



The Corps

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Environment



**Wildlife
management
ensures**

30 **mission
security,
public safety**

Environmental Operating Principle #3

Create mutually supporting economic and environmentally sustainable solutions.



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The Corps Environment

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The Corps Environment's editorial staff welcomes submissions with an environmental, sustainability or energy focus from USACE and Army units worldwide.

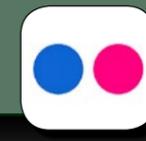
Send articles, photos, events, letters or questions to the editor, at Corps-Environment-Magazine@usace.army.mil.

Submission deadlines are indicated in red:

December 15 February
March 15 May
June 15 August
September 15 November

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Advancing Army readiness through environmental compliance, stewardship

By Amy L. Borman
Deputy Assistant Secretary of the Army for
Environment, Safety, and Occupational Health

The Army's Environment, Safety, and Occupational Health (ESOH) community ensures that Soldiers are able to carry out warfighting missions, and safeguards the quality of life, health, and safety of our Soldiers and their families.

As your Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health (DASA (ESOH)), the **Army ESOH Strategy 2025** provides my framework and strategic approach to successfully respond to new missions and future threats.

Our community's readiness is exemplified by the Army's response to the COVID-19 global pandemic.

In March, during my first month as the DASA (ESOH), our workplace and life as we knew it changed dramatically.

The Army's immediate support to the COVID-19 response efforts serves as a testament to its ability to meet the challenges of emergent threats. COVID-19 has affected the work we do in many ways: from protecting individual and community health, to the research, development and assessment of equipment and procedures, to sustaining the readiness of our forces.

In response to the pandemic, I have issued two Armywide policy memoranda providing interim Army National Environmental Policy Act (NEPA) procedures to accomplish required public engagements normally conducted at in-person public meetings — balancing this urgent public health crisis and restrictions with the need to continue with the NEPA compliance process to enable critical Army mission activities.

The theme of this issue of *The Corps Environment* is mutually supporting economic and environmentally sustainable solutions, in support of Environmental Operating Principle #3.

A particularly noteworthy example highlighting EOP #3 is our current work on the Program Comment for Army Inter-War Era Historic Housing and Its Setting (1919-1940), also referred to as the Program Comment.

The Army has the largest housing mission in the federal government, managing and operating over 100,000 housing units for Soldiers and their families. Of this total, the Army has approximately 26,000 historic housing units, over 3,200 of which are from the Inter-War Era.

The Program Comment, expected in September 2020, will provide the Army with an alternative and programmatic means to comply with its responsibilities under Section 106 of the National Historic Preservation Act (NHPA) regarding Army Inter-War Era housing and its setting (1919-1940).

The Program Comment will address this large class of historic property in a single programmatic NHPA compliance action, with the ultimate intent of reducing health and safety risks for military families living in thousands of historic Inter-War Era housing. It will also improve the quality of life in military family housing that was not previously possible due to the high cost of historic building materials and will address project-by-project NHPA compliance that impacts military families by delaying occupancy of historic housing.

In addition to the Program Comment, this office also anticipates that the revised final Army NEPA regulations are forthcoming. Found at 32 CFR 651, the Army's NEPA regulation is titled "Environmental Analysis of Army Actions."



Amy L. Borman
Deputy Assistant
Secretary of the Army
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Occupational Health

See **ENVIROPOINTS**, page 5

The revision process began in 2016 and the draft final rule is now under final review by the Office of Management and Budget.

Ultimately, revision of 32 CFR 651 was critical to ensure modernization and readiness activities occur as planned with no significant delays due to the NEPA process. The revisions streamline the Army's internal NEPA procedures, particularly in terms of the revision and addition of many new Categorical Exclusions.

Other ongoing DASA-ESOH priorities include conducting cleanup programs to restore property that may contain environmental contamination or military munitions from past Department of Defense use, enhancing Army safety and occupational health programs, and assuring that the Army addresses environmental considerations when acquiring new technology and information systems.

Important environmental contamination cleanup efforts currently

underway include the Army's efforts to address per- and poly-fluoroalkyl substances (PFAS). The inaugural Army PFAS Working Group (APWG) Campaign Plan has been established and includes associated lines of effort intended to keep the Army enterprise on track to mitigate use, investigate past releases, and properly dispose of its PFAS-containing materials.

Regarding munitions cleanup, the Army has inculcated the Army 3Rs (Recognize, Retreat, Report) Explosive Safety Education program. The Army's 3Rs explosives safety program is designed to implement installation-specific Army 3Rs programs that educate military personnel and civilians about the safety actions to take should they encounter or suspect they have encountered a munition.

With respect to the enhancement of the Army's safety and occupational health programs, we published a milestone **Army Safety, Occupational and Environmental Health (SO&EH)**

Strategy 2020 – 2028 in April 2020, marking the first time in 10 years the Army issued a new SO&EH strategy. The Army's Environmental Quality Technology (EQT) program identifies, investigates, and facilitates the use of environmental technology solutions while reducing costs of material production, maintenance, and operation.

Currently, the Army EQT program is fostering innovation and collaboration by promoting opportunities to work with industry, academia, and across DOD laboratories.

It continues to be a busy, yet productive, time for the Army ESOH community.

I look forward to the progress and improvements we will make together as the Army ESOH community.

Collectively, these efforts bring the ESOH strategy, policies, and programs full circle, placing Soldiers and their family's first, and prioritizing modernization and readiness.

Environmental Operating Principles

- 1 Foster sustainability as a way of life throughout the organization.
- 2 Proactively consider environmental consequences of all Corps of Engineers 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 the Corps, 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 Corps of Engineers actions in a collaborative manner.
- 7 Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

Learn more about the EOPs at:

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

Career Program Change Requests

By Karla Langland
USACE, CP-18 Director

Do you believe you should be aligned to Career Program 18, but your employee record shows that you are not?

Career program offices have the authority to transition employees from their current career program into another. In fact, the CP-18 office routinely receives monthly requests from supervisors seeking to transfer employees into the career program. These actions are enabled through the Civilian Human Resources Agency's web-based tool that tracks hiring actions called Automated Nature of Action, or AutoNOA.

In order to request a transfer, the supervisor must login to their AutoNOA account and nominate the employee for the change.

Next, the CP-18 office will receive the request and review the employee's position description against CP-18 business rules. These rules list internal criteria that describes the roles within the

Army community of engineers, scientists, and other construction-related occupational roles and helps the CP-18 office determine the alignment of a position description to the career program. This document can be found on the CP-18 Army Career tracker website.

What if you're not certain what career program you are aligned to? You can check a couple of different websites. First, you can check your civilian career report on **MyBiz+**. Second, you can check **Army Career Tracker**. Your career program is prominently displayed on the front page of ACT after you log in.

Why is it important to be aligned to the correct career program? Proper career program alignment allows access to resources and professional development tools, such as training, certifications/licensure, mentorship and career development opportunities. Employees cannot make this request, only supervisors with authorized AutoNOA accounts can request a career program change. It is important that supervisors ensure employee position descriptions are related to building and construction

efforts and/or are in support or research roles.

Finally, it's important to understand your career program can fluctuate during your career as an Army civilian employee. The position description drives the alignment of an employee to a certain career program, not the employee's formal education, training or background. For example, you could be an environmental engineer by training and apply for and be selected for a program management position. The specific program management position you now occupy may be in another career program. It's all about the duties and responsibilities required in the position description, not the individual's background or training.

If you have any questions about which career program you are assigned to, or if you are a supervisor and want specific instructions on how to access AutoNOA, please drop us a note at: cp18proponencyteam@usace.army.mil.

Project to improve harbor navigation

By Vince Little
USACE, Norfolk District

A U.S. Army Corps of Engineers study aimed at improving navigation and generating transportation cost savings for deep-draft ships using New York and New Jersey Harbor terminals reached a key milestone April 23.

Lt. Gen. Todd Semonite, chief of engineers and commanding general, U.S. Army Corps of Engineers, signed a chief's report, recommending the New York and New Jersey Harbor Anchorages Study for authorization by Congress.

The USACE, Norfolk District led the comprehensive study, but it was a joint effort that included the Corps' New York and Mobile districts.

"This is a tremendous achievement for USACE," said Col. Patrick Kinsman, Norfolk District commander.

He added that, more importantly, this collective team worked tirelessly developing a solution for our partners at the Port Authority of New York and New Jersey to improve efficiencies and reduce risk to port operations by providing anchorage space for larger vessels that currently do not have it.

"I'm so impressed with this effort, especially over the last two months," he said. "Given the Corps' support to (the Federal Emergency Management Agency) fighting COVID, we're still delivering in our important water resources program simultaneously."

The chief's signing culminates a two-year, multiagency, expedited effort to complete the report.

"This is a result of successful execution as a region," said Col. Thomas Asbery, commander, USACE New York District. "Norfolk District did a phenomenal job to lead the collaborative effort of multiple Corps districts, the Port Authority of New York and New Jersey, and many other stakeholders that resulted in an approved chief's report in 18 months. It's an honor to be part of a great team."

According to the report, larger vessels calling on the port now exceed maximum anchorage dimensions – 47 feet below mean lower low water and a length of 1,100 feet. Those ships can't use the anchorage at all, and typically go straight to dock unless there are weather issues.

The new anchorage would allow these

widening it to 3,000 feet with associated approach-area modifications and a maximum designed swing area up to 3,600 feet, and dredging about 950,000 cubic yards of material.

The project's estimated cost is \$25.3 million, with the Corps covering 65% and the Port Authority of New York and New

Jersey, its nonfederal sponsor, picking up 35%.

"The signing of the chief's report positions the project for construction authorization in the next Water Resources Development Act, which is in the works this year," said Richard Klein, chief of Norfolk District's programs and civil works branch. "Authorization is a very important step toward project construction."

The chief's report will undergo further review by the assistant secretary of the Army for Civil Works and Office of Management and Budget before formal submittal to Congress.

The report's signing also permits the preconstruction, engineering and design phase, which shifts to New York District responsibility. That covers project design and typically lasts up to three years.

The project could save ports more than \$320,000 in annual transportation costs, the report stated. It's also expected to

create jobs, investment and economic development.

"The Port of New York and New Jersey is pleased to continue our partnership with the Corps of Engineers to identify improvements to waterway facilities such as the Gravesend Anchorage needed to support the port's current and long-term vision," said Sam Ruda, Port Authority of New York and New Jersey director. "Last year, the agency laid out a 30-year master plan to ensure we continue to lead as one of North America's pre-eminent ports of entry. Continuing to work with the Corps on projects like this is a major part of that plan."

"We thank the Corps of Engineers and Gen. Semonite for their leadership and support, and we look forward to working together on the next stage of this important program," he said.



(USACE Headquarters photo)

Lt. Gen. Todd Semonite, chief of engineers and commanding general, U.S. Army Corps of Engineers, signs a chief's report for the New York and New Jersey Harbor Anchorages Study while Maj. Gen. Scott Spellman, deputy commanding general for civil and emergency operations, displays the study's placemat.

larger vessels to anchor without going back to the ocean, officials said. As future ships increase in size, they will have a reliable anchorage once it's built.

"It's important the Corps continues to meet the nation's needs in a timely manner," said Dan Hughes, Norfolk District's planning resources section chief.

"In New York and New Jersey Harbor, there is insufficient anchorage space to accommodate the largest ships coming into the port," he said. "This creates transportation inefficiencies and leads to higher transportation costs of goods coming into the U.S."

"The potential benefits are that the port will be able to continue to receive larger vessels," he said.

The study's recommendations include: deepening Gravesend Anchorage to a required depth of 50 feet MLLW,

Holistic USACE decision-making: counting social, environmental benefits

By Elizabeth Murray & Trudy Estes
U.S. Army Engineer Research and
Development Center
Susan Durden
Institute for Water Resources

U.S. Army Corps of Engineers employees attended a workshop at the USACE Institute for Water Resources in Alexandria, Virginia, July 24–25, 2019, to lay the foundation for new cross-business line research that will facilitate improvements in how the organization collectively evaluates and plans civil works water resources development projects.

When formulating plans for these projects, various outputs are identified, described, quantified and/or monetized during the planning phase, in order to evaluate alternatives and recommend a plan.

Such outputs are the foundation for any CW

project's engineering, design, construction, operations and maintenance, authorization and budgeting decisions.

To date, the scope of outputs considered during planning have been limited to those most directly relevant to the study or project authority, as defined by Congress.

USACE organizes the evaluation of project effects into four accounts, per the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (1983): national economic development, regional economic development, environmental quality and other social effects.

NED is a well-developed concept backed by economic theory and supported with robust methods and tools.

As a result, many Corps projects focus on

documenting NED benefits. However, these projects may also generate beneficial or adverse effects that fall into the other three accounts, and there is currently no unified theory of value, and often no robust metrics for measuring these benefits or impacts.

For instance, although the EQ account is used to evaluate benefits of aquatic ecosystem restoration projects, as well as environmental impacts of other types of projects, the environmental value of such projects can be challenging to decipher.

The most common output used to

because metrics are not available. Research in public health and safety is ongoing, but the OSE account encompasses many other "quality of life" benefits and impacts that could be considered in project planning: income and employment; community cohesion; socially vulnerable populations; and long term maintenance and productivity of resources.

Work remains to clearly define and incorporate such factors in project analyses and align with evolving Corps of Engineers planning policy.

During the workshop, employees discussed procedures and tools to identify, quantify, and possibly monetize changes to the environment and society to improve the manner in which the Corps evaluates and plans civil works projects.

