cultural resources management, USACE managers promote awareness of environmental values and adhere to sound environmental stewardship, protection, compliance and restoration practices.

This is not always done singlehandedly.

USACE manages long-term public access to and use of natural resources in cooperation with other federal, state and local agencies, as well as the private sector.

The Lewisville Lake, just north of Dallas in Lewisville, Texas, is one such example.

As part of an ongoing effort, park rangers there lead the Lewisville Lake Fisheries Restoration Project with assistance from the U.S Army Engineer Research and Development Center, or ERDC; the Lewisville Aquatic Ecosystem Research Facility, or LAERF; the Texas Parks and Wildlife Department Inland Fisheries Division; the Boy Scouts of America; the Department of Energy Oak Ridge for Science and Education; and, the Marcus High School Bass Club.

The driving force behind the Lewisville Lake project is Josh Houghtaling. He came to work with the Fort Worth District as a park ranger in late spring of 2018.

Describing himself as being "very passionate about the outdoors and bettering wildlife habitat," Houghtaling almost immediately used this passion to work relentlessly on a grant submission to make this restoration project possible.

"The grant that I applied for is titled 'Lewisville Lake Fisheries Restoration Project,' and is funded through the national Reservoir Fisheries Habitat Partnership, Friends of Reservoirs Program," he said. "This program was established to improve public understanding and knowledge of fish habitat conservation through collaborative partnerships in reservoirs of the United States and supports reservoir conservation activities."

Through his efforts, the Lewisville Lake Fisheries Restoration Project received a $30,000 grant, placing second in the nation when ranked against other submissions.

The grant's four objectives include: promoting shoreline stabilization through the use of soft and hard armoring at areas of concern at four sites of priority concern by USACE in Lewisville Lake; addressing sedimentation and water quality impairments by developing and establishing native emergent vegetation and using a flood-tolerant seed mixture that works with the lake's hydrology; supporting recreational activities through fisheries habitat conservation and creation within the lake's littoral zone through temporary brush structure and artificial structures; and promoting education of healthy aquatic ecosystems through restoration activities on the lake with the construction and procurement of interpretive kiosks, hiking trails and signs.

"The goal of this project is to provide the public with a sustainable water resource that can continue to adapt to urbanization and provide habitat for a variety of fish and wildlife species," Houghtaling said.

To enhance fisheries habitat and promote shoreline stabilization, native riparian, wetland and aquatic species were planted at four sites on Lewisville Lake. To reduce erosion and stabilize shorelines, native seed mixtures of appropriate moist soil grasses, sedges and forbs were broadcasted in restoration areas to supplement containerized plantings.

"Containerized plants were grown in deep root containers that promoted strong below ground biomass that can withstand the fluctuating hydrology of Lewisville Lake during the establishment phase," Houghtaling said.

As a project partner, ERDC-LAERF has been working with the district to provide planting and seeding specifications, and is providing stock for plantings that were grown from regionally collected propagules within the Trinity River Watershed in North Texas. It also worked directly with project partners in field campaigns to implement planting plants at re-vegetation sites on the lake and protecting them from herbivory.

Lynde Dodd, research biologist with the Aquatic Ecology and Invasive Species Branch of ERDC, serves as an expert in restoration and invasion ecology of freshwater macrophytes. Her role was to assist the district with recommendations on re-vegetation of native aquatic, wetland, and riparian plants suitable for providing improvements to fisheries habitat while also working to reduce shoreline erosion on the lake.

"This work directly supports the district in their efforts toward protection of our natural resources at Lewisville Lake," Dodd explained. "Submersed aquatic vegetation means improved fisheries habitat — immediate cover and food in the short term — and as aquatic plants establish in the long term, additional benefits will include: improved water quality by reducing turbidity, removal of excess nutrients from the water column via uptake from the plants themselves, and reduced erosion by physically holding lake sediment in place with the production of below ground biomass (roots)."

Additionally, wetland and riparian vegetation planted at the shoreline will serve to reduce erosion as they establish, providing a buffer and increasing cover for wildlife at the shoreline.

Dodd describes her career as her "passion."

"I'm lucky that I get to engage with equally passionate partners where we work together to improve habitat for wildlife and better our everyday lives by enriching the world around us," she said. "Not only are we working to overcome challenges that impair water quality and aquatic habitats, we are working to achieve sustainable ecosystems that protect our natural resources."

Within the next month, the project team will be building and deploying, in suitable areas of the lake, artificial habitats using polyvinyl chloride, or PVC, and large flex tubing. These structures will primarily benefit the bass and crappie species highly sought after by fishermen. They will be placed at sites and water depths most conducive for use under the direction of USACE staff and input by project partners.

Additionally, a kiosk and hiking trail is currently being constructed by two different Eagle Scout projects. The kiosk will be placed at the Hickory Creek campground and the hiking trail will be at Doe Branch Park.

"Ultimately I would like to bridge an educational gap between humans and their understanding of wildlife and habitat," Houghtaling said.

Joshua Houghtaling, Lewisville Lake park ranger, places wire cage enclosures for planting of aquatic vegetation as part of the fisheries restoration project.
(Photo by Rob Jordan)

$20 million dredging project enhances fish, wildlife habitats

Story & photo by Nayelli Guerrero
USACE, St. Paul District

Recreational boaters may have noticed recent dredging activity in the McMillan Island area, just north of Guttenberg, Iowa. The McGregor Lake Habitat Rehabilitation and Enhancement Project, or HREP, located in Pool 10 of the Upper Mississippi River, recently completed its dredging phase.

The 580-acre McGregor Lake project includes the mid-river McGregor Lake and adjacent island and slough habitat between the main and east channels, and will enhance fish and wildlife habitat using 70,000 cubic yards of dredged material.

"This project will improve habitat diversity by reducing shoreline erosion, sedimentation and wind-driven wave action," said Zach Kimmel, project manager.

The dredged material wasn't always intended for McGregor Lake.

When the district navigation branch experienced a shortage of dredged material placement site capacity, the district combined its Upper Mississippi River Restoration, or UMRR, and 9-foot navigation channel authorities to place dredged material at McGregor Lake. This cost-saving solution not only provided critical placement site capacity for dredged material, it also elevated approximately 12 acres of floodplain forest and saved the restoration program almost $1 million dollars.