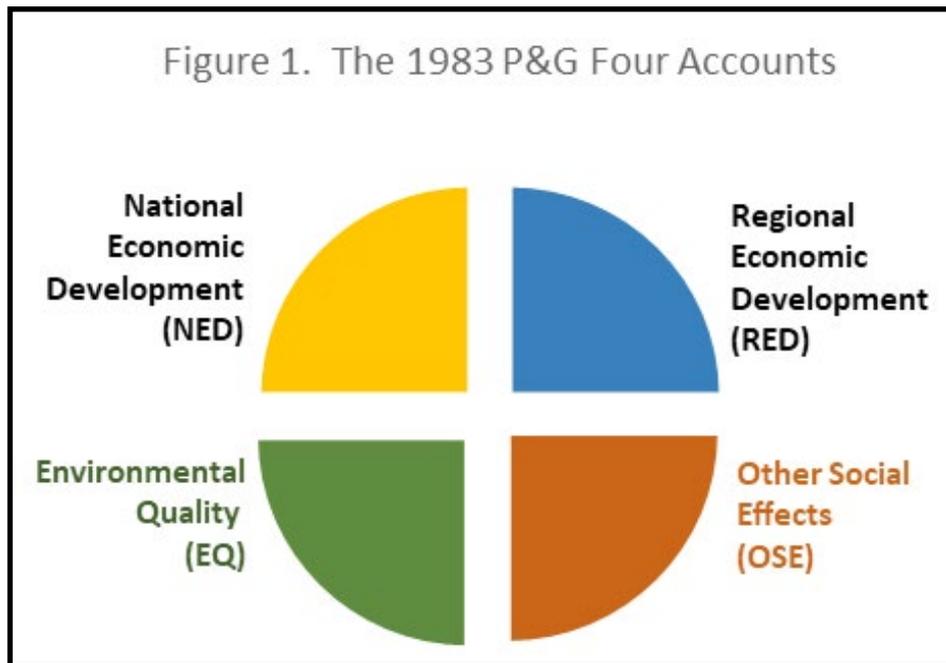
Attendees identified new research and development efforts focused on the refinement or creation of tools and techniques to allow the inclusion of OSE and EQ

considerations in project planning.

Based on the workshop outcomes, a research team has been formed to investigate metrics addressing life safety (including life loss and morbidity), community resilience, social vulnerability and equity, as well as environmental quality metrics that can be applied across aquatic ecosystem restoration and non-AER project types.

The research team will review and adapt existing techniques where possible and work with field teams to ensure practicality and usability.

An inclusive analysis of project effects is needed, and the use of such analysis in decision-making will better fulfill the Corps' federal roles and responsibilities across all of its business lines.



The Corps organizes the evaluation of project effects into four accounts: national economic development, regional economic development, environmental quality and other social effects.

display changes in environmental quality is the "habitat unit," a representation of habitat quality and quantity for a specific species or suite of species.

HUs do not identify or assign values to the suite of other goods and services a restored ecosystem may provide.

As such, they're useful in comparing alternatives within a project, but not for assigning value either within a project or across projects.

EQ benefits associated with flood risk management and navigation project alternatives are not formally considered in the evaluation; including them would provide a more complete, holistic analysis.

Similarly, many factors that would impact the OSE account are not currently considered in project analyses, in part

Reaching cultural success among mountains

Fort Hunter Liggett protects historic sites, manages ever-changing training mission

By Kathy Alward
U.S. Army Environmental Command

The largest Army Reserve installation and the seventh largest of all U.S. Army installations by land, Fort Hunter Liggett is located in the Santa Lucia Mountains along the central coast of California.

The post resembles 20% of the world's terrain on almost 165,000 acres of diverse and remote land that serves as a valuable training environment for constantly changing mission requirements.

Committed to protecting its heritage in both current and future missions without interruption to training, Fort Hunter Liggett's Cultural Resources Management Program (CRMP) successfully manages historic properties that are up to 8,000 years old, with more than 700 recorded archaeological sites, three historic properties listed on the National Register of Historic Places and an additional four historic private in-holdings properties that are considered while planning Army actions.

According to Lisa Cipolla, the cultural resources program manager, "Resources include Native American village sites, burial grounds, and pictographs; Spanish mission-era structures; 19th century mining camps; historic ranch sites and cemeteries; and historic Army training sites."

"The program is dedicated to supporting the military mission by addressing compliance with federal preservation laws, managing cultural resources in support of training, and seeking to protect our nation's heritage through good stewardship practices," she said.

The California-based installation serves as a strategic readiness platform for every branch of the military, including Active, Reserve and National Guard units, state and federal agencies, and foreign allies.

The CRMP prioritizes cultural resource projects within the post's mission and coordinates with the Directorate of Plans, Training, Mobilization and Security as well as the Directorate of Public Works in all levels of planning for immediate and future missions for cultural resource compliance with historic preservation laws.

Army Total Force Readiness was supported at Hunter Liggett in fiscal 2019 when a closed maneuver area was opened after the implementation of a pilot mitigation strategy for capping an archaeological site to support heavy vehicle maneuver.

As part of a programmatic agreement with the California State Historic Preservation Office, the post is able to continue opening more maneuver area as additional survey, testing and mitigation are conducted.

"Thanks to the successful implementation of the agreement and mitigation with Integrated Training Area Management the amount of previously closed maneuverable land has been opened up to increase training capabilities for further support of the Army Total Force Readiness," said Liz Clark, Hunter Liggett environmental division chief.

The CRMP team monitored the capping of two archaeological sites in the Mission Road realignment construction project that successfully preserved the integrity of the sites and allowed for improvement of the main road leading into the installation.

See **HUNTER LIGGETT**, page 11



(Photo by Tom Wilmer)
Mission San Antonio is located in Southern Monterey County adjacent to Fort Hunter Liggett.

The team has evaluated 15 historical structures that are more than 50 years old and assisted with renovation plans for a historic hotel listed on the NRHP that supports Soldiers and families on post.

The team also evaluated 26 archaeological sites in the maneuver areas for NRHP-listing eligibility and successfully implemented the programmatic agreement for off-road heavy vehicle maneuvers at over 200 sites within the maneuver areas.

Through collaboration with the U.S. Army Corps of Engineers, Construction and Engineering Research Laboratory, the post was a test site for a Defense Legacy Grant, a project that is developing a new method that will reduce time and costs in conducting archaeological field studies.

CRMP communicates with local Salinan tribal members regularly, because Hunter Liggett is their ancestral homeland.

For many years, installation personnel have coordinated with members of the local Salinan community to visit Stony Valley, an ethnographically documented sacred place, for ceremonial and educational purposes.

Additionally in 2019, a database of detailed inventory was developed to upgrade the condition of the existing archaeological collections, and more than 9,000 artifacts were repackaged to meet federal curation standards and catalogued into the inventory.

The post's cultural awareness and education are achieved through several methods, including assistance with helicopter tours for visiting military VIPs citing the installation's landscape, history and capabilities. Awareness and appreciation for its cultural history are also included in the newcomer's welcome packet to new Soldiers and their families.

Installation community relations was

exhibited at an educational event. The CRMP team provided a talk on the Gil Adobe structure listed on the national register and met with the descendants of the Gil family.

The CRMP team also provided an interview for the local public radio station covering the history of the hacienda, a historic building that was constructed by William R. Hearst that is of cultural significance and is used for community events on the installation.

More information about the hacienda can be found at www.kcbx.org/post/issues-ideas-tour-historic-hearst-ranch-headquarters.

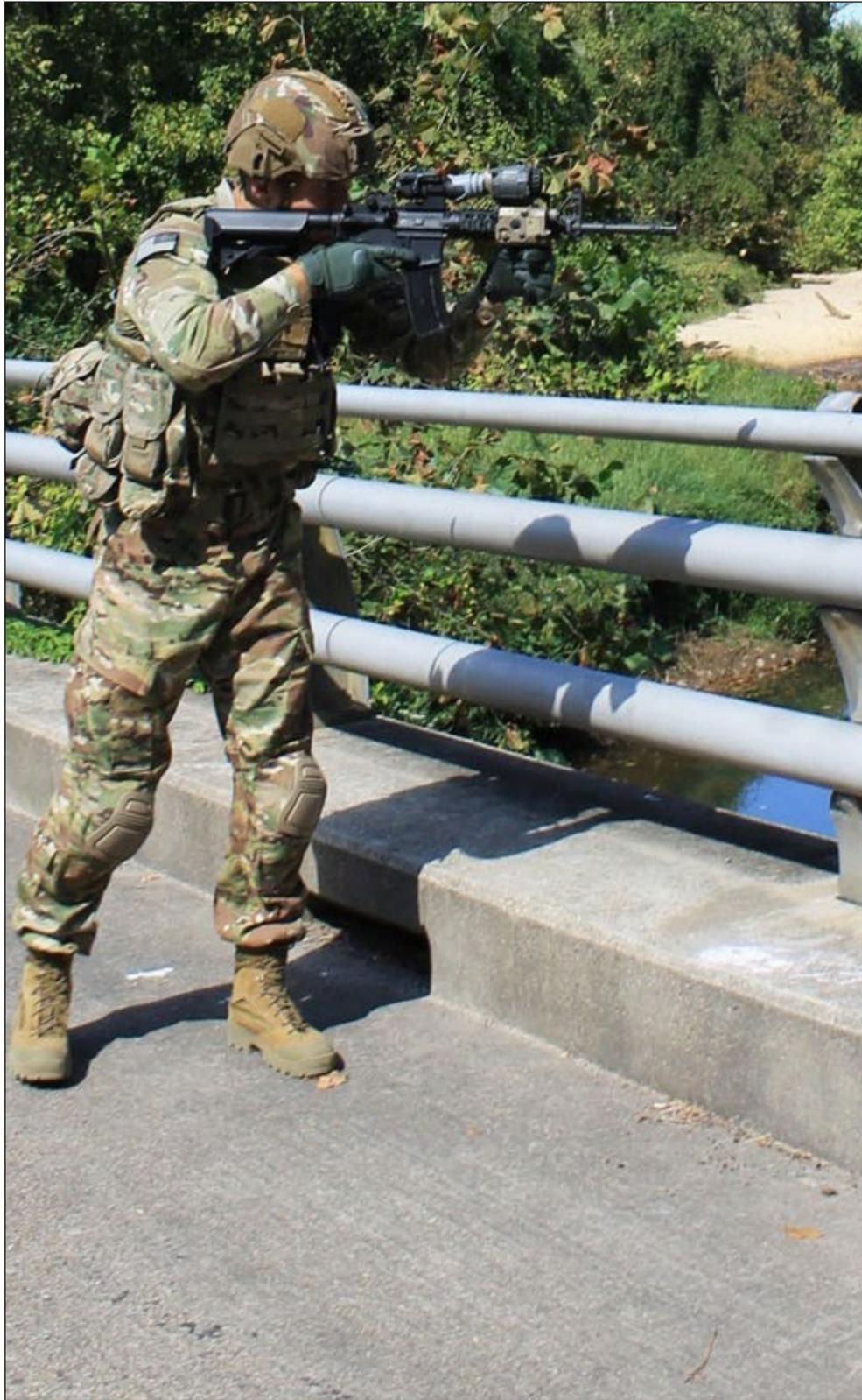
CRMP shares their success stories through several avenues to include participating in the Installation's Integrated Strategic and Sustainability Planning and sharing with other Army Reserve installations and readiness divisions.



(Photo by Cynthia McIntyre)

Members of the Xolon Salinan tribe participate in a smudging purification ceremony before they visit the Stony Valley Arch at Fort Hunter Liggett, California. Bobby Sims, of Apple Valley, uses an eagle feather to waft the sage smoke onto Donna Haro, tribal headwoman, of Sprekels, California.

Fort Belvoir supports Soldier training through environmental stewardship



Story & photos by Lydia Shuart
U.S. Army Environmental Command

Fort Belvoir's Natural Resources Program has been very effective in both supporting the installation's military mission and in achieving land management goals.

Of the installation's 8,500 acres, nearly 5,400 acres are forest with another 1,085 acres of wetlands.

Fort Belvoir also has 12 miles of shoreline along the western side of the Potomac River in Fairfax County, Virginia.

"The mission of Fort Belvoir's Natural Resources Management Program is to manage natural resources as an integral part of the military mission using sound ecological principles to conserve biodiversity and natural resources," said Dorothy Keough, conservation branch chief.

Sizable tracts of publicly and privately owned land outside the post's boundaries are under conservation management, which highlights the importance of conservation beyond its boundary.

The diversity of the land provides the perfect environment for a diverse plant and animal population, including some 483 plant species the Virginia Natural Heritage Program considers rare.

The installation is also home to eight federal- and state-listed endangered and threatened species, with many more under consideration. Recorded on-post are 43 mammal, 278 bird, 32 reptile, 27 amphibian, and 65 fish species.

According to Partners in Flight (PIF), a cooperative network working collaboratively with partners to conserve migratory and resident birds and their habitats, many bird species of concern also call Fort Belvoir home.

The 2018 Fort Belvoir Integrated Natural Resources Management Plan was updated to continue protecting five conservation areas on-post designated as Special Natural Areas between 1979 and 2016.

This plan ensures that conservation does not inhibit the installation's mission-essential training and support. These five areas make up a contiguous corridor for wildlife that connects the installation to off-post regional/state park lands and National Wildlife Refuge habitats.

The management plan was created in partnership and with the guidance of the U.S. Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries.

Fort Belvoir's Natural Resources Program team, headed by Keough, oversees the garrison's adherence to, and creation of, conservation priorities in compliance with laws and regulations.

During the plan's implementation, the NRP team found the installation's geographic information system to be extremely out of date. GIS is used for mapping existing natural resources, conservation actions, surveys and training.

Through innovative resourcing, the team was able to update and upgrade the data to produce high-quality layers and maps for the INRMP.

Fort Belvoir has combined wildlife needs with skills training on the installation. The

team enhanced the shelter and food resources available to amphibians, birds and mammals by thinning all vegetation over 12 feet tall to reestablish early-successional habitat.

This change made way for a helicopter landing zone for Soldiers to use in touch-and-go landings and realistic high-capacity signal training.

The team also provided adequate land obstacles with felled pine logs by thinning an overgrown pine stand for Soldiers' land navigation training. These actions resulted in high-quality habitat for amphibians and some PIF birds while also addressing military training needs.

"Management strategies, implemented by teamwork, improve installation training land to ensure a positive military training experience, while promoting stewardship and sustainability throughout the community," said Greg Fleming, natural resources specialist.

For 20 years, the garrison and partners have held an annual Earth Day event that teaches school-aged children the importance of harmony between natural resource conservation and the military mission.

The Fort Belvoir NRP team held one such event in 2019 to bring the team, a group of community volunteers, and Soldiers together in planting 65 trees in a section of the corridor that had previously been mowed grass.

Fort Belvoir is a leader in the transferability of their expertise and in promoting the harmonious combination of conservation and mission readiness.

Together with their partners and stakeholders, they have been able to bring mission training and Army readiness together with the critical conservation of habitat and wildlife within their boundaries and beyond.



The Integrated Natural Resources Management Plan ensures that conservation does not inhibit Fort Belvoir's mission-essential Soldier training and support.

Working side-by-side picking up debris along the river bank, Fort Belvoir personnel promote and teach area students the importance of environmental stewardship.



(Photo by Melissa Malakos)

A team from the Huntsville Center's Environmental and Munitions Center of Expertise train personnel on how to effectively and safely apply absorbent rolls to a simulated hazardous material spill at U.S. Army Garrison Rheinland-Pfalz in 2019.

Huntsville Center improves HAZMAT management

By **Kathy Alward**,
U.S. Army Environmental Command

Largely through concerted efforts to efficiently and effectively manage, track and report hazardous materials and hazardous waste, Army installations worldwide are protecting the environment and reducing costs.

Implemented with help and guidance from the U.S. Army Engineering and Support Center's Environmental and Munitions Center of Expertise, garrisons are reaping the benefits of reducing the environmental impact of hazardous materials and hazardous waste while still satisfying regulatory requirements.

The Huntsville, Alabama-based EM CX provided program management for the U.S. Army Installation Management Command as it sought to implement the Environmental, Safety and Occupational Health – Management Information System worldwide.

Previously, organizations used other more costly user licenses, such as the Hazardous Materials Management System, or other commercial database that charged annual fees to manage hazardous material and hazardous waste data. Licensing costs were also greatly reduced with the single

EESOH-MIS application.

“Through implementation of the EESOH-MIS, installations can effectively control necessary quantities of hazardous materials maintained on hand to meet mission requirements while at the same time protect the environment by minimizing excess ordering and controlling hazardous constituents,” said Diana Rochford, EESOH-MIS program manager from the EM CX, located in Omaha, Nebraska.

Rochford added that implementation of this system allows the Army to reduce costs, reduce waste and increase readiness by ensuring all its installations and activities use it to effectively manage their hazardous material and hazardous waste.

EESOH-MIS implementation adds value to the Environmental Quality Program, because it retrieves data while still complying with environmental reporting requirements, such as the Emergency Planning and Community Right to Know Act and Resource Conservation and Recovery Act. This also ensures safety data is now available to communicate risks associated with hazardous material to emergency responders and HAZMAT handlers.

The costs associated with the preparation of HAZMAT disposal

documents have been reduced through less paperwork and shorter timeframes. Control of the quantity and nature of hazardous material stored on the installation also ensures compliance with pollution prevention requirements.

Additionally, the EM CX team met with stakeholders to ensure the program was implemented to include training and effective communication requirements.

Stakeholders included Department of the Army G-4, the deputy chief of staff G-9, IMCOM Headquarters, the U.S. Army Sustainment Command, public works directorates across the Army, tenant organizations, and shop stewards and safety and occupational health personnel wherever hazardous material or hazardous waste are used.

The team's efforts from 2017 through 2019 resulted in the transition of 10 installations to the EESOH-MIS.

This included 123 training sessions, six follow-up, nine pre-site and six data collection site visits conducted.

Other achievements include the creation of the Emergency Planning and Community Right-to-Know Act, or EPCRA, that helps communities plan for chemical emergencies and requires installations to report on the storage, use and release of hazardous substances.

Memphis dive team protects endangered species

Story & photo by Kathy Alward
U.S. Army Environmental Command

The fat pocketbook mussel, or *Potamilus capax*, is listed as a federally endangered species, with the largest population in the country historically being found in the St. Francis River Basin within the boundaries of the U.S. Army Corps of Engineers, Memphis District.

The Memphis-based dive team are highly trained and experienced biologists who have assisted other Corps districts such as Pittsburgh, Little Rock, Rock Island and Mobile to be sure their Endangered Species Act responsibilities are met regarding the potential impacts on threatened or endangered mussels.

“The Memphis District has been tasked with maintaining a vast flood control program within the basin that is responsible for protecting life and property,” said Mark Smith, supervisory biologist and dive team leader. “This includes a system of channels, levees, pumping stations and other flood control structures that extends from the hills of southeast Missouri to just north of Helena, Arkansas, covering approximately 8,400 square miles.

“Populations of the endangered fat pocketbook mussel have been found throughout the basin,” he said. “Efforts to protect the species while still maintaining the authorized flood control project have been the focus of the team’s efforts in the basin.”

Consultation efforts associated with the Endangered Species Act, Section 7, and discussions between the Corps and the U.S. Fish and Wildlife Service brought to light the need for a system-wide perspective of the fat pocketbook mussel population within the basin.

Section 7 is a mandate directing all federal agencies to ensure the actions they authorize, fund, or carry out do not put in jeopardy the continued existence of a species, or destroy or negatively modify critical habitats.

Sampling conducted in the basin, primarily by the Corps, as well as the Arkansas Department of Transportation, Arkansas Game and Fish Commission, and other resource agencies, showed that the fat pocketbook mussel population appeared to be stable.

The U.S. Fish and Wildlife Service developed a recovery plan, listing requirements to document and remove the mussel species from its federally protected

threatened and endangered species status.

On July 11, 2018, the Corps officially signed onto the conservation plan with the U.S. Fish and Wildlife Service to ensure that actions were not harmful to the overall population of the species, and to develop data documenting the overall population in the basin.

That conservation plan encompasses two projects that have already saved time and money, including a proposed clean out of Ditch 10 located in Poinsett County in Arkansas and the Belle Fountain Ditch in southeastern Missouri.

Surveys were conducted at Ditch 10 and construction was approved to cleanout a 4-mile channel using timed searches to collect, measure and relocate the mussel species to a part of the stream that would not be impacted by the construction. Cost savings for the Ditch 10 project were estimated at approximately \$60,000 in the survey effort, including at least two months’ time saved.

The Belle Fountain Ditch project involved replacing culverts, typically embedded structures that allow water to flow under roads, railroads or trails, and placing riprap, the rock or other material used to protect shoreline structures against erosion around the new culverts.



The Memphis-based dive team of highly trained and experienced biologists assist other USACE districts to ensure their Endangered Species Act responsibilities are met regarding the potential impacts on threatened or endangered mussels.

(Photo courtesy of California Army National Guard)

Through its programmatic agreement process, the California Army National Guard was able to preserve and protect historic buildings such as the Soldier Bowl amphitheater that once featured celebrity entertainment for troops during World War II.



California Army National Guard maintains historical integrity

By Lydia Stuart
U.S. Army Environmental Command

Camp Roberts, the largest Army National Guard training site in California, is located on 42,361 acres that span both Monterey and San Luis Obispo counties.

Active for the last 80 years, this training site must remain fully functional and strong in its operations, while at the same time respect the natural and cultural environment.

In fact, Camp Roberts has successfully instituted a comprehensive Cultural Resources Management program to maintain the many historic and prehistoric cultural and archaeological sites found there.

The installation serves as the West Coast overseas deployment mobilization center. The site also serves as the training ground for the California Army National Guard, Army, and active and reserve units from other military branches.

Training areas there support a tactical array of infantry, armor and artillery individual maneuvers and collective unit battle drills, including bivouac,

helicopter and airborne operations, land navigation, large caliber weapons training, live-fire exercises, and mounted and dismounted maneuvers.

It is the only dedicated live impact area for all-caliber direct and indirect weapons systems, including a Combined Arms Collective Training Facility that offers urban warfare simulation training.

Starting in 2018, Camp Roberts made great strides in revitalizing its Cultural Resources Management program with the California Guard's full staff and support.

Today, the program prioritizes site protection and technology-enabled monitoring with the help of interagency cooperation. This revitalization began with the execution of a new programmatic agreement (PA) to streamline the management of cultural resources in compliance with Section 106 of the National Historic Preservation Act. That agreement was executed in coordination with the California State Historic Preservation Officer and National Guard Bureau, and is focused on tailoring the Guard's NHPA compliance processes to save time, reduce costs and obstacles, and better enable its training mission.

The new PA enables Camp Roberts to submit its backlog of evaluation reports to the California SHPO,

in order to formally determine resources' legal status in regards to the listing criteria for the National Register of Historic Places. This resolved the regulatory status of 56 archaeological sites and 294 buildings and structures in 2018–2019.

"Compiling and submitting the supporting documentation for these resource evaluations was a huge effort, but the resolution of their NRHP status was worth it," said John Sharp, the California Guard's cultural resources manager.

"The majority of these resources were not determined to be historically significant, and the management of these buildings and a significant amount of acreage within the training lands can now become fairly automated and streamlined per the PA," he said.

This process has also allowed the Camp Roberts staff to focus on protecting the few buildings that do have historical significance, i.e. the Soldier Bowl amphitheater, that exhibits unique regional architecture and which featured celebrity entertainment for troops during World War II.

The amphitheater has benefited from the recent SHPO consultation, and is one of the few buildings on Camp Roberts to be found culturally significant.

When wildfires blazed across the state, the Guard and the California fire department were able to protect the Soldier Bowl from fire damage, preserving its historical legacy.

In 2018, an on-site cultural resources specialist with archaeological experience and extensive geographic information system experience was hired. He was able to establish comprehensive cultural sensitivity mapping in GIS that included updating and correcting archaeological site boundaries, depicting the NRHP status (i.e., regulatory status) of all archaeological resources, and depicting sensitive areas requiring Native American consultation.

This new program made way for integrating the CRM GIS layers with natural resources, training operations, historic land use, and proposed projects for more viable data.

To date about 35,000 acres have been surveyed for archaeological resources. To survey the final 5,000 acres (approximately 3,000 acres of "impact area" are exempt from the survey) funding has been programmed into fiscal 2020.

The integrated, georeferenced map will establish detailed spatial boundaries to facilitate training movements and construction activity, and it will help

to classify sites by regulatory status.

A Camp Roberts master digital database was also created to keep up-to-date information, summaries and bibliographic data for all existing cultural resources reports.

The CRM program team has also established working relationships with local Native American tribes — California has the most diverse Native American population in the U.S. — to consult and aid in the survey of Native American cultural sites, a vital piece of stakeholder collaboration.

"Our CRM efforts on Camp Roberts are primarily aimed at directly supporting the activities focused on the training and readiness of Guard Soldiers," Sharp added. "Our recent efforts related to both historical buildings and archaeological sites have had the ultimate effect of facilitating construction projects and opening up new acres for training or construction according to the installation's needs."

The CRM program ensures that the California Army National Guard and its partners have a lasting pledge to preserve the integrity of significant cultural and historical resources at Camp Roberts, while simultaneously maintaining a tried and true commitment to mission readiness.

Arkansas Guard exceeds environmental impact goals, reduces energy costs

By Lydia Shuart
U.S. Army Environmental Command

The Arkansas Army National Guard is making great strides in renewable energy sources across the state.

The Guard encompasses two major training sites where momentous reductions in energy use have been made, the Camp Robinson Maneuver Training Center and the Fort Chaffee Joint Maneuver Training Center.

Camp Robinson covers nearly 33,000 acres and accommodates the Professional Education Center, providing conferences, classes and training for the nation's full-time Guard support personnel.

The larger of the two training sites, the Fort Chaffee Center, covers over 65,000 acres and includes specialized training facilities like the Arrowhead/Rattlesnake Assault Strip, Carnis Village and the Carnis Auburn Forward Operating Base.

The Guard's environmental staff oversees the environmental impact of the two training sites, 54 readiness centers and 862 buildings, statewide.

"Reducing energy use has been a longstanding goal for the Guard's environmental management system, and over the past two years, the environmental staff documented a nearly 7% reduction, a significant milestone for that program," said Darrell Daniels, Environmental Programs branch chief.

The state Guard's energy goals include but are not limited to energy independence, a goal that is steadily coming to fruition.

It has been developing and implementing several plans to reduce energy consumption, reduce solid waste, increase recycling, and

to make greener choices in their everyday operations.

But before implementing any new energy or solid waste management plan, the staff must identify the current energy use and solid waste to efficiently focus on where the plans and goals should be centered.

First, through \$1 million of infrastructure funding provided in 2019, the Guard was able to build a new 360-kilowatt solar field at Camp Robinson. The solar field was created with an additional megawatt expandability of power production should the center's needs increase and funding becomes available.

The solar field is operational and is projected to offset the Guard's current energy consumption by between 5% to 10%. All excess power produced by the solar field is rerouted to the public energy grid.

Fort Chaffee is working on a similar solar field design.

There, the Guard is looking for further redundancies in its energy systems to ensure that there are no training interruptions or impediments.

In the natural gas capacity, a second gas line has been connected to the other side of the installation.

In the electrical capacity, it has tied into a second substation should anything happen to the initial substation.

Between 2008 and 2018, the Guard's energy use dropped from 66.4 kBTU/square foot to 54 kBTU/square foot, a significant decline for an installation that encompasses 5 million square feet of floor space.

During site inspections of the Environmental Performance Assessment System, the installation earned 49 positive findings overall, making it the most positive EPAS assessment ever, and one of the best

assessments in the nation.

The installation did, however, require some improvement in solid waste management.

The environmental staff conducted a complete waste audit in 2018 that helped identify where the installation's weaknesses were and enabled the staff to develop an Integrated Solid Waste Management Plan to drive waste diversion and reduction.

The installation was found to be generating 1,606 cubic yards of solid waste per year, including municipal, construction and demolition solid waste.

The installation's recycling program diverts 67% or 300.6 tons of solid waste annually, reducing disposal costs and generating an average revenue of \$200,000 for the state each year.