The district's maintenance and repair section from Fountain City, Wisconsin, began dredging March 26 and finished July 2. Using district vessels, including the Dredge Wade and Motor Vessels Lyon, Wells and McNamara, the crew dredged the Mississippi River main channel near McMillan Island and transported the dredged material to the McGregor Lake HREP site. There, the crew transferred the sand from material barges, which transited as far as 14 miles from the project site, to the upper end of McGregor Lake.

St. Paul District awarded the contract to begin constructing the HREP on Sept. 28. Project construction is scheduled to be completed within five years.

The $20 million HREP program is funded through USACE's UMMR program. It was planned and designed cooperatively with the U.S. Fish and Wildlife Service, the Iowa and Wisconsin departments of natural resources and local interests.

Scott Rolbiecki, master tender operator, USACE, St. Paul District, removes sand from the tracks of an excavator before dredged material placement at McGregor Lake near Guttenberg, Iowa, May 21.

Innovative thinking saves bighorn sheep from water shortage

By Ana Henderson
U.S. Army Garrison, Yuma Proving Ground

The U.S. Army Garrison, Yuma Proving Ground (YPG) has an extremely intelligent and dedicated workforce who are also passionate about the ecosystem around the range.

"I get calls a couple times a week from folks down range who make an observation," explains Daniel Steward, YPG's wildlife biologist.

This dedication leads to employees going above and beyond to solve a problem. So was the case when range operations lead, Darrell Williams, reached out to YPG's meteorological team to ask if they could help the Arizona Department of Game and Fish (AZDGF) with remotely monitoring wildlife water station tank levels.

Williams works closely with the YPG Environmental Sciences Division and the Meteorology Division, and they all work with AZDGF.

Every few weeks the department flies over YPG's ranges to check on wildlife and the water stations. AZDGF monitors more than 25 wildlife waters on YPG alone.

Williams noticed that because of the post's busy firing schedule, sometimes it was difficult for AZDGF to make their scheduled flights.

Additionally, in those weeks between the flights there was no way to know if a tank had an issue. Those water stations are instrumental in sustaining wildlife.

"That's a part of how we are able to sustain those high numbers that we are to be able to support sheep re-location by AZGFD to support bighorn populations statewide," explained Steward.

Williams had an idea and made the call to the meteorological team.

"I talked to the met (meteorology) guys and asked 'do those pressure transducers work on the tanks?'," Williams said. "They said yes."

The pressure sensors work much like the sensors used to measure the water in washes around the range. Because YPG has a very large range with remote locations that need to be monitored, there are sensors to alert when washes are running during a storm.

Ryan Ingham and Cory Olsen, electronics technicians with the Meteorology Division at YPG, took that pressure sensor and installed it in four of the AZDGF wildlife water tanks.

Ingham admits that the installation was not difficult… it was accessing the tanks that was the challenge.

For some, we had to go in by helicopter to bring in the equipment, he said. Some we had to hike to. Others are a few miles round trip. "So, we had to carry all the equipment up the mountain range."

Ingraham began monitoring the pressure data in the tanks and converted the pressure into depth in inches. He provides this data to AZDGF weekly.

In early July, Ingham noticed a two-inch drop in one tank.

He notified AZDGF and they hiked out to the Chocolate Mountains that weekend where they found a broken pipe, probably caused by two sheep playing around. This, in turn, drained the tank.

The team was also surprised to find 16 bighorn sheep milling around, presumably in search of water.

The alert of the drop in water saved their lives, said Steward. "This time-of-year, they really depend on that water," he added. "If you let them go dry, you are going to lose animals."

Steward proudly shared this story to illustrate just how dedicated individuals can make an impact.

"Our workforce is passionate about the outdoors, and these innovations bring these types of tools to bear," he said.

Cory Olsen, electronics technician with the Meteorology Division at Yuma Proving Ground, makes his way to inspect four pressure sensors installed on the Arizona Department of Game and Fish wildlife water tanks.
(Photo by Ryan Ingham)

USACE's efforts bolster burrowing owl population

By Hannah Mitchell
USACE, Walla Walla District

For most bird species, the concept of living underground would be considered strange. For the burrowing owl, living anywhere else would be unthinkable.

Burrowing owls are native to the Washington state region now known as the Tri-Cities. However, human development in the area has fragmented their habitat and made it harder for them to survive.

To combat this, the U.S. Army Corps of Engineers, Walla Walla District has constructed artificial burrow systems for the owls in the Habitat Management Units (HMUs) surrounding Ice Harbor Dam.

These burrows consist of 10-foot tunnels, made from PVC pipe about 6-8 inches in diameter, and a burrow chamber made from plastic fruit barrels that have been cut in half. A wire mesh floor is put on the burrow chamber to allow for water drainage and to keep predators from digging into where the owls are nesting.

"The burrowing owl is important because they're the ecosystem engineer for a lot of habitats in this area," said Jim Castle, wildlife biologist with the Walla Walla District.

Once constructed, the artificial burrows are buried in the ground. The nesting chamber is topped by a "lid" made from a weighted bucket. This bucket can be lifted off the burrow to allow researchers to look down into the nest and check on the owls.

Burrowing owls are known to readily adopt artificial burrow systems, which is no surprise since they commonly take over burrow systems created by ground squirrels. These owls are not ambitious diggers, especially in firmly packed soil. More often they will find an existing structure, be it a ground squirrel tunnel, an irrigation channel or a pile of rocks, and improve it to suit their living needs.

Male burrowing owls often find a raised place to perch and guard their territory against predators and other burrowing owls. To accommodate this, USACE places a t-stake near burrow entrances to provide a place for a male burrowing owl to perch.

The district had installed 16 burrows about three years ago. So far, no burrowing owls have taken up residence.

"This area is still inhabited by burrowing owls, in different parts of the Tri-Cities, in pockets," Castle said. "We're hoping to improve some of the habitat by installing these artificial systems so that if there's an opportunity for them to re-establish in this area, they'll have a place to go to. It's sort of like building them an apartment complex."

According to the Cornell Lab of Ornithology, these owls are small, between seven- and 10-inches long with long legs. They can be found in regions of the western United States, through Mexico and down to the southern tip of South America.