In the hunt for sustainability and green procurement, the staff constantly monitors operational and general cleaning supplies for possible green substitutions.

To reduce internal lab costs, the staff has obtained a \$4,600 internal sampling kit to characterize unknown compounds in-house. Normally, each test costs around \$1,200 a sample, and with an average of a dozen samples required each year, the kit will easily pay for itself within months.

According to Lt. Col. Brian Mason, the state Guard's public affairs officer, the environmental team's efforts solidifies our position in the communities as a great neighbor who cares about being more than just a good environmental steward.

"This award," he said, "demonstrates our exemplary efforts in environmental science, sustainability, innovation, green remediation and practices, preservation and protection."

Montana Guard restores environment with advanced geophysics technology

By Kathy Alward
U.S. Army Environmental Command

The Montana Army National Guard remediation team leads cleanup projects to restore legacy training sites throughout the state.

These sites have been contaminated with munitions or munitions constituents and may include unexploded ordnance, or UXO, that did not detonate decades earlier and are still capable of exploding.

“The Guard has historically used local training areas to train its Soldiers, but sometimes these areas were not cleaned up completely after use, especially rounds that entered subsurface soil.” said Virgil Kaiser, remediation specialist, Montana Army National Guard.

“These sites can pose a risk to people who recreate on public lands or build on

private lands that were former training areas,” he said. “So current land use is a key risk factor when setting remediation targets.”

The Guard is using advanced geophysics to detect UXO located below ground with increased accuracy, helping eliminate the guesswork in excavation while reducing remediation times and costs.

Advanced geophysics equipment confirms the shape of anomalies with digital data, which helps the project crews positively identify UXO and eliminate fragmentation, metallic rocks and non-UXO anomalies from their digs.

The number of anomalies can be reduced by 80% using this technology.

“While this technology has a cost to it, it ultimately slashes the time spent at a project site, reduces the number of anomalies to investigate, and reduces the potential time residents are evacuated during UXO excavation,” Kaiser said.

He estimates that the team has saved over \$80,000 at just one of the five sites now being targeted for cleanup using this technology.

When funding became available in fiscal 2018, five UXO remediation sites in Montana proceeded with cleanup under the oversight of the U.S. Army Corps of Engineers: Scratchgravel Hills Artillery Range, Livingston Target Range, Dawson County Local Training Range, Lost Horse Rifle Range and Frying Pan Basin.

During these cleanup actions, the Guard worked to establish relationships with stakeholders, including state regulators and public and private landowners with whom they negotiate for land access.

In addition, the Montana Guard ensures their interests are being met by overseeing contractors hired by the Corps to write cleanup plans and reports and to perform remediation fieldwork.

See MONTANA, page 21



(Montana Army National Guard courtesy photo)

An advanced geophysics metal mapper 2x2 collects dynamic data during the remedial cleanup phase at the Scratchgravel Hill cleanup site.

Army Reserve leverages alternate water sourcing, bolsters mission readiness

Story & photo by Ashley Bradford
U.S. Army Reserve
Sustainability and Resiliency Division

When you think of the U.S. Army Reserve, it's unlikely the first thought that comes to mind is leading innovators in alternative water sourcing.

Yet, it's true — the Army Reserve is committed to leveraging new technologies and innovative applications to reduce environmental impacts while bolstering mission readiness and resilience.

From rainwater harvesting systems to exploring atmospheric water generation and ground water recharging, the Army Reserve's Energy and Water Program strives to blaze a sustainable path into the future.

While governed by various federal and Army requirements and regulations, the water program takes it a step further with a holistic strategic approach.

The Reserve component not only aspires to meet those demands, but it implements the best-fitting solutions with wide applications at its centers and Army

Reserve-funded installations.

These solutions aim to avoid complex new technology just for the sake of innovation and instead focus on providing sustainable systems that make existing installation systems and personnel more efficient and effective.

One of the technologies at the top of the program's solutions list for the past four years is rainwater harvesting systems.

In 2016, the Army Reserve began researching ways to offset non-potable water needs.

It found that using repurposed rainwater to wash vehicles was a great place to start and pilot systems were subsequently installed at Reserve centers in Savannah, Georgia, and Grand Prairie, Texas.

Because water requires minimum filtration and only low-dose treatments of chlorine to use in non-potable applications, it's considered a fairly low-risk use of rainwater harvesting.

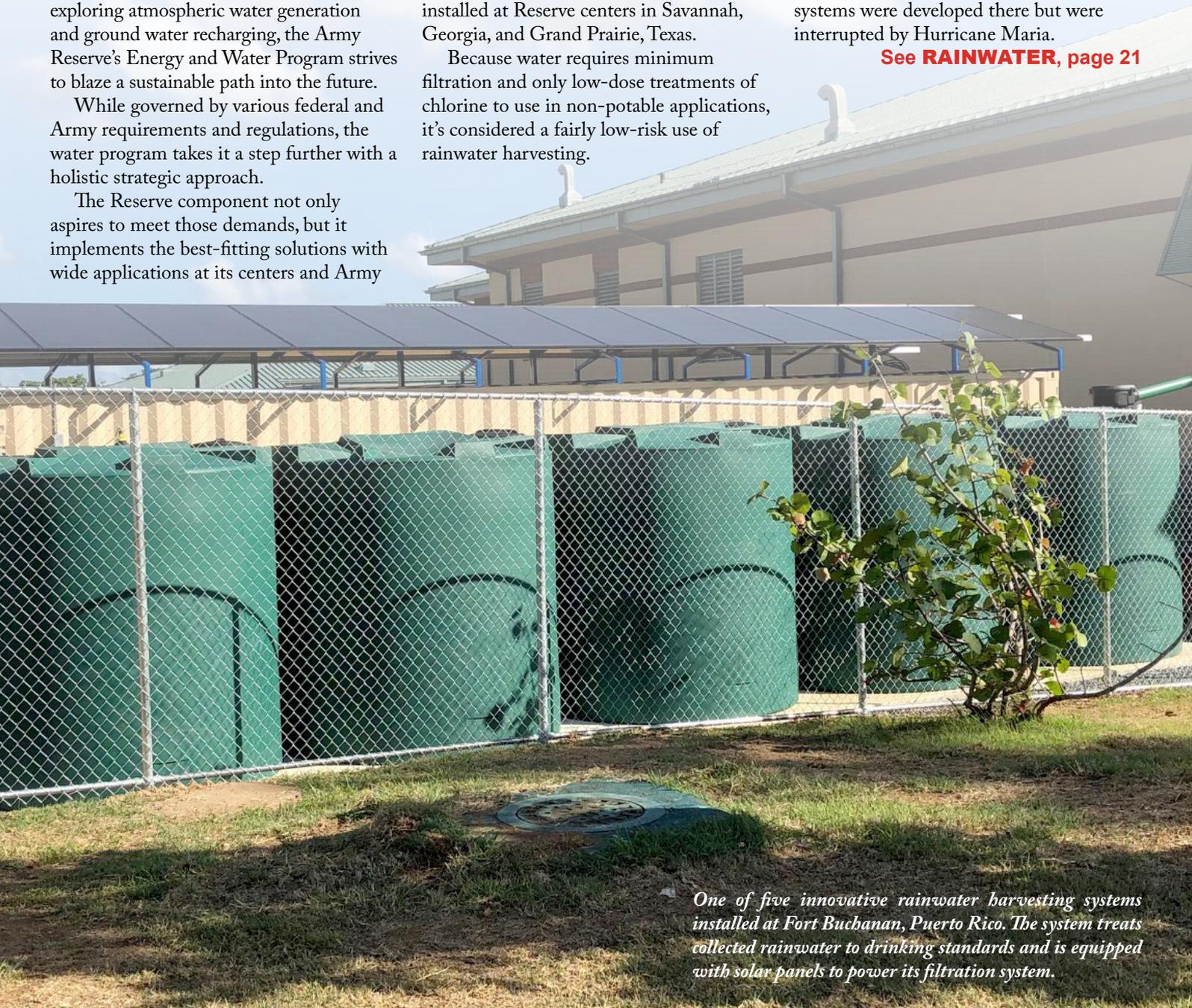
Both sites realized great success by collecting a combined 35,000 gallons of water (April 2017-May 2019) and met 95% of their vehicle wash demand.

The systems were also found to be easy to maintain and were well-received by the maintenance personnel who regularly used the systems.

After the success of the two pilot systems, the Army Reserve decided to use rainwater harvesting systems as an alternative potable water source at Fort Buchanan, Puerto Rico, an installation that has seen its fair share of natural disasters.

With no water back-up system in place, plans for a series of rainwater harvesting systems were developed there but were interrupted by Hurricane Maria.

See RAINWATER, page 21



One of five innovative rainwater harvesting systems installed at Fort Buchanan, Puerto Rico. The system treats collected rainwater to drinking standards and is equipped with solar panels to power its filtration system.

Encompassing 41.34 acres near Helena, and previously used for training from the 1950s until 1984, Scratchgravel Hills Artillery Range has publicly accessible trails owned by the Bureau of Land Management. Previous investigations there discovered mortar and high explosive items that could harm the public.

Surface and subsurface munitions are being detected using advanced geophysics as required by the 2018 proposed plan for cleanup.

A dramatic improvement was seen by using advanced geophysics instead of conventional restoration actions at Livingston Target Range Munitions Response Site, 28 acres near the town of Livingston that supported munitions training in the 1930s. The team is the face-to-face liaison between the Corps and landowners who were reluctant to grant access to the land.

During the remediation process for the 10.4-acre, privately owned, Dawson County Local Training Area Munitions Response Site, it was determined that lead could be a soil and water hazard, and grenades used for training from 1950 to 1998 could pose a UXO hazard.

Future cleanup will include removal of surface fragments and legacy berms contaminated with lead and recovery of grenade material to a depth of 18 inches below ground surface.

In addition, future cleanup efforts at the Lost Horse Rifle Range munitions response site are slated.

Primarily used as pasture land today, the 4.5 acres of privately owned land was used from the end of WWII until the 1970s as a small arms target range.

There, the primary goal is to remove lead contamination by excavating and properly disposing of the target berm.

Remedial Investigation activities

were completed in 2018 and a feasibility study is now being initiated to develop and analyze remedial alternatives at the Helena North Hills, a site that consists of privately owned open ranch land and state-owned land that is at times open to the public.

The Helena location is immediately adjacent to another site that underwent extensive UXO remediation.

Live-fire training with tanks, mortars, and towed artillery was conducted in this area from approximately 1948 to the mid-1950s.

The expanded use of advanced geophysics technology serves to protect human health and the environment, while saving time and funding.

In addition, by employing this equipment at multiple Guard sites, it will facilitate validation and nationwide use on UXO sites undergoing remediation.

RAINWATER

continued from page 20

Devastated by the category 5 hurricane during September 2017, the Caribbean island suffered extensive damage and lost consistent water service for a month.

Post-hurricane recovery efforts proved more than ever that resilient alternative water sources were desperately needed.

In 2018, an innovative new rainwater harvesting system, designed to treat collected rainwater to drinking standards, was installed at the Fort Buchanan welcome center. To push rainwater through the system's advanced filtration and help power the system's automation and telemetry, the system is equipped with solar panels, enabling it to operate despite disruptions to the electrical grid.

Additional systems were installed at four other facilities, and there are plans for three more rainwater harvesting systems to be installed by the end of the summer.

Beyond low-risk and low-impact applications, the Army Reserve Installation Management Directorate looks forward to embedding more cutting-edge solutions that have the potential to change the way critical missions are conducted.

"As we look to the technology of tomorrow, there's always a benefit to

finding technologies that can also be applied to our tactical applications," said Trey Lewis, a contract employee with

These solutions aim to avoid complex new technology just for the sake of innovation and instead focus on providing sustainable systems that make existing installation systems and personnel more efficient and effective.

Pacific Northwest National Laboratory who works as the Army Reserve's water program coordinator.

"In the Army's push to multi-domain operations and our new construct to enhance the agility of the warfighter, that's where we can see solutions

like atmospheric water generation potentially coming into play," he said. "This technology produces potable water from the ambient air surrounding the generator. It's portable, works in various environments, and could be a game changer for disaster response by allowing rapid production of water at any location, regardless of proximity to surface water."

As far as enhancing the way the Army Reserve manages water infrastructure, Lewis said there are lessons to be learned from energy microgrids and leveraging a similar setup for water.

"Just like with energy, there's an opportunity to build on legacy water structures and layer microsystems within them," he said. "These microsystems enable the management and distribution of water to become more cost effective, increase efficiency and bolster our resilience as we harden our Army Reserve centers and Reserve-funded installations. With all these solutions at our fingertips to explore, it's going to be exciting as the technology continues to evolve, and the Army Reserve is at the forefront."

For more information about the Army Reserve's Energy and Water program, visit <https://www.usar.army.mil/Sustainability/>.

Stormwater team helps protect post's natural water resources

By Kathy Alward

U.S. Army Environmental Command

Fort Belvoir, located in Fairfax County, Virginia, on 8,500 acres within the Potomac River and Chesapeake Bay watersheds, is home to three refuges that conserve 1,750 acres and help protect the integrity of the watersheds.

The Fort Belvoir stormwater team is the heart and soul of the post's natural water resources conservation effort.

"The stormwater team uses an iterative management approach to reduce risks, maintain compliance, and continually improve processes and programs," said Sybille Vega, industrial stormwater program manager.

According to Felix Mariani, environmental chief, Fort Belvoir's goal is to remain a world-class installation, while maintaining a new standard of excellence in sustainable federal urban design and development.

The stormwater team from the Directorate of Public Works Environmental Division Compliance Branch ensures that stormwater structures are well maintained, making Fort Belvoir cleaner and more attractive for all of its residents.

Team personnel educate the community on the importance of keeping stormwater clean to ensure the preservation of natural water resources at public events such as Earth Day and Safety Day.

Fort Belvoir operates under the Master Stormwater Pollution Prevention Plan that outlines practices and controls used to protect the integrity of stormwater discharges and satisfy compliance requirements stated in both the installation's individual industrial stormwater major permit and the municipal separate storm sewer system general stormwater permit.

Accomplishments include 17 new stormwater control practices brought on line, including the historic district's new regional pond.

The main purpose of the pond is to alleviate flooding issues resulting from the lack of stormwater management structures in the historic district.

The pond can withstand a 100-year



(Photo by Wilamena Harback)

Sybille Vega, industrial stormwater program manager, and an associate take turns helping each other dress out in HAZMAT suits during a training exercise for hazardous materials spill response.

storm, has reduced nutrient and sediment loads from the area, and prevents stormwater damage that would result in costly repairs to buildings that are eligible to be listed on the National Register of Historic Places.

More than 2,100 linear feet of streams have been restored through the efforts of the stormwater team.

The team was responsible for eight cleanups, using about 300 volunteers to divert over 300 bags of trash from the watershed to proper disposal systems.

Non-exposure conditions met at 16 facilities were identified and documented to increase the potential to have the sites removed from permitting requirements.

The team published approximately 20 stormwater education articles in *The Fort Belvoir Eagle*, and produced 20 fact sheets on best management practices required to maintain compliance with ISW and MS4 permits.

Extensive plan reviews are conducted by DPW-ED to ensure the most current standards for stormwater design are incorporated into projects.

Additionally, team members work with the Virginia Department of Environmental Quality to drastically decrease time needed to obtain plan approval, increase efficiency by condensing the overall process, reduce contracting costs, and keep stakeholders on track without their losing interest.

Entomologist warns of tick spread, threat

By Cathy Kropp
U.S. Army Environmental Command

In an alert from the International Society for Infectious Diseases, Army Environmental Command's entomologist learned of the spread of lone star ticks and the threat they pose to unsuspecting populations.

Named for the dot on their back and not for the state, the lone star tick is found at many southern posts and is moving into the northeast United States region, including New York.

Lone star ticks are considered "hunter" ticks. They typically seek out mammals, including humans, and crawl quickly toward them.

Deer ticks are "questing" ticks. They climb onto grass and then attach themselves to mammals who happen to pass by.

According to Cornell University, lone star ticks can run three times faster than deer ticks.

Lone star ticks do not transmit Lyme disease, the most common illness caused by other ticks. However, they can carry several other serious bacterial and viral diseases and can cause an allergy to red meat.

The tick can spread a bacterial disease called ehrlichiosis, which has similar symptoms to Lyme and can result in severe illness. It can spread tularemia, also caused by a bacterium that can cause fevers and skin ulcers.

The tick can also carry Heartland virus. This is of great concern, as there is no vaccine for it yet. The Heartland virus causes a flu-like illness, including fever, headache, muscle aches, diarrhea, appetite loss and tiredness.

Southern tick-associated rash illness is also known to be transmitted by bites from the lone star tick.

Most Army installations already have a program in place that explains who or how tick bites should be reported.

The Army Environmental Command disseminates information products on specific pests that can affect Army operations.

Information on ticks is included on two posters the command developed to help organizations educate and inform post residents, workers and visitors why

or when they should be concerned.

One is to keep adults aware <https://go.usa.gov/xwg82> and the other is an activity book for children <https://go.usa.gov/xwg8T>.

"If parents need something to occupy their kids during 'stay-at-home' restrictions, I recommend our Ticks Make You Sick activity book," said Dr. Bill Miller, entomologist for the Army Environmental Command.

He recommends that those who live and/or work on Army installations should watch for these ticks, and if a tick is found on their body, they should

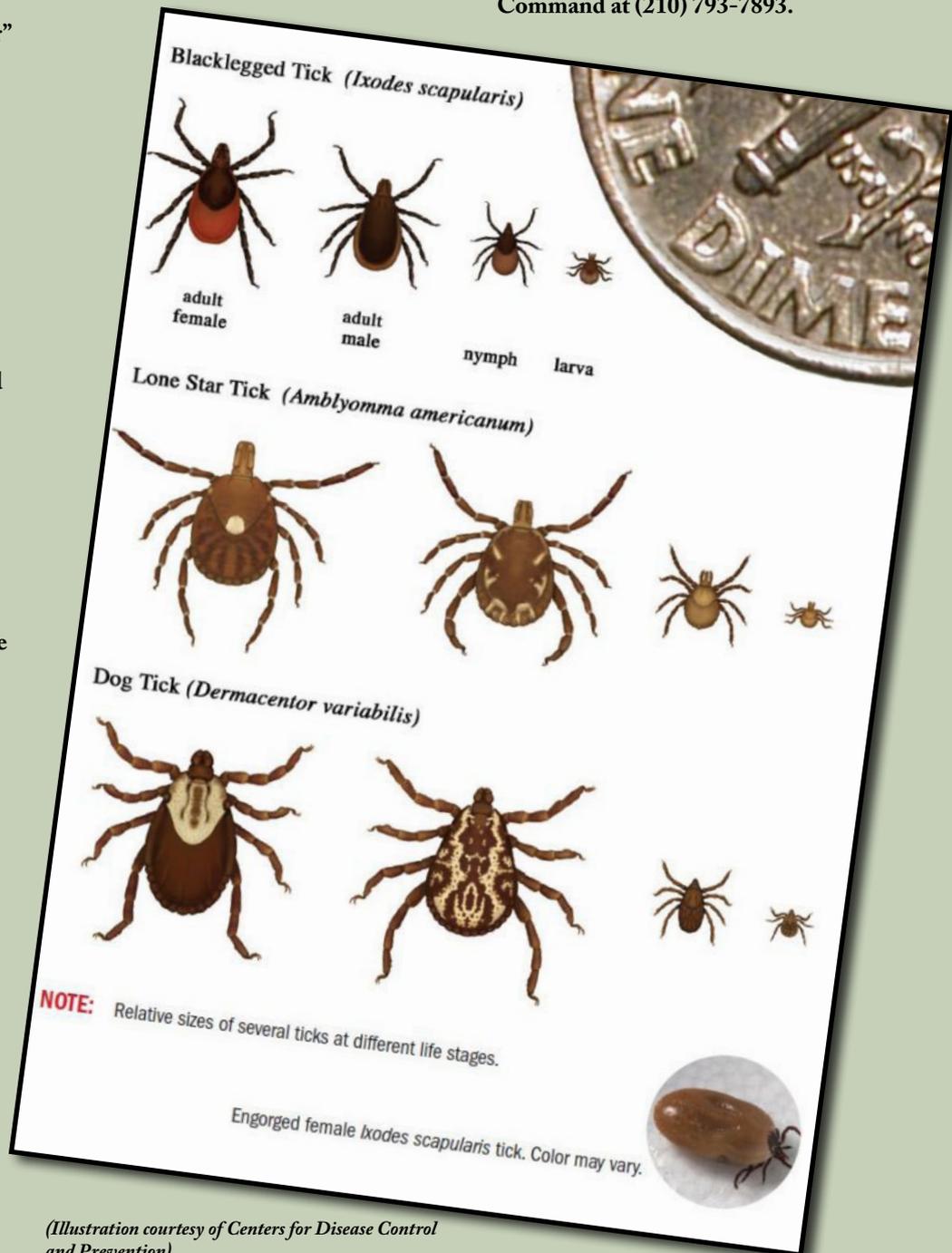
contact the local military medical treatment facility.

Facility personnel will send the tick to the Human Tick Test Program at the Army Public Health Center.

If the tick is found on a pet, owners are instructed to contact their family veterinarian.

Miller said to submit a work order or contact your integrated pest management coordinator if you find ticks in or near military housing.

If someone doesn't know who the installation pest manager is, they can contact the U.S. Army Environmental Command at (210) 793-7893.



(Illustration courtesy of Centers for Disease Control and Prevention)

Twice the Life

Post repurposes textiles, increases waste diversion

Story & photo by Ashley Bradford
U.S. Army Reserve
Sustainment and Resiliency Division

Textiles and conducting research for post collections, Fort Buchanan entered into a memorandum of understanding with the for-profit company in the spring of 2019.

commercial, high-traffic areas near the post's two main entrances. This way, regardless of where entry is made, donations could be easily dropped off free of charge without having to drive to the other side of post.

U.S. Army Garrison Fort Buchanan, Puerto Rico, is the only federal military installation on the island and, in fact, the only one in the Caribbean.

Its unique location, coupled with a history of overcoming natural disasters, makes for a strong, tight-knit community that takes care of each other and their resources.

The Fort Buchanan Directorate of Public Works is always seeking new sustainable and resilient solutions to bolster their community and environmental stewardship.

Their newest initiative, a textile collection program, is strengthening partnerships while diverting waste that would have been sent to landfills.

"When evaluating ways to increase recycling, we determined there was an opportunity already on the island we could potentially leverage to create a stream for clothing," explained Osvaldo Fantauzzi, Fort Buchanan's pollution prevention program manager.

"We reached out to PR Textiles Recycling, LLC, and invited them to the installation to learn more about their operations," he said.

"The company has collection bins in place at municipalities, school districts, non-profit and for-profit organizations, businesses and associations across Puerto Rico to collect clothes, shoes and other textiles," he explained. "Any clothing donated in new condition is reused, while other material is shipped to the United States to manufacture rags with post-consumer recycled content."

After initiating meetings with PR



Collection bins are strategically placed at high-traffic areas near the post's two main entrances to encourage the public's participation in the textile recycling initiative.

The MOU, drafted in its final form by Maria M. Martinez, management analyst, outlines the program's parameters with the installation for the span of 36 months.

PR Textiles provided four collection bins that were strategically placed in

commercial, high-traffic areas near the post's two main entrances. This way, regardless of where entry is made, donations could be easily dropped off free of charge without having to drive to the other side of post. "It's been a real great experience in terms of relationship," Fantauzzi said. "Partnering with PR Textiles enables us to easily provide a service for our community while giving back to others and reducing waste."

Since September 2019, the post has collected and diverted 2.6 tons of textiles.

"Some of the items donated are brand new with the price tags still attached," Fantauzzi added. "So being able to pass them on to someone else is huge. And for the other items that can be processed and recycled, PR Textiles has the shipping and export resources that would otherwise be too costly for us to manage."

Looking ahead, the post's DPW Environmental Team, under the leadership of Anibal Negron, hopes to increase textile collections while also finding more ways to recycle additional materials that pose a challenge on the island.

"We have seen some interruption to textile collections with a recent earthquake and now the coronavirus disease," he said. "We're hoping the disruptions will minimize later into the year so we can continue to serve the local community through the program and better project consistent waste diversion."

"We're also hoping to pursue more ways to better recycle other streams like glass as it's difficult to recycle here," he said.

"Through all the challenges we may face, our DPW is strong and resilient," Fantauzzi said. "We remain committed to blending our mission with taking care of each other and our resources."

Army depot uses limited resources to make impact

Story & photo by Lydia Shuart
U.S. Army Environmental Command

Corpus Christi Army Depot successfully recycled 17 tons of metal and cardboard materials on a monthly basis in 2018-2019.

It also improved the corrosion prevention process by successfully using environmentally preferred chemicals.

Established in 1961 and located on the Naval Air Station Corpus Christi, Texas, the depot is an industrial Army installation responsible for providing depot-level maintenance of rotary aircraft for the Department of Defense as well as most North Atlantic Treaty Organization nations. It operates under an Army Working Capital Fund and has an annual revenue of more than \$800 million.

Employing over 5,500 personnel and contractors, the installation sits on 158 acres and houses more than 70 buildings on 2.3 million square feet of industrial space.

The depot ensures the Army's aviation readiness through overhaul, repair, modification, retrofit, testing, recapitalization and modernization of helicopters, engines and components, including worldwide on-site field maintenance teams, analytical crash investigations and chemical material process facilities.

According to its former commander, Col. Gail E. Atkins, the depot's goal is to meet the Army's readiness requirements no matter what the mission, during war and peacetime.

"We will always answer our nation's call," she said. "Our vision is mission first, people always! We accept that mission with great pride."

Atkins relinquished command to Col. Joseph H. Parker during the depot's first-ever virtual change of command ceremony held May 29.

As an Army Working Capital Fund entity, and an International Organization for Standardization-certified industrial operation, the Corpus Christi Depot efficiently uses time and resources while maintaining high-quality manufacturing, environmental and safety standards.

The U.S. Army Aviation and Missile Command supports the Depot Environmental Management System in the identification and implementation

of sustainable actions and improvements.

The depot recycles as much as possible to keep personnel in the recycling mindset, using the installation solid waste contractor and Defense Logistics Agency Disposition Services to recycle as many waste streams as possible.

In 2018 and 2019, the depot established a means of increasing their recycling practices of metal and cardboard waste by 40%, diverting 15 tons of mixed metals and 2 tons of cardboard to recycling per month.

The Environmental Compliance Program staff make it almost effortless for personnel to recycle the waste by providing readily accessible receptacles that they pick up and store.

The nature of the depot's industrial processes dictates that most parts must go through a process called passivation to prevent corrosion, typically using hazardous chemicals.

As part of a toxic chemical reduction program, a test was conducted there to replace nitric acid in the process with an environmentally preferred product.

Considered the industry standard, nitric acid is commonly used on products in the aircraft and auto industry that require corrosion prevention.

The depot replaced nitric acid with citric acid as an easy-to-use organic and safe alternative.

Found in oranges and other citrus fruits, more than 99% of the citric acid sold in the U.S. is used in food and beverage products, cleansers and disinfectants.

In addition, when formulated correctly, citric acid provides excellent performance at considerable cost savings.

The depot, in a partnership with AMCOM staff, conducted tests on the use of citric acid in the corrosion prevention process at its plating shop.

That solution proved too acidic to treat in the pre-treatment process, but the wastewater treatment team believed they could neutralize the base in another process that created the alkaline waste, requiring the use of sulfuric acid to bring the pH in line for disposal in pre-treatment systems.

The team sought to determine whether the citric acid could replace sulfuric acid in the process.

After several tests had provided positive results, the team was able to make two separate processes "greener" as a result of the chemical change.