This effort is part of the district's goal to increase biodiversity by creating habitat appropriate for all species from mammals and reptiles, to amphibians and insects; from the birds that live in trees, to those that choose to make their homes under the ground.

Watch a video about these efforts: **https://youtu.be/lA6_N1lxpBg**.

(Photo by Tech. Sgt. Aaron Perkins)

Threatened by human development, wildlife biologists with the USACE Walla Walla District constructed an artificial burrow system to help the burrowing owl survive.

Resource efficiency managers support modernization of defense industrial base

By Dr. Robert L. Straitt
U.S. Army Materiel Command

Due to the ever-changing demands of the information age, access to secure and reliable energy has become one of the most critical factors in ensuring our nation's ability to protect and provide for its citizens.

In response to our expanded energy needs — from powering the advanced weapons systems used to defend our nation to powering the neonatal units used to care for premature infants — the Army's energy program has rapidly evolved into a complex system of systems designed to ensure not only the simple ability to buy and sell energy resources but also to provide secure and reliable energy to meet our needs across the globe.

At the forefront of this mission is the U.S. Army Engineering and Support Center, Huntsville's Resource Efficiency Manager, or REM, program, which brings the best minds in the free world together to introduce new technologies and processes that extract every possible unit of energy from the most fuel-efficient and resilient energy-system technologies available.

REMs, often called the "energy boots on the ground," provide vital expertise to develop site energy plans encompassing projects that achieve sustainable, renewable, and secure energy management.

Ensuring energy access at Department of Defense installations worldwide is a complex task, requiring REMs to conduct ongoing analysis of data from multiple sources to detect potential energy issues and outages before they happen.

To improve this process, REMs are currently working with U.S. Army Materiel Command (AMC) to embed advanced artificial intelligence and machine learning technologies for tracking and reporting energy usage, project initiation, security and emergency management response information into a single, easy-to-use interface that is both adaptive and secure. The interface can process mountains of data, identify trends and alert decision makers of possible threats in a matter of seconds. In our energy-dependent world, this is truly a life-saving tool.

In addition to improving our means of analyzing existing energy systems, REMs are exploring new, emerging technologies to generate resilient, sustainable energy for Army missions around the world.

They are currently providing their technical insight in support of the DOD's Pele Program, which involves the development of a safe and mobile nuclear microreactor to generate power for remote operating bases. These microreactors could help keep Army weapons systems armed and ready, while also providing the nation's warfighters with the energy they need to maintain sustainable and acceptable living conditions in the most demanding environments.

The latest renewable technologies such as wind, hydro and solar offer another promising solution to meeting our extensive energy needs, and this is another area in which REMs have proven to be an asset.

REMs, such as those assigned to AMC, have extensive hands-on experience with these technologies and have worked in these industries to design, build, install and maintain utility-scale wind turbines around the globe.

REMs are also exploring gasification and plasma-ionization technologies that will one day provide Army installations with clean and resilient energy generation while eliminating scrap hazard materials in environmentally friendly ways.

As investigators from organizations such as Army Futures Command look into an ever-widening range of developing energy-resilient technologies for Army installations of the future, they turn to REMs for assistance, due to their proven experience in data compilation, energy-resiliency assessment, and lifecycle cost analysis of some of the most advanced energy concepts being explored by the commercial, academic and government sectors.

REMs provide installation and command energy managers and energy program senior leaders the knoweldge base to make informed stategic decisions on Army energy resilience and productivity initiatives.

To learn more about the Huntsville Center's REM program, visit https://www.hnc.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/490651/energy-division-resource-efficiency-managers/.

Dr. Robert Straitt has 30 plus years of experience in the field of energy reliabililty and security and currently serves as a resource efficiency manager with Sain Engineering Associates at the U.S. Army Materiel Command. His most recent projects include gasification and plasma-ionization technologies power generation, Army metering and control systems modernization, Army mobile nuclear power systems, cyber and CEMA security planning and implementation, and developing energy, water, and control system strategy for Army installations in multi-domain operations.

(Photo by Jeremy S. Buddemeier)
Daniel Miller, a leverman with Cottrell Contracting, operates the Rockbridge dredge near Jekyll Creek, April 16, 2019.

Innovative pilot project nabs USACE-wide team award for sustainability

By Jeremy S. Buddemeier
USACE, Savannah District

Conventional wisdom warns against building on shaky ground, but the future of Georgia's coastline could very well rest on five acres of "pluff mud."

Last year, workers with Cottrell Contracting of Chesapeake, Virginia, wrapped up a three-month-long dredging pilot project, which seeks to find cost-effective, environmentally friendly disposal methods for this especially silty, watery material that comprises much of Georgia's portion of the Atlantic Intracoastal Waterway (AIWW).

"While we still have some monitoring to complete in the marsh over the next year or so, having the project receive the 2020 USACE 'Green Dream Team Award' speaks volumes for the collaborative effort of the team."

– Jonathan Broadie

A two-pronged attack

Situated just south of the Port of Brunswick, Georgia, where "roll-on, roll-off" container ships deliver cars from around the world, contractors dredged a channel near Jekyll Creek to a depth of 10 feet using two innovative beneficial use strategies: thin layer placement and open water dispersal.

The thin layer placement portion sent 5,000 cubic yards of pluff mud to enhance a nearby marsh, while open water dispersal was used for another 220,000 cubic yards, which was placed into a naturally scouring "deep hole" in St. Simons Sound.

Together, the two techniques provide a cutting-edge approach to challenges as shifty as the silt itself.

"The closest disposal options are about seven miles offshore and that's very costly," said Jonathan Broadie, project manager for the pilot project and acting chief of navigation, U.S. Army Corps of Engineers, Savannah District. "So not only are we finding a place to put the material, but we're also finding ways to help protect the marsh."

By comparison, material dredged from the Savannah River can be conveniently piped into several dredge material containment areas right along the north edge of the river.

Back at Jekyll Creek, the contractors quickly discovered this wasn't a typical dredging gig and had to adjust tactics throughout the project.

"Pluff mud is different because it is maintenance material that is extremely soft and silty, and high liquid," said Burt Moore, chief of dredging for Savannah District. "It doesn't like to stay in place, it likes to move."