The Corpus Christi Army Depot's goal is to meet the Army's readiness requirements no matter what the mission, during war and peacetime.

"We will always answer our nation's call. Our vision is mission first, people always! We accept that mission with great pride."

Col. Gail E. Atkins
Former commander
Corpus Christi Army Depot



Kolda Elementary School principal, Josie Alvarez, looks on while Corpus Christi Army Depot employees from the Environmental Program's Compliance Division and presenters from the local area teach students about environmental stewardship during the school's Earth Day festivities.

Study offers Charleston potential solutions to reduce storm risks

By Jackie Pennoyer
USACE, Charleston District

Following months of analysis and statewide coordination, a team of engineers from the U.S. Army Corps of Engineers recently drafted a report on the Charleston, South Carolina, peninsula's coastal storm risks and developed a feasible plan to mitigate the risks.

The Charleston Peninsula Coastal Flood Risk Management Study, or simply the Charleston Peninsula Study, is part of a broader federal initiative — fueled by local collaboration — to proactively reduce the risks and damages caused by severe coastal storm events in communities along the east coast.

This spring, the three-year federal study recently crossed an important milestone: selection of a tentative coastal flood risk reduction strategy for the peninsula, the study's defined area.

On April 20, the study team released its blueprint of proposed measures in a draft report. The report also covered the study's assessment of environmental impacts, as required by the National Environmental Policy Act.

In general, the plan recommends three measures: a perimeter storm surge wall, an offshore wave attenuation structure and some additional nonstructural floodproofing.

Combined, these measures make up what is known in the federal civil works process as the National Economic Development, or NED, Plan.

At this stage of the federal study, all measures remain conceptual only.

The report opened for public comment through June 19, but due to the ongoing public health crisis, the study team extended the comment period from 30 to 60 days, established virtual office hours and created an interactive website to allow viewers to engage with modeling used to inform the study's analysis.

Initially requested by the city of Charleston and later funded through congressional emergency supplemental funding, the study and its findings are one component of an overall, comprehensive flooding strategy for the city. More specific details, such as designs, layouts and exact placements, occur in later phases of the study and require additional authorization and funding from Congress.

Still, the draft report findings give the community, local, state and federal

governments a baseline for important conversations about the peninsula's future, as well as an actionable and feasible way ahead.

The peninsula is no stranger to coastal storms and flooding.

In the last few years, the peninsula has experienced some of its highest-ever recorded tides. Sea levels have risen a foot since 1890, and estimates show sea levels will continue to rise through the end of the century.

During these severe storms, much of the medical and critical infrastructure are at risk to significant damages.

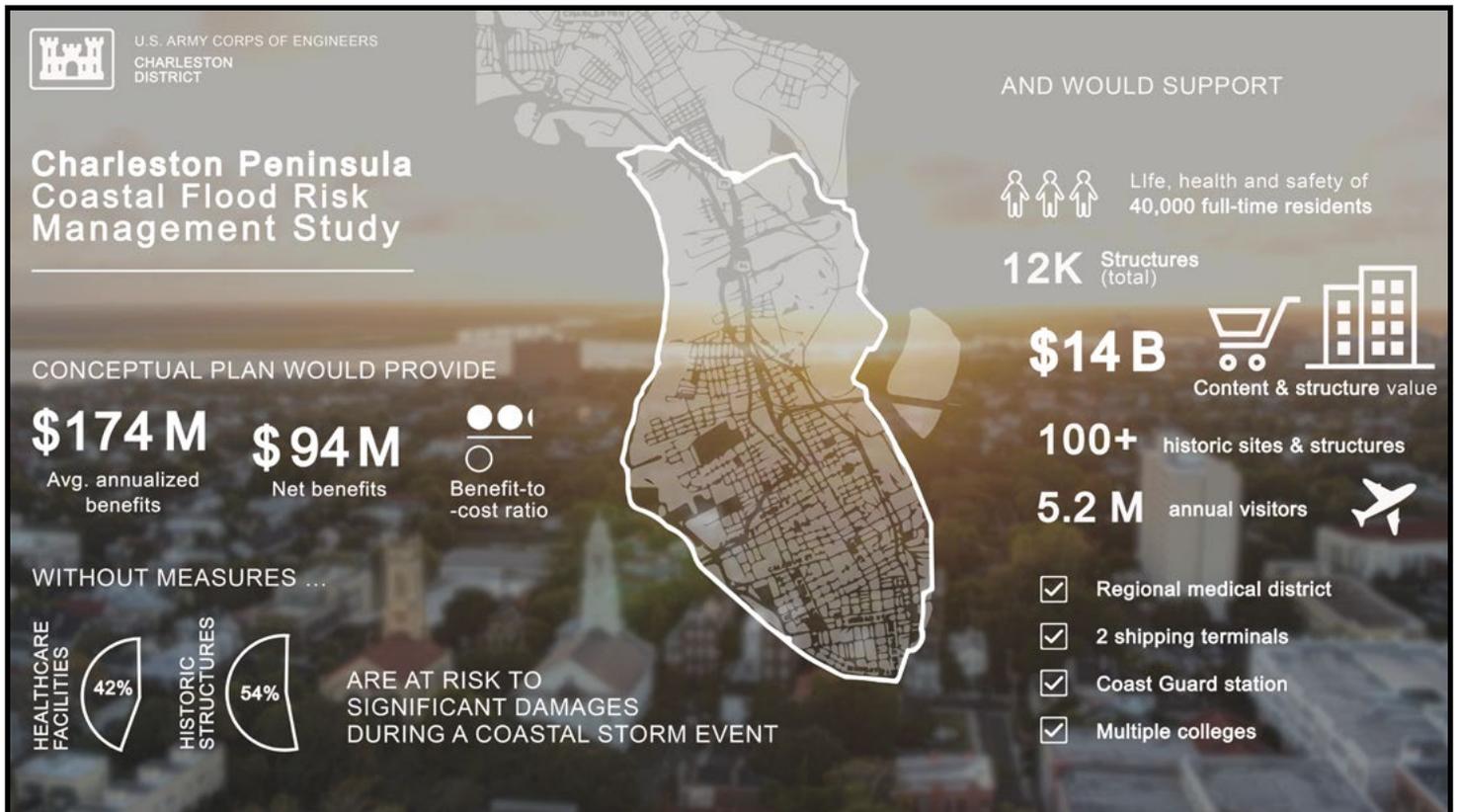
The Corps is committed to developing the best solution for the peninsula and urges the public to review the report, engage with the team and provide feedback.

Comments and suggestions from the public inform future aspects of the study and are a vital part of the Corps process.

To access the report, visit www.sac.usace.army.mil/charlestonpeninsulastudy or pick up a hard copy outside the Charleston District headquarters office.

Community members can also engage with the members of the study team one-on-one during virtual office hours or access various engineering models on the interactive website at <https://arcg.is/0HHiSF>.

To submit feedback, complete the digital feedback form or mail comments to the Charleston District Planning and Environmental Office.



Corps district creates buzz around pollinator habitats

Story & photos by Mark Thompson
USACE, Pittsburgh District

Bees, birds, beetles and butterflies: what do they have in common? All of them, including an assortment of other species, play a vital role as the invisible engine powering the world's food economy, pollinating plants and keeping nature in check.

You may not notice them now, but you would notice if they were gone. And their numbers are declining.

The U.S. Army Corps of Engineers, Pittsburgh District is working to change that.

Corps employees wear a lot of hats — most of them are hard. But when you visit a couple of district recreation sites, you can find a few park rangers sporting their headgear covered in a veil of netting.

The U.S. Senate designated a week in June as “National Pollinator Week” in 2007, an initiative designed to raise awareness of the importance of pollinators and the threats they face.

Since 2014, the Corps has worked to enhance pollinator habitats across more than 12 million acres of land and waters.

Pollinator plots can be found at the Pittsburgh District's Shenango River Lake and Tygart Lake sites, featuring exhibits designed to educate the public about the importance of those species while encouraging proactive conservation practices.

Tygart Lake hosts a range of pollinator plants, including magnolia trees, cherry trees, dogwood trees, persimmons, crab apple trees, butterfly bushes and lilies. This assortment of flora attracts and sustains active pollinator populations.

Tygart's interpretative honeybee display allows visitors to get an up-close look at nature's most important pollinator.

Commercial honeybees are responsible

for one of every three bites of food we eat, and annually contribute \$15 billion of agricultural value.

“It's important to provide these hives not just for our pollinators, but for bees that are all around us that we do not know about,” said Stacy E. Lewis, Tygart Lake project site resource manager.

“Honeybees are essential to our crops and everyday lives. They keep nature in check,” she said. “Here at Tygart, we're trying to foster an environmental awareness to the community, students and visitors through our interpretive displays and ranger programming.”

It's not just the well-known honeybee that performs the crucial role of pollinator.

John Chopp, district wildlife biologist, explained that pollinators come from several species and do their work in many places.

“A variety of animals serve as pollinators, including bees, wasps, flies, butterflies, moths, bats, beetles and birds,” Chopp said. “Pollinators are crucial members of various ecosystems, from farmland to wilderness to urban environments. There are an estimated several hundred thousand flowering plant species, many of which depend on pollinators to reproduce.”

An “invisible gem of the Earth” is how Rose Reilly, wildlife biologist, Pittsburgh District, describes honeybees and other pollinators. She says we do not notice their contribution to our economy and quality of life.

“The pollinators are really critical to our whole economy and food security,” Reilly said. “You wouldn't even have a tomato without a pollinator.”

According to Reilly, climate change, loss of habitat, human activity and improper use of insecticides have resulted in sharp reductions in honeybees and native pollinators during the past three decades.

Combine this decline with the onset of conditions such as Colony Collapse

Disorder and the future of pollinators such as honeybees can look bleak.

But Reilly believes you don't have to own millions of acres to produce a positive impact for pollinators. She says you can start in your backyard and create your own pollinator plot.

“Take portions of your yard and don't mow it,” Reilly said. “Let the things that would naturally grow there and purposefully plant species that pollinators need.”

To learn more about planting a pollinator plot, visit the website at <https://www.fws.gov/midwest/news/PollinatorGarden.html>.

To find out about the Corps' Pollinator Protection Plan visit <https://corpslakes.erd.c.dren.mil/employees/pollinator/pdfs/USACE-Pollinator-Strategy.pdf>.



An invisible gem, honeybees are critical to the nation's economy and food security, responsible for one of every three bites of food eaten and annually contributing \$15 billion of agricultural value.



Tygart Lake Corps employees work with the buzzing residents living in their interpretative honeybee display. The display allows visitors to get an up-close look at nature's most important pollinator inside the visitors center and out.

Wildlife management ensures mission security, public safety

By Mark Schauer
U.S. Army Yuma Proving Ground

As a natural laboratory for testing virtually every piece of equipment in the ground combat arsenal, U.S. Army Yuma Proving Ground has a vested interest in responsible stewardship of the land.

Though located in one of the nation's most extreme desert climates, the proving ground is still home to a vast diversity of wildlife, including the Sonoran pronghorn, desert tortoises and bighorn sheep.

Yuma's environmental stewardship efforts have earned plaudits from within the Army and from agencies like the Arizona Department of Game and Fish. Officials there are quick to note that the success of the installation's wildlife management program is in large part thanks to the steadfast support of area hunters and sportsmen.

"We get so much support from groups like the Yuma Rod and Gun Club and Arizona Bighorn Sheep Society for construction of wildlife water catchments and monitoring animal populations," said Daniel Steward, Yuma wildlife biologist.

He added that "a lot of these things rely on volunteer labor to accomplish, and it is our sportsmen who reliably help get these projects done."

Generations of Yuma-area sportsmen have hunted the proving ground's ranges for game such as mule deer, bighorn sheep, quail, rabbit, coyote and dove — with over 1,200 square miles of land area, there is enough room to allow safe access to hunters.

"We have an obligation to have public use of some of the installation where it is not hindering our mission," Steward said. "The mission is always first."

Still, Yuma's mission of virtually testing every piece of equipment a Soldier is likely to shoot, drive or wear means that safety and security considerations make access here less liberal than on other public lands.

Developmental testing at Yuma is at the forefront of Army modernization priorities, particularly in the area of long-range precision fires of artillery.

"We have restricted access because at Yuma Proving Ground we are shooting things we have never shot before," Steward said.

"We have safety buffer zones we must observe for our tests," he explained. "Periodically, if we have a test with a large safety buffer zone, we may have to close down specific hunting units."

The proving ground's hunting areas are divided into these small "units" to ensure that any such closure is surgically targeted, not a wide swath of land well beyond the needs of hunter safety and mission security.

"It's kind of a balance between safety and security when we establish these hunting areas," Steward said. "They are in places that avoid our busy impact areas and where people can be relatively safe without being a security issue for our testing."

Steward says that the goodwill of Yuma's hunting population is invaluable in preserving and perpetuating the installation's wildlife.

"Hunters have been helpful to our program," he said. "They help be our eyes and ears on the range."

"Under the North American model of wildlife management, fees that our sportsmen pay in large part fund all wildlife conservation efforts nationwide," he said.



The Chicago District's coordinated planning of ecosystem restoration efforts will help create unified results across county, state and regional boundaries, maximizing benefits to wildlife and people.

Project helps restore ecosystem, maximizes benefits to wildlife, people

Story & photo by Vanessa Villarreal
USACE, Chicago District

As the nation's environmental engineer, the U.S. Army Corps of Engineers manages one of the largest federal environmental missions – constructing sustainable facilities; regulating waterways; managing natural resources; cleaning up contaminated sites from past military activities; and restoring degraded ecosystems.

Through the implementation of 33 ecosystem restoration and protection projects totaling over 4,200 acres and 7.5 miles of aquatic habitat, the Corps' Chicago District has proven project execution experience under the Continuing Authorities Program and Great Lakes Fishery & Ecosystem Restoration authorities.

While these figures demonstrate the success of former projects, a planning effort is happening now that will be more focused on identifying opportunities and funding to implement more projects in the future. And it's called the Ecosystem Restoration Master Plan.