Moore, who has more than 25 years of experience working with the dredging industry, described the difficulties contractors faced.

Not only did they have to position the dredge safely in the narrow waterway, but they also had to wait for favorable low tides to dredge. In addition, they had to contend with the wind, which could easily undo a day's work.

A typical dredging project would move 10 times the amount of material by working around the clock and with a more dense dredge spoils.

Contractors also placed porous coconut coir logs along the border of the designated five-acre portion of the marsh to retain the dredged material and allow marsh grasses to adapt to the new level, which was anywhere from two inches to a foot higher in elevation.

Scientists and researchers with Georgia Southern University and the University of South Carolina have been monitoring the marsh and its wildlife periodically and will continue to collect data over the next few years to ensure the health of the marsh and the associated ecosystem.

The larger, open water dispersal portion of the pilot project posed a different set of challenges.

According to Moore, contractors had to run a 40,000-foot sub-line to deliver the material within 5-10 feet from the bottom of the deep hole in St. Simons Sound. The hole is approximately 60-70 feet deep, compared to the surrounding depths, which average 30-40 feet.

Researchers with LG2 Environmental Solutions, Inc., along with Savannah District survey team experts used tracers—two environmentally inert fluorescent sediment manufactured to mimic pluff mud—to ensure the dredged material actually made it to the bottom and to study how the material naturally dispersed in the surrounding areas.

"Preliminary observations suggest it could be a placement strategy for numerous projects along the Georgia and Carolina coasts that keeps sediment in the coastal system and doesn't require capacity in upland or offshore disposal site," said Clay McCoy, Ph.D., acting director, USACE Regional Sediment Management Regional Center of Expertise.

McCoy said this portion of the project was modeled after a similar technique that resulted in no documented impacts near Hilton Head Island, South Carolina, about 100 miles north of Brunswick, Georgia.

The open water dispersal method, combined with the thin layer placement, which has been used in Maryland, New Jersey and Louisiana, could be used throughout Georgia's Atlantic Intracoastal Waterway as an environmentally sound, cost-effective method that also bolsters the coast against the negative effects of sea level rise and climate change.

A promising start

Although the project is still in progress, it's already turning a lot of heads. In August 2020, the project team received the USACE 2020 Sustainability Awards Program's "Green Dream Team Award" and commendation from the Atlantic Intracoastal Waterway Association.

According to Lara Beasley, USACE Headquarters Environmental Division Chief, the Sustainability Awards Program recognizes significant contributions in the fields of energy efficiency, sustainable solutions, reduced impacts to the natural environment, and preserving and enhancing the nation's natural resources.

In addition to Broadie and Moore, USACE, Savannah District awardees include: Jason O'Kane, Roger Lafond, Ronnie Westbury, Glenn Bacon, Chris Wheeler, Nathan Dayan and April Patterson. Other agency partners in the project include: USACE, South Atlantic Division, USACE, Jacksonville District, Jekyll Island Authority, The Nature Conservancy, the Georgia Department of Natural Resources, U.S. Fish and Wildlife Service, the Environmental Protection Agency and the National Oceanographic and Atmospheric Administration.

"While we still have some monitoring to complete in the marsh over the next year or so, having the project receive the 2020 USACE 'Green Dream Team Award' speaks volumes for the collaborative effort of the team," Broadie said.

"It took a lot of hard work and dedication from experts within the USACE South Atlantic Division, Georgia DNR and other agency partners to come together and make this project a success," he added. "We hope to continue this collaboration on future projects along the AIWW in Georgia using these innovative dredging techniques that are beneficial to the environment."

Video link: **https://www.youtube.com/watch?v=QyluZZ8-bZ0.**

Project aims to improve floodplain forest processes, restoration and management

By Nayelli Guerrero
USACE, St. Paul District

In late June, the La Crescent, Minnesota, environmental section measured the growth of tree seedlings at Kain's Switch South near New Albin, Iowa.

Approximately 600 seedlings were planted in late May, part of a research project conducted by the University of Minnesota through a Cooperative Ecosystems Studies Unit agreement with the U.S. Army Corps of Engineers, St. Paul District's recreation and natural resource branch, environmental section.

The project aims to improve understanding of floodplain forest processes, restoration and management.

"Through this study, we hope to better understand the factors limiting viable floodplain forest regeneration and develop target tree seedling guidelines to improve our effectiveness in restoring forests," said Andy Meier, forester, USACE, St. Paul District. "Forests can be degraded by a range of health threats, including invasive species, emerald ash borer and Dutch elm disease."

The project consists of nine separate planting blocks, with 64 seedlings to a block totaling 576 trees, under intermediate canopy density.

The nine blocks are split across three flooding gradients: an area of high inundation with 30-40 days flooded during the growing season; an area of intermediate inundation with 10-30 flooding days; and, an area of low inundation with 1-10 flooding days.

Over the next few years, the district will monitor seedling mortality and growth rates across four tree species: swamp white oak, silver maple, American sycamore and common hackberry. Staff will measure and record each seedling's height and root collar diameter while checking for leaf dieback and deer browse.

If the seedlings survive, they should establish quickly. The intermediate light conditions in the planting locations inhibit the growth of reed canary grass and other vegetation, which should allow the seedlings to grow above the height of the competition more effectively.

The initial phase of the project will be completed by 2021. If the trees survive, the plantings will continue to be monitored for many decades to come, Meier said.

(Photo by Nayelli Guerrero)

USACE, St. Paul District pathways forestry interns Marshal Johnson and Mackinzie Shaffer-Smiley measure and record seedling growth near New Albin, Iowa, June 17.

USACE's drill crews adapt to 'new normal'

(Photo courtesy of USACE)

The U.S. Army Corps of Engineers has drilling and subsurface exploration crews located in nine districts across the United States and South Korea.

By Loree Baldi & Dr. Faisal Ahmed
USACE, Fort Worth District
and Marty Goff
USACE Headquarters

The U.S. Army Corps of Engineers (USACE) has drilling and subsurface exploration crews located in nine districts across the United States and South Korea. They provide essential support to all USACE missions and can deploy throughout the world in support of those missions.

These drill crews work in all types of conditions, from highly urbanized areas to remote locations where they have to build their own access roads.

The onset of COVID-19 resulted in unique and difficult challenges for USACE's drill crews; however, they were able to address those challenges with the same level of dedication, innovation and professionalism they have always used to complete their tasks.

The COVID-19 pandemic has required USACE to adapt to a "new normal" for meeting its mission-critical activities. Changing the entire way an organization does business can be a daunting task; however, USACE's drill crews are resilient and adaptable. They're familiar with difficult working conditions and face unique challenges, such as finding lodging and necessities in remote areas. So, when the COVID-19 pandemic struck, USACE's drill crews were already prepared for the "new normal."

Initially, all of these drill crews were shut down until a travel exemption process for mission-critical investigations was activated by USACE Headquarters. Once the exemption process was established the crews were ready to get back to work! With few exceptions, all drillers returned to work. Several drillers with health issues decided not to travel and remained at their duty stations working on related activities to support the in-field crews.

The drill crews have effectively dealt with delays in obtaining permits, acquiring rights of entry, and securing supplies through patience, diligence, and adhering to consistent schedules and protocols.

An example of their dedication and inventiveness is the Fort Worth District's core drill unit. Since implementation of the travel exemption process, they have been actively executing mission-critical investigations.

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DRILL CREWS

continued from page 35

At the beginning of the pandemic, the district's drill unit struggled to find solutions to properly follow the Centers for Disease Control and Prevention (CDC) guidance/General Services Administration (GSA) vehicle cleaning recommendations because cleaning and sanitation supplies were scarce.

They improvised by making their own disinfectants and cleaning supplies. The lead driller had experience with public/city water well decontamination and used the same safe mixture to decontaminate equipment and tooling. The team was able to find and use pet disinfectant cleaner to clean the cabs of vehicles. They placed disposable rags and disinfectant mix in two-quart buckets with lids and used them at gas pumps, their hotel rooms, and other common public areas, when needed.

In order to minimize the risk of COVID-19 when returning from temporary duty, unit members took additional measures to protect their families. One member even washed his clothes the day before returning home, stored his luggage outside in the garage, and showered immediately prior to interacting with any of his family members.

Finding ways to create and encourage a work environment that allows for safe, positive communication to continue in order to support drill crew working-relationships has been one of the hardest challenges to overcome. The drillers, however, have been finding healthy ways to deal with the added stress of the pandemic through exercise and their religious faith.

USACE drill crews have also worked out various methods to maintain a positive attitude throughout the pandemic. Because of their willingness to work with this "new normal," the drill crews have successfully and effectively completed the investigations needed to ensure USACE's missions are fully executed.

Without their due diligence and dedication, many mission-critical activities would have been significantly delayed or not completed.

(Photo courtesy of USACE)

Teammates from USACE Fort Worth District's core drill unit: (from left) Dallas Spencer, lead driller; Joel Webster, field geologist; and Chris Bean, drill rig operator, conduct drilling operations at Lackland Air Force Base in San Antonio, Texas.

Scientists study soil to generate ideas for improving restoration projects

By Melanie Peterson
USACE, St. Paul District

"By taking a closer look at the differences between the natural islands and the constructed islands, we hope to generate ideas for improving our already successful restoration projects."

- Aaron McFarlane

U.S. Army Corps of Engineers, St. Paul District environmental scientists Aaron McFarlane and Eric Hanson, recently surveyed natural islands in Pool 5, near Fountain City, Wisconsin; Pool 10, near Guttenberg, Iowa; and man-made islands in Pool 8, near La Crosse, Wisconsin; and, Pool 9, near Eastman, Wisconsin, along the Upper Mississippi River.

The man-made islands in pools 8 and 9 were created by the district from dredged material.

The St. Paul District has several programs for environmental restoration that partner with other federal, state and local partners. One example is the Upper Mississippi River Restoration program, which has constructed restoration projects and conducted long-term monitoring from St. Paul, Minnesota to St. Louis, Missouri, since 1986.

Eric Hanson, ecologist, USACE, St. Paul District, takes a soil sample at a constructed island in Pool 8, near La Crosse, Wisconsin, July 22. (Photo by Melanie Peterson)

The islands are meant to serve multiple purposes, such as breaking up wind on large expanses of water, providing sheltered areas for vegetation to grow and creating fish and wildlife habitat, McFarlane said.

Over the course of two weeks, the team, including environmental section interns, looked at 45 plots, each 1/100th of an acre. The surveys included identifying each tree and documenting ground cover plants and their density.

Soil sampling consisted of an on-site field description of what the soils looked like. Soil samples were taken and sent to the Engineer Research and Development Center (ERDC) Wetlands and Coastal Ecology lab in Vicksburg, Mississippi, to determine physical characteristics and soil chemistry. Small cores were also sent to the ERDC Environmental Microbiology lab to be analyzed for DNA and analyzed to find out what the microbiome of the soil looks like.

"We take all that soil data, plus the data of trees and plants, and we see if we can correlate how that works together and what direction we would want to go to change the characteristics to make the constructed islands closer to naturally occurring islands," McFarlane said.

Restoration projects are often trying to replace lost, eroded land, he added.

"The soils in those lost lands took thousands of years to develop. Plants, animals, microbial communities and hydrologic processes all had a part in making the soils that we now see as high-quality floodplain habitat," he said. "We're trying to rebuild these places in just a few years.

"By taking a closer look at the differences between the natural islands and the constructed islands, we hope to generate ideas for improving our already successful restoration projects," McFarlane added. "I'm hopeful this study and follow-up studies can show us ways to make our new construction projects act more like these older lands and support high-value ecological communities like floodplain forests."

Collective expertise, enduring partnership advance FUSRAP

By Jenn Miller
USACE Headquarters

The U.S. Army Corps of Engineers (USACE) and the Department of Energy's Office of Legacy Management (DOE-LM) have been working together for more than two decades to advance the Formerly Utilized Sites Remedial Action Program (FUSRAP), cleaning up sites with contamination resulting from the nation's early atomic energy program.

Through this long-standing partnership, USACE and DOE-LM continue to make progress in their collective efforts to remediate sites that can then be restored for beneficial reuse within local communities across the country.

"Our goal is to safely and efficiently clean up FUSRAP sites to ensure protection of human health and the environment," said John Busse, USACE Headquarters Environmental Division. "Once our cleanup efforts are complete, we then transfer the sites back to DOE-LM for long-term management and stewardship."