On Dec. 10, 2019, the district held a vision workshop to introduce the Chicago District's initiative to develop a strategic plan for future ecosystem restoration investments in the Chicagoland area of northeast Illinois and northwest Indiana to its partners and stakeholders.

The meeting was used to facilitate feedback from stakeholders on draft objectives for a vision document which will outline the purpose and need for funding, and the strategy for efficiently and effectively implementing future projects.

Attendees included the McHenry County Conservation District, Illinois Department of Natural Resources, Chicago Wilderness and Openlands.

"We shared success and lessons learned, and developed a unified message regarding the importance of continuing to implement ecosystem restoration projects in the Chicagoland area," said Alex Hoxsie, USACE planner and landscape architect.

Participants were asked to provide feedback on the benefits of restoration projects, identify opportunities and risks in implementing restoration projects, and how to best utilize a crowd source mapping tool to improve collaboration.

"This mapping tool will create a central repository for partners to share information about their completed projects and plans for the future," Hoxsie said. "By showing where all of these groups have done work, are doing work, and plan to do work in the future, we hope to be able to identify opportunities for collaboration and guide future effort."

During the interactive exercises, participants indicated that collaboration between community groups,

non-government organizations, academia, and state and local agencies would assist ecosystem restoration objectives.

Participants also indicated a strong desire for a unified vision for the region that captures the big picture.

The vision for this plan was developed collaboratively by the Corps and a number of environmental stakeholders in the Chicagoland area.

"The beauty of the plan is that there are a lot of groups already working on ecosystem restoration initiatives in the area," Hoxsie said. "What we wanted to accomplish with this effort was to bring all of these existing visions together in order to demonstrate the need for investments in future work and to identify opportunities for projects to collaborate on."

Gene Fleming, chief of the Environmental Formulation and Analysis Section, said ecosystem protection and restoration are vital because they help save existing valuable habitats and restores habitats that provide communities of plants, animals and microorganisms interacting with their environment.

He added that a healthy environment provides us with food, fuel and timber; contributes to the purification of the air and water; helps mitigate climate change; restores wildlife populations; prevents the loss of species, including threatened and endangered species; and more.

"Additionally, it creates jobs and provides a quality of life for the millions of people that enjoy the outdoors, including people that enjoy their nature walks through restored habitats, wildlife watchers that seek out areas that support the migratory and resident birds, and all those that want to catch largemouth bass. Ecosystem restoration is important," he said.

On Feb. 25, 2020, a virtual follow-up meeting was held to discuss due-outs and progress since the December 2019 summit.

The district also informed its stakeholders that the district boundaries have expanded and will require developing a lot of new relationships and bringing other groups up to speed.

"But it will ultimately help us generate an even better picture of all the good work that is going on in the larger region that includes the entire western shore of Lake Michigan," Hoxsie said.

He said that, since the early 1800s, the district's regional boundary has seen a 2,508% increase in developed land, 75% reduction in forests, 95% reduction in prairies, and 55% decrease in wetlands.

"Coordinated planning of ecosystem restoration efforts will help create unified results across county, state and regional boundaries to maximize benefits to wildlife and people," he said. "We've had successful meetings so far with some great dialogue and I look forward to seeing what we come up with next."



*(USACE courtesy photo)
Members of ERDC's Applied Research Planning and Support Center have taken a leading role in developing Installation Energy and Water Plans for Army installations and the National Guard.*

Research center develops strategies for installation energy, water plans

The U.S. Army Engineering Research and Development Center is the research organization of the U.S Army Corps of Engineers.

Relatively new to ERDC, the Applied Research Planning and Support Center provides support for both water and energy planning.

Part of its mission is to provide a full spectrum of planning support that meets tomorrow's needs in part through leveraging technology, including the development of useful techniques and tools to improve water and energy planning analyses and resiliency.

This research center has taken a leading role in developing Installation Energy and Water Plans for Army installations and the National Guard.

The process was launched in response to Army Directive 2020-03, requiring installations to evaluate and improve water and energy resiliency measures while also acknowledging the need for critical military activities to continue even if there is a disruption of standard energy and water services.

The central approach is to focus on achieving increased security, resilience, readiness, and mission assurance across Army installations.

The first step of the process is to determine the baseline condition.

It consists of analyzing and determining the installation's existing water and energy resources, infrastructure, uses, deficiencies and needs as are identified and obtained via data requests, biweekly web/telemetings and workshops.

Shortcomings in the areas of critical mission sustainment, infrastructure condition, assured access to resource supply, and system operation are then addressed by proposing solutions/projects that will improve these deficiencies.

These projects may include capital improvement projects to provide more energy or water, to improve installation resilience, or might focus on policy changes or even conservation projects.

The finalized projects, along with a proposed schedule, lead to an implementation plan that outlines steps the installation can refer to when making water and energy decisions.

The IEWP process, which often refers to installation status reports involving mission capacity (ISR-MC), provides a standard platform for evaluating Army installation energy and water security posture.

The central approach is to focus on achieving increased security, resilience, readiness, and mission assurance across Army installations.

These ISR-MC reports are forwarded as directed by the Department of the Army Installation Management – Operations Directorate (Real Property and Asset Management Division) for eventual G9 final approval and incorporation in the following fiscal year's data collection.

ISR data is treated as For Official Use Only, or FOUO, and can only be released to non-Army agencies by the ISR program manager.

ISR-MC informs Army decision-making, breaking up resiliency into four attributes which are evaluated on the ability to support mission requirements, including critical mission sustainment, assured access, infrastructure condition, and system operation, each of which must be in good standing for resiliency to be properly demonstrated.

Critical mission sustainment, or CMS, refers to the installation's or facility's ability to continue the mission even if its energy or water services are disrupted.

The goal of the IEWP and the ISR-MC is to achieve continuity

of operations for a duration set by the senior commander or higher headquarters. When the duration has not been stipulated, the goal is to sustain energy and water for a minimum of 14 days.

For water, CMS may be achieved by demonstrating sufficient on-site water resources (such as groundwater or a reservoir) or by water storage.

Energy may be achieved by the use of backup generators with sufficient fuel or a combination of renewable energy sources with generator backups.

Assured access is defined as the capability of an installation to maintain a dependable supply of water and energy during normal and emergency-response operations.

Assured access can be achieved, for example, by having a combination of groundwater access and municipal water, or by having an alternative means of power to a system.

Infrastructure condition refers to the condition of the infrastructure supporting the supply of energy and water, and whether or not their distribution networks are flexible and redundant in order to reliably meet mission requirements.

For example, a facility may have sufficient water resources, but if the pipes are in poor condition, they may fail, consequently affecting its availability to meet water needs, including firefighting.

System operation is defined as the installation's capacity for trained personnel to conduct required energy and water security system planning, operations and sustainment activities. This also includes training and exercises to address resource cutoffs.

In summary, the IEWP process requires a strong understanding of the Army ISR-MC analysis.

Development of the ISR-MC multi-criteria decision analysis, or MCDA, allows scores to be adjusted (unofficially) or estimated/simulated when needed.

It also allows the user to determine if proposed projects address the deficient areas of the ISR-MC analysis, and provides useful MCDA capabilities to rank projects and determine order.



Huntsville Center mobilizes team, responds to nation's call for action

By David San Miguel
U.S. Army Engineering and Support Center, Huntsville

Working hand-in-hand with the U.S. Army Corps of Engineers' geographic districts and divisions, the Federal Emergency Management Agency and the Department of Health and Human Services, the U.S. Army Engineering and Support Center, Huntsville, is focusing its skill and expertise on supporting the nation's efforts to combat the coronavirus pandemic.

According to Albert "Chip" Marin III, programs director, it's particularly noteworthy that the Huntsville Center is a medical support team that includes the Corps' Medical Facilities Mandatory Center of Expertise and Standardization, and owns the technical experts who determine whether or not new construction designs meet code requirements for medical facilities.

It's an expertise that drew the attention of federal, state and local officials who anticipated the rapid spread of COVID-19 and the expected mass shortage of hospital bed space to treat those infected.

Lt. Gen. Todd T. Semonite, chief of engineers and commanding general of the U.S. Army Corps of Engineers, recognized early on that the urgency of the response would largely be driven by this rapid spread.

Mobilized under the National Response Framework and Stafford Act, the Corps was given mission assignments from FEMA to execute planning for expanding hospital capacity, first in New York and then elsewhere if called upon.

During a Pentagon brief about COVID-19, Semonite had already acknowledged that the race against the virus was "an unbelievably complicated problem" that needed a simple solution, and he reached out to the Huntsville Center to look into adapting existing facilities to address that challenge.

"We received a request from the chief directly because we had the Medical Center of Expertise, and we leveraged the whole enterprise and pulled in the medical support teams from the Corps' Little Rock and Mobile Districts," said Wade Doss, Huntsville Center engineering director.

Doss said experts from the USACE Engineering Research and Development Center were a growing part of that team.

As the Corps' "go-to" enterprise for innovative solutions, the center brought in its subject-matter experts and technical engineering professionals to quickly develop strategies and concepts to help the Corps' geographic districts and divisions rapidly convert hotels, dorms, convention centers and large, arena-type facilities into ICU-capable, or as they've come to be known, alternate care facilities.

"Our mission was to come up with some conceptual

site-adaptable designs, engineering and construction deliverables and artifacts that would help our districts and divisions execute faster when they get to these facilities," Doss said. "The idea is to help FEMA and the state and local governments get ahead of the hospital bed shortage."

He added that his team of about 30-40 engineers and architects worked around-the-clock putting these concepts, sketches and designs together, and drafting equipment lists, schedules and performance work statements – all the things that engineers and constructors need to hit the ground running.

"Time is of the essence," he said.

The Medical Facilities MCX has the capability and experience in medical facilities design and outfitting needed to support the Corps in its efforts to establish alternate care facilities, and works closely with its stakeholders and partners to ensure that projects executed meet mission requirements.

"Most of what we do is cutting-edge technology," Marin said. "We are creating solutions for challenges that may not have existed before."

To develop these deliverables, Doss put together a team of construction experts and medical design, architect and code criteria experts and fleshed out the concepts, including sketches, functional layouts, performance work statements, equipment lists, etc.

"We worked closely with FEMA, HHS (Department of Health and Human Services), the NFPA (National Fire Protection Association) as well as the Corps' geographic districts and divisions to support ACF projects across the country," he said. And like the rest of the Corps enterprise, most of the work was done virtually through Skype, teleconferences, WebEx and everything else.

Doss said this entailed working every day, seven-days-a-week until all the districts and divisions got the deliverables they needed to turn concepts into reality.

"Our goal was to get ahead of it and try to get these concepts laid out for hotels, dorms and arenas – facilities we thought could be good fits and that would already have a lot of the infrastructure," he said. "But our main goal was to help the districts' assessment teams."

Doss immediately put a core team together, and contacted Tony Travia, chief of the Medical Facilities MCX, tasking him to join Semonite and meet with New York Gov. Andrew Cuomo to discuss these concepts to address the hospital bed shortage.

Travia said he had just gotten off self-isolation from a temporary duty assignment in Germany.

"But I had already formulated what information we might need to deliver, reaching out and engaging partners outside the Corps, tapping into the command surgeon's expertise and HHS to gather what information it already had about alternate care facilities.

"By the time I boarded the plane, we probably had the 80% solution of what became the first hotel-to-healthcare concept, and started working the arena," he said.

See **COVID-19 RESPONSE**, page 39

(Photo by Stephen Baack)

As part of the Huntsville Center's collective response to the COVID-19 effort, Jelani Ingram, acting chief of the Architecture Branch, conducts a site assessment to determine whether it's suitable for conversion into an alternate care facility.



(Photo by Stephen Baack)

Huntsville Center's acting chief of the Architecture Branch, Jelani Ingram, center, runs through a site assessment checklist with members of the USACE, Mobile District at a facility in Jacksonville, Alabama, April 8.

COVID-19 RESPONSE

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By mid-March, the MCX was fully engaged and actively developing concepts to convert arenas and hotels into alternate care facilities.

Travia recalled some of the challenges the team had to overcome.

“Our standard mission is to perform group design review and construction support for medical treatment facilities,” he said. “This is typically for new construction, though sometimes that may consist of additions or alterations.”

He explained that these particular FEMA mission assignments entailed converting facilities not normally configured for the treatment of hospital patients.

“Every district has those core competencies – engineering, architecture and environmental – permitting disciplines,” Travia said. “But districts may only execute a medical project once in a decade and may not have the time to build that experience from scratch. That’s why we help assess the medically unique aspects of the project – what is required to convert sites into facilities capable of delivering healthcare, so the districts can focus on what they do best.”

Specifically, site assessments help determine whether health care requirements can be met based on the number of patients a site would support, the proximity to nearby hospitals, utility

requirements, air filtration and handling capacities, safety features for emergency response and egress, staging of ambulances, and parking availability.

Another consideration is the time it would take to convert the facility for health care use. Normally, such conversions take between five days and two weeks, varying from site-to-site based on the level of patient care, number of patient beds, and the extent of work required.

Doss explained how the Huntsville team developed facility assessment checklists that field engineers could take with them to determine whether those facilities identified by FEMA and state and local government could be converted into viable alternate care facilities.

“We try to draft our deliverables around several scenarios,” he said, “COVID-19 and non-COVID patients. We’re working with local health officials to make it site-adaptable. It all depends on the local officials: the mayor, the governor, local health officials wherever you’re at in the country to see what they need.”

Jelani A. Ingram, Huntsville Center’s acting branch chief of architecture, said the MCX initially developed a checklist of items that a building/site needed to have in order for it to be considered a viable site for an ACF.

“The checklist focused on all building

conditions including architectural, site, MEP (mechanical, electrical and plumbing) systems, fire protection, ADA (American Disability Act) accessibility, all building infrastructure, and that it met minimum code requirements,” he explained. “There were certain conditions that a building had to meet before a full-on assessment would be done.”

Based on this checklist, these buildings could quickly be eliminated based on a “GO/NO GO” evaluation.