In June, Busse was promoted to chief of the Environmental Support Branch, one of three branches located within USACE Headquarters Environmental Division. Busse will oversee the execution of approximately $1 billion annually in environmental service work for Department of Defense and non-DOD partners.

In addition to the work his team performs under FUSRAP, he also oversees the decommissioning of Army deactivated nuclear power plants, and environmental work for the Air Force, Army, National Guard Bureau and Reserves.

His team also assists the Environmental Protection Agency in cleaning up some of the nation's most contaminated sited under EPA's Superfund Program and supports a wide array of non-DOD agencies under the Interagency and International Services – Environmental (IIS-E) program.

"Under the IIS-E program, we provide environmental technical support to agencies across the globe," Busse said. "The primary objective of the program is to provide stakeholders with a quality product, on time and within the established budget, leveraging expertise across our USACE enterprise."

The program provides a multitude of professional services and technical products to non-DOD federal agencies, state and local governments, tribal nations, private U.S. firms, international organizations and foreign governments.

It is under the IIS-E program that USACE further supports DOE initiatives. This includes the dismantlement of previously decommissioned nuclear reactors on behalf of DOE, such as ongoing work at the Lawrence Livermore National Laboratory in California, to dismantle and dispose of a decommissioned three-megawatt research reactor. For this project, USACE is providing project management, construction management, technical support and contracting to DOE-Environmental Management.

Additionally, USACE is providing ongoing technical support to DOE-LM for the Weldon Spring Site Interpretive Center in Missouri. For this project, the team is providing services for project management, engineering, design, exhibit design and installation, construction contract procurement and management, quality assurance and safety inspections.

"Under the IIS-E program, our assistance is customized to meet the needs of our federal partners," Busse explained. "Our support can vary from only providing highly specific technical advice to complete program management. We are able to leverage our technical and contracting competencies across the entire USACE enterprise for our federal partners' initiatives and quickly pull together multi-disciplinary teams with a wide variety of capabilities."

A good example of this is USACE's execution of FUSRAP.

"One of the things that I like about FUSRAP is that it draws together and maximizes, the strengths of two federal agencies," said Gwen Hooten, DOE-LM Environmental Team 2 supervisor. "There's a real synergy between us. USACE brings their expertise in remediation and LM brings our expertise in long-term stewardship. Together we make a great team."

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(Photo by Susan Blair)

The 5,000th shipment of FUSRAP-related material prepares to leave the Luckey Site in Luckey, Ohio, on July 31. Each truckload averages approximately 16.5 tons of material Read more about these efforts on page 18.

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USACE consists of a headquarters office, geographic divisions, supported by district offices, as well as centers, labs and active components. In total, six districts from three divisions are working on 21 active FUSRAP sites across eight states.

Districts currently supporting FUSRAP projects are the Buffalo and Pittsburgh districts from the Great Lakes and Ohio River Division; St. Louis District from the Mississippi Valley Division; and Baltimore, New York and Philadelphia districts from the North Atlantic Division. USACE's Environmental and Munitions Center of Expertise and the Kansas City District also provide technical assistance.

Busse is very familiar with working on FUSRAP at the district level. Prior to working at USACE Headquarters, he served in several roles including project engineer and manager, and program manager at USACE Buffalo District for more than eight years.

"It is so rewarding to be able to witness first-hand 20-plus years of progress within FUSRAP, going back to my days as a private consultant," Busse said. "Increasing the efficiency and timeliness of recent site closeouts, like the Colonie Site in New York, is a direct result of strengthening the existing partnership we have with DOE-LM. Together, our collective expertise will continue to streamline the site closeout and transfer process."

"Historically, LM and USACE have always worked well together," said Cliff Carpenter, DOE-LM FUSRAP program manager. "Because of John Busse's first-hand knowledge of FUSRAP, we will be able to successfully tackle the more challenging and complicated issues at our remaining sites."

Ensuring a common operating picture is critical in executing FUSRAP. This is accomplished through interagency work groups for each of the 21 active FUSRAP sites.

"Regular communication and meeting together annually helps ensure that we have everyone in the room when we are discussing these projects," said Nicki Fatherly, FUSRAP national program manager with USACE Headquarters Environmental Division. "Using interagency work groups to tackle difficult issues enables constructive dialogue between us, which improves the site transfer process."

Fatherly has been providing national-level programmatic leadership for FUSRAP for nine years. In her position, she champions this program at the USACE Headquarters level. She develops and defends national program budget development and oversees program execution performance metrics in close coordination with USACE divisions and districts. She is also the primary point of contact for DOE-LM Headquarters staff.

"As we are completing cleanup efforts on FUSRAP sites and transferring them back to DOE-LM, there is also ongoing, concurrent coordination to assist DOE-LM in identifying and facilitating beneficial reuse for these properties where possible," said Fatherly. "So, while we continue to make progress, there is also more work to be done and together, we will continue to accomplish the mission."

(Photos by JoAnne Castagna)

USACE completed cleanup efforts at the Colonie FUSRAP site in Colonie, New York, and transferred the site to the Department of Energy's Office of Legacy Management for long-term management in 2019.

Pictured here: active construction in 2005 (left) and completed site in 2019 (below).

USACE launches Engineering With Nature podcast series

By Holly Kuzmitski
U.S. Army Engineer Research and Development Center

A new podcast series tells the stories of a growing international community of scientists, engineers and researchers who are applying Engineering With Nature principles and practices to solve problems and diversify infrastructure value.

The U.S. Army Corps of Engineers developed the podcast to mark the EWN initiative's 10th anniversary.

In each podcast, experts who are advancing the state of the EWN practice will discuss lessons learned. The interviews will also highlight what specifically has been achieved, share knowledge developed through collaborations, and focus attention on activities in the U.S. and around the world where EWN principles and practices have been successfully applied.

In 2010, Dr. Todd Bridges, senior scientist with the U.S. Army Engineer Research and Development Center and EWN national lead, collaborated with USACE colleagues to launch the initiative.

The EWN vision is to advance infrastructure practices by aligning natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits through collaboration.

"The EWN podcast series focuses on the innovation and collaboration that's achieved when we seek to combine natural and engineering processes," said Bridges, who introduces listeners to EWN during the first episode of the podcast series. "The outcomes are triple-win results for infrastructure, the environment and the communities we serve."

EWN podcast host, Sarah Thorne of Decision Partners, has been involved with the EWN initiative since its inception. Through dialogue with Sarah, podcast guests describe the challenges, unique collaborations and the compelling projects that exemplify the power and promise of the EWN approach.

"Listeners will hear from people across the U.S. and around the world who are transforming the approach to navigation, flood-risk reduction and other types of infrastructure projects by applying Engineering With Nature principles and practices," Thorne said. "The results are amazing.

We hope our listeners will be inspired and encouraged by the tremendous potential of EWN."

The EWN podcast series made its debut Aug. 26.

The first season includes 10 episodes that are available on the EWN website at **www.engineeringwithnature.org**, the Apple podcast website or the Apple podcast app.

"Season 1 features a knowledgeable group of people who are advancing EWN practices," said Dr. Jeff King, EWN deputy national lead. "Our guests address subjects like increasing communities' and military installations' resilience, innovative application of natural and nature-based features, and private sector and academia efforts to advance the use of natural infrastructure.

"These topics, coupled with informative examples of EWN activities and projects, have generated a lot of interest and enthusiasm among our listeners," he said.

King described how after each podcast, listeners are invited to submit their own thoughts and questions about the topics being discussed.

"At the end of every podcast, questions are posed to the listeners," King said. "These questions are presented in an effort to gain additional perspective about the topics.

"There has been a lot of excitement generated by having this level of engagement with the guests," he said. "A 'contact us' link is embedded on each EWN podcast preview webpage. After listening to the podcast, people can simply click the link and send us an email with their questions."

Bridges feels it is important to share these stories about developing and implementing nature-based solutions for water and infrastructure projects, and collaborating with a growing national and international community to innovate, solve problems and create sustainable solutions.

"There are so many EWN projects and strategies occurring around the world that can help inform the practice," Bridges said. "Podcasts offer another information-sharing platform for people to learn about nature-based, innovative techniques that are being applied to overcome a variety of complex challenges."

Season 1 podcasts are already available on the EWN website, and there are plans for a Season 2 in spring 2021.

"Interest in the podcast has been overwhelming," King said. "We now regularly have people contacting us wanting to share stories about their work and projects through an EWN podcast. It is exciting to see this level of enthusiasm among our listeners."

Wildfire threatens dam, traps power plant operator inside

"I was doing as much as I could to keep the power plant, the equipment and myself safe. I kept brainstorming to keep myself busy: 'what else could I do?'"

- Mike Pomeroy

By Kerry Solan
USACE, Portland District

Before leaving for work, Mike Pomeroy said goodbye to his wife, Ronda, the way he always did: with a promise.

"I'll see you in 14."

The powerplant operator then made the hour drive to the Detroit Dam that Labor Day evening under "red flag" conditions as the Beachie Fire consumed swaths of land to the northeast.

Detroit Dam is isolated in a canyon in the Cascade Mountains, 45 miles east of Salem, Oregon. The 500-foot dam creates Detroit Lake behind it, and under the masterful plant operators, releases just the right amount of water into the river below.

Throughout the night, the fire surged south as Pomeroy went about his work, driving between Detroit Dam and Big Cliff Dam three miles to the northwest. Dam operators manage both dams while on shift.

Around midnight, the "main line" blew at Big Cliff, and he drove to the dam to reset it.

"I knew conditions were deteriorating" he said. "While traveling to Big Cliff, the wind had kicked up to 50 or 60 miles an hour."

At the time, county emergency managers issued evacuations alerts as the fire rapidly migrated into lands in the North Santiam River Canyon. Pomeroy discovered this only after a state trooper he came across informed him about the Level 3 evacuation notice.

He immediately returned to Detroit Dam and began to prepare the plant to be in an "unmanned" state.

"I knew time was critical," he said. "It was a race to get things in the best state possible before I left."

Pomeroy shut down the generators and opened regulating outlets to continue the flow of water out the dam.

Detroit Dam is considered a remote location, which meant that radios and cell service were intermittent.

He spent the next few hours preparing to evacuate as the wildfire approached the dam from the north, swallowing thousands of acres of land.

The next morning, he finally received the notice to evacuate. He finished readying the dam and called his wife.

"I'm evacuating," he said.

Back home, Ronda was watching the fires.

"I knew that if the fire came, he'd be cut off on both sides," she said.

Pomeroy headed onto Highway 22 toward Big Cliff Dam but was only able to make it a few miles before he had to turn back. The fires raged to strong. Embers, smoke, deadfall, rocks and flames littered the road.

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"I drove through the fire line, hoping to get past it, but the farther I got, I knew I was really in it," he said. "And I knew if I got stuck, there was no way out of it."

Tuesday morning, Tim Ernster, Pomeroy's supervisor, was still planning on his shift exchange, even though he knew Pomeroy would not leave his post.

"I wanted to make sure Mike had an escort out of there, and the incoming operator had an escort in," he said. "We thought we still had access to get to Mike."

After a futile attempt and about 45 minutes after telling his wife he was heading home, he called her again.

"Driving through the smoke, my visibility was, at best, a few feet," he said. "I knew if I hit a boulder or downed tree, I may not make it back to the dam."

"I thought he was calling to tell me he was out of the canyon and was safe," she said. "But he told me he couldn't make it out."

Dustin Bengston is the deputy chief of operations in the Willamette Valley, and oversees conditions of the projects in the valley. Among his many duties, he runs scenarios to plan for disasters — events that would affect the dams throughout the valley.

"We are tuned into fire hazards this time of year," he said. "I'd had a conversation with Mike before his shift about the wind forecast — we knew the risk was high."

But what was forecast and what unfolded was unprecedented.

Unable to leave, Pomeroy continued to secure the dam.

"I was doing as much as I could to keep the powerplant, the equipment and myself safe," he said. "I kept brainstorming to keep myself busy: 'what else could I do?'"

Pomeroy brought vehicles into the powerhouse main bay. He opened the gate and unlocked the penthouse for anyone seeking refuge.

"It was a hundred little details that kept me moving, kept me preparing for whatever would come next," he said.

During intermittent radio contact, he bounced ideas off his coworkers.

(Photo by Amber Tilton)

Mike Pomeroy (second from right, holding bag) stands with the team that made it to his location after he was trapped by wildfires at the Detroit Dam for nearly 30 hours.

"It was comforting," he said.

Pomeroy also communicated with his wife when he could.

"He didn't tell me exactly what he was going through — I think he didn't want to worry me," Ronda said. "He said he was going to take care of the dam and was getting ready to shelter in place."

Ann Gardner was Ronda's contact when she couldn't reach Pomeroy

"She was very calm," Gardner said. "She focused on his pride in the work, and that he was concerned for project safety and taking care of the plant."

True to her expectations, when Pomeroy wasn't preparing the facility, he began to stock the dam — his last ditch was going to be to shelter inside the concrete walls of the dam. He staged water, food and self-contained breathing apparatus. He soaked cloth air masks in water to prepare for smoke. He brought in a cot, spare clothing, a sleeping bag from his locker and anything else he could think of.

Pomeroy climbed the stairs repeatedly to stock survival supplies and prepare the dam, powerhouse and facilities, and taking short 15-minute naps throughout the day.

"There was an exhaustion factor, but I didn't like the idea of sleep," he said. "It felt like putting chance in charge."

Near the end of the day, the air seemed to clear.

"I didn't see the fire. The air was better," he said. "I was hopeful that the worst was behind me."

Miles away in Eugene, Ernster was monitoring the fire and knew it was heading straight toward Detroit.

"When Mike went on shift, it went from a 5% chance that the fire would reach him to the fire being on top of him so quickly," Ernster said. "To watch the condition change so quickly was definitely scary."

Around 7:40 p.m., Pomeroy called Ronda.

"He told me he was going to finish up what he was doing and then rest," she said. "I took comfort in knowing that he's smart, and he was going to do all he could do."

It was their last communication.

"I didn't realize that's when the fire was moving toward him," she said.

Pomeroy continued to monitor the fire through the security cameras, and by Tuesday evening he saw it fast approaching.

"I didn't know how much time I had," he said. "It was a pretty good size, and it looked like it was moving fast."

Using his radio to communicate with other dam operators, Pomeroy discussed his and their final preparations.

"By the time I was done doing all that I could possibly do, I'd completely lost communication," he said.

Pomeroy then made his way to the dam and powerhouse, and recognizing that the fire may destroy the plant, he went into the concrete dam.

It was around 11:30 p.m. His only refugee was a chipmunk that ran inside.

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Near the door of the dam, he staged a life preserver in the event he had to vacate the shelter and jump into the river below.

With communications cut off, Ernster no longer had the distraction of communicating with Pomeroy.

"I kept thinking, 'I'm powerless to do anything, and this could get really bad,'" he said.

Detroit Dam is a large concrete structure with cold, dimly lit tunnels that run through it. Pomeroy would shelter in the lower level, believing it to be the best and most secure place.

Knowing he'd done all he could, he closed his eyes, laid down on his cot and pulled his sleeping bag around him. Despite the fire erupting around the dam, it was so cold. He could see his breath.

Pomeroy's wife could not bring herself to sleep that night.

"I finally laid down around 2 a.m., but I couldn't sleep," she said. "I didn't want to miss a call from him."

When Wednesday morning came, she tried calling his cell phone. Ronda, Pomeroy's wife of nearly 38 years, said she began to cry.

"I thought I'd lost him," she said.

At 7 a.m., Bengsten called Ronda.

"They'd lost communication with Mike, but were trying to get to him," she said.

Eight hours after entering the dam, Pomeroy poked his head out the door.

"I didn't hear or see fire," he said. "I saw daylight."

He tried his radio. Lookout Point, more than 100 miles away, answered him.

"That was a happy moment," he said.

Pomeroy's coworkers and supervisor were in a briefing when they received the news that he was okay.

"There was a pause in the briefing," Bengston said. "I knew each one of us was relieved to hear he was okay."

Around 11 a.m., Ernster and Pomeroy's coworkers, escorted by law enforcement and fire officials through the still-dangerous evacuation area, left to reach the stranded powerhouse operator.

It would take an hour of navigating through roadways littered with debris before they could reach the powerhouse operator.

Ernster said he "isn't a sentimental guy," but ran over to hug Pomeroy nonetheless.

Pomeroy had been alone for 30 hours when he saw his supervisor and coworkers arrive. "It was exhilarating to see them," he said. "There was a lot of hugging.

"We still had a job to do," he said.

Pomeroy and the team began to bring the plant back up, and get the generators running.

As of Sept. 18, the Beachie Fire had claimed the lives of four people and burned more than 190,000 acres.

Returning to them was "everything" Pomeroy said. "It's hard to talk about. It was very important to get back to my family — it was the number one thing."

At 5 p.m, Ronda finally heard from Pomeroy. He was heading home.

Within an hour, Pomeroy, escorted by Ernster, was standing in his front yard.

"When he showed up at the house — there are no words," Ronda said. "My son was with me, and it was a huge hug-fest. Having him standing there in the yard was pretty good."

Days later, Ronda wrote a letter to the team:

Words cannot express how thankful l am to have Mike here with us. I know that without the coordinated efforts of countless people across the Corps, things would have turned out very different.

All the things that were done behind the scenes, the diligence and care that was given to the whole operation and the dedication of all involved has made me appreciate our Corps family even more.

We are beyond grateful for the support and positive attitude needed during a stressful time for all. The phone calls, messages, and concern for me and our family are something that will never be forgotten.

Many lives are forever changed due to this devastating event. Everyone that contributed to the rescue of my husband are now forever family.

With sincere thanks and appreciation,

Ronda Pomeroy

A week after he took shelter in the dam, Pomeroy spoke about the team that supported him from afar through the disaster.

"I'd like to thank them all — their efforts to get to me, their constant communication with my family," he said. "I can't thank them enough."

The experience didn't prevent him from returning to the line of work.

On Sept. 18, Pomeroy returned again to Detroit Dam for his shift.

(Photo courtesy of Mike Pomeroy)

Mike Pomeroy staged a cot and sleeping bag inside the dam to escape the threatening flames closing in on him.