“If a structure did not have a fire suppression system, it would automatically be considered a NO GO and eliminated,” he said.

Ingram admits, however, that in the case of an arena, such restrictions could be relaxed because they often encompass large open spaces and normally do not have sprinkler systems.

“In such cases, other means to sprinkler the space would need to be explored,” he said.

“Other factors that could quickly eliminate a building/site were no ADA accessibility routes for handicap and patient gurneys, elevators too small to fit a gurney, exposed asbestos, and if utilities were in need of extensive repair or replacement that required long lead times on replacement parts,” Ingram said.

See ALTERNATE CARE, page 40

ALTERNATE CARE

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The hospital and city members are responsible for providing the Corps with potential buildings/sites for ACF conversion. They decide if they want the ACF to accommodate COVID or non-COVID patients (most chose non-COVID because it was less taxing on their resources).

“Our team would look at each site identifying first the NO GO markers,” Ingram added. “Then, when those were eliminated, we would look at proximity to local hospitals because being able to staff these ACFs with healthcare providers was going to stretch hospital resources. So, it was determined that ACF sites needed to be within at least a 10-mile radius of the hospital.”

Since Huntsville Center is not bound by regional location and provides technical and engineering support to all the Corps geographic districts, the Mobile District asked for support in its efforts with statewide assessments.

“They looked to us to cover the northern part of Alabama,” he said. “We conducted our assessment in Huntsville, Tuscaloosa and Calhoun County (Anniston, Oxford). Once a site was chosen, the team would go in and photograph the site taking notice of open floor space, access points for patients, staff and equipment. The team would assess the HVAC (heating, ventilation and air

conditioning) system, power requirements, and if there was back-up power to help run potential medical equipment.”

That assessment included looking at the number of restrooms to accommodate staff and patients, and whether the facilities had a full kitchen and laundry room that could be utilized.

“We found that abandoned or repurposed hospital spaces were the best locations because the medical infrastructure was already in place,” Ingram said. “There would be nurse call, back-up power, critical power outlets, clean and dirty zones, private bathroom and showers, full kitchens, laundry, proper nurse stations, pharmacy, sterile storage, elevators for gurneys, ADA access, hazardous waste disposal and security checkpoints. These facilities could be quickly re-commissioned and brought back online.”

The team assessed arenas, abandoned and repurposed hospital spaces, hotels, city meeting centers, and convention centers, trying to accommodate a wide range of options for the areas.

“We had 48 hours, a day to assess two or three sites and a day to package the report that covered all major disciplines ranging from architectural/site, mechanical, electrical and fire protection and get it back to the Mobile District,” Ingram said. “We would design and lay out the space showing patient beds/cots, nurse station,

administrative support, storage, portable bathroom and shower facilities, and medical support areas. This information was packaged and handed over to our partner and then briefed to the requesting governor.

“The process was pretty seamless. Once a site was chosen, the Corps was given 30 days to design, construct and hand over an ACF to FEMA and local officials,” he said. “The Huntsville Center was critical to getting out early facility checklists, performance work statements, business rules, points of contacts, and early design studies that the district could use and adapt on the ground.”

Ingram explained that throughout the process, safety was paramount.

“When we first started the assessments we tried to keep six feet apart based on CDC recommendations and guidelines from our safety department,” he said. “As things got worse, we moved to all personnel wearing masks because trying to maintain six feet in large groups was proving difficult, especially when trying to communicate to everyone or moving through small spaces.”

Through it all, Ingram says it was a very humbling and awesome experience to be on calls with General Semonite and to hear him discuss the impact of the work we had done for the COVID response.

See ASSESSMENTS, page 41



(Photo by Stephen Baack)

Paul McCarty, second from left, a mechanical engineer with the U.S. Army Engineering and Support Center, Huntsville, joined with his counterparts with the Mobile District to evaluate potential sites for alternate care facilities in response to the COVID-19 pandemic.

“I was personally awestruck when our commander informed us that our work had made it all the way to brief the president and his COVID response team,” Ingram said. “Most of all, I was proud of my team of architects and engineers that worked tirelessly to get this information out to our people on the ground. This would not have been possible without their hard work and dedication to the mission and our country.”

As the COVID-19 response efforts continued nationwide, Huntsville Center did more than innovate the assessment of ACF sites.

As the chief of Huntsville Center’s Systems-Cost Division, Amanda Pommerenck led her team to help develop a site assessment checklist that geographic districts and divisions could use in searching for suitable sites.

“This was like a planning mission assignment where we put together a basic how is this mission going to work and what are the site assessments going to look like,” she said.

“We came up with this process called the binder – not a physical binder, but like an email detailing what health care facility and what various scenarios that we might be looking at,” Pommerenck said. “It was like building in the lessons learned as we went through the process.”

“Travia and one or two other folks were

on the ground in New York,” she added. “But, by the end of March nobody was going anywhere. It was all virtual.”

Pommerenck explained that each district has engineers, but what they don’t have is the medical expertise to build or change a non-medical facility to be used as an alternate care facility.

“So, they don’t need us to tell them how to build or convert the facility,” she said. “We simply provided them with all the things they needed to think about when they were conducting a site assessment.”

A lot of the site assessment team’s questions centered on some sort of medical unique aspect.

“We would take that question, deliberate and write out our response,” Pommerenck said. “We would try to work that response into our planning document and provide them with more information so that we could better inform the next team doing a site assessment.”

“I get having plans for a conventional hospital or medical facility, but there are no real plans for an arena,” she explained. “You had to be adaptive – I mean it’s a hospital treating COVID, non-COVID patients – what kind of facility does the community need to address.”

Pommerenck added that these considerations had to be taken into account and worked through authorities on the ground, i.e. the fire department of

Miami had different rules and regulations than the fire department in Chicago.

“You’re dealing with different codes at different facilities, different populations of patients,” she said. “It’s a lot of work for the district, so what we were trying to do was get them off to a good start and provide them with guidelines for a solid foundation.”

“Travia and his team from the Medical Center of Expertise conducted the site assessments and could reach out to us to answer any construction and or contract administration questions,” she said.

“So about 40 people, between the MCX, our construction and contract administration division, and a few from the architecture branch comprised the response team,” Pommerenck said. “It was a big group, and we did a good job of delineating everyone’s role.”

“As of now, we’ve conducted over 1,155 site assessments and have helped Corps districts construct 38 alternate care facilities,” she said.

Pommerenck added that though things are tapering down, the team is prepared for any kind of resurgence of the virus.

“We made a final update to the binder where we took all the requests for information, the lessons learned – what we’re calling a playbook – that will be posted onto the Corps website,” she said. “So, if we should have a resurgence in the fall, it’s not necessarily going to be the same folks in leadership, so we wanted to have a short and sweet document that says this is how or what we consider an alternate care facility. Here are the other agencies involved, Health and Human Services, FEMA, health facilities, planning agencies, etc.”

“This is the down-and-dirty playbook where all the documents can be found, points of contact and lessons learned,” she added.

Mission aside, Pommerenck admits that throughout the whole ordeal, there were times she felt overwhelmed.

“It was such a negative event – the sickness. I have a doctor friend in Chicago, who in the midst of all this, would share some of the horrible things that were happening to her patients,” she said. “And I found myself getting emotional about how important this mission was, how proud I was of the team and how at a minute’s notice we all just helped each other. I felt proud to be part of the solution – all the lives that we affected and perhaps saved.”



(Photo by Stephen Baack)

Savannah Grosch, a mechanical engineer with the U.S. Army Engineering and Support Center, Huntsville, takes notes during a site assessment in Jacksonville, Alabama, April 8.

ERDC researchers develop forecast models to aide in fight against COVID-19

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

Since mid-March, the U.S. Army Engineer Research and Development Center has been engaged in the national effort to combat the COVID-19 pandemic by delivering a suite of tools to support U.S. Army Corps of Engineers and Federal Emergency Management Agency decision-makers.

In response to the pandemic, members of the COVID-19 Model & Analysis Team, or C-MAT, worked 16-18 hours a day for several months to develop, operationalize and deliver a capability that provides the most accurate and timely projections possible and to ground predictive modeling solidly on the best available data.

Dr. Larry Lynch, ERDC Information Technology Laboratory, has served as the ERDC COVID-19 Fusion Cell Lead, coordinating all of ERDC's COVID-19-related activities, while ERDC Environmental Laboratory Senior Research Scientist Dr. Todd Bridges has led ERDC's 40-person C-MAT.

As a result of their efforts, the C-MAT developed an epidemiological model to provide forecasts of the COVID-19 spread.

The ERDC Susceptible Exposed Infected Recovered, or SEIR, model (<https://esmov.erd.c.dren.mil>) was developed in a matter of weeks to help predict the disease's spread and provide the foundation for ERDC's approach.

The model forecasts are provided to the Corps' Geospatial Taskforce, which then summarizes outputs in order for the

broader USACE team to advise federal, state and local partners on decisions related to COVID-19 courses of action.

These forecasts were used to help decide where and when to construct alternate care facilities.

Another extensive modeling effort, led by the EL's Dr. Benjamin Trump, has translated the ERDC SEIR model and population-specific data in Guam, the

wasn't enough to complete the assessment," Trump said. "That would [have been] a fatal assumption, because not all beds are available for COVID-19."

The C-MAT also provided support to FEMA's Region 1 as part of their Data Analytics Team.

Due to the closely integrated relationship between FEMA Region 1 and the USACE New England District,

the C-MAT modeling efforts influenced a range of decision-making in that particular region.

The team helped by assessing the number of COVID-19 patients in the region, and then projecting everything from hospital beds to mortuary equipment needs. The team even helped FEMA Region 1 predict how many additional ventilators they would need from the national stockpile.

The C-MAT was also at the forefront of providing reopening guidance to FEMA Region 1 and USACE district commanders with the USACE Placemat.

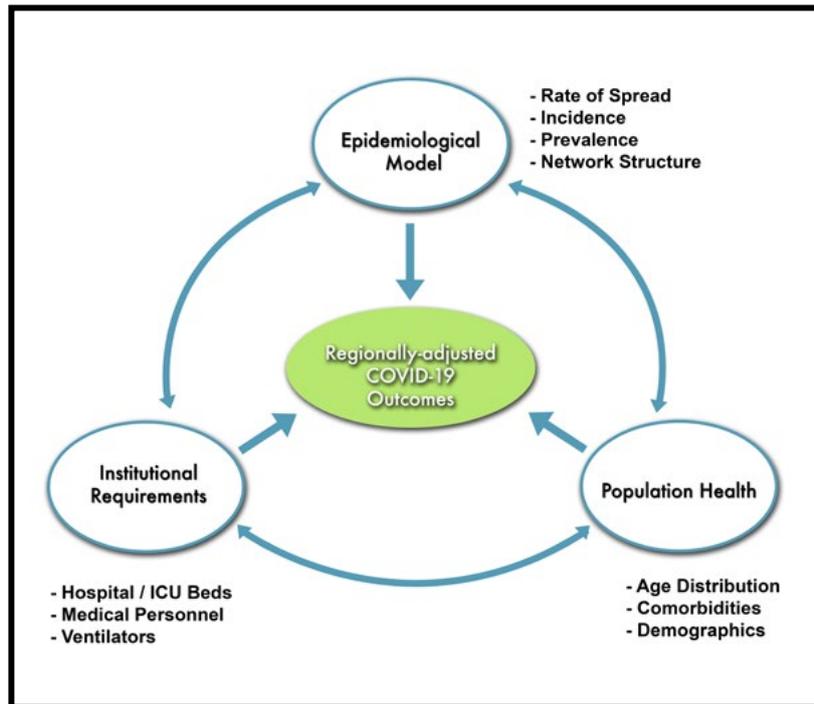
This tool took guidance from the White House COVID-19 task force and added practical

tools and benchmarks for decision-makers to use when reopening their facilities.

ERDC Director Dr. David Pittman recently described how he felt about the teams' work.

"I'm so proud of all of our modeling teams' efforts," he said. "The models' effectiveness demonstrates how the power of ERDC can help our nation solve even unprecedented challenges, like the COVID-19 pandemic.

"Our modelers have brought tremendous resources to bear on this fight for our federal, state and local partners, and their collaborative efforts will go down in history as an outstanding example of interagency cooperation," he said.



ERDC researchers developed a three-step process for assessing regionally adjusted COVID-19 outcomes. The process includes epidemiological modeling to determine the exposure rate, an analysis of population health outcomes and institutional requirements for efficient management of the virus.

Commonwealth of the Northern Mariana Islands and American Samoa in support of the USACE Pacific Ocean Division and the U.S. Army Pacific Command, the Army component of the U.S. Indo-Pacific Command.

The C-MAT used the ERDC SEIR and population-specific data for the islands and developed a three-step process for assessing regionally adjusted COVID-19 outcomes.

In addition to the ERDC SEIR and population health data, the team accounted for institutional abilities and infrastructural resources available for a local coronavirus outbreak.

"Determining how many beds, staff, ventilators and so forth are on Guam

Corps' JALBTCX team monitors coastlines, preps for 2020 hurricane season

By JoAnne Castagna, Ed.D.
USACE, New York District

In a hotel conference room on Long Island, New York, a team of experts are processing computer data and information, displaying it onto a large monitor.

"It's a beautiful thing. On the screen they are able to observe the condition of the New York and New Jersey coastlines almost in real-time," said Jeffrey Cusano, geospatial coordinator, U.S. Army Corps of Engineers (USACE), New York District.

The team is the Joint Airborne Lidar Bathymetry Technical Center of Expertise, or JALBTCX.

Recently, Cusano and other members of the New York District seized the opportunity to use this team to obtain cutting-edge survey data of the coastlines.

Not only did the team get the data to them fast, but the Corps is already using it to monitor and improve its coastal projects, as we enter the Atlantic hurricane season.

Earlier this year, USACE, New York District tapped the JALBTCX for their expertise.

Based out of Mobile, Alabama as part of USACE, Mobile District, the JALBTCX team performs operations, research and development in various airborne geospatial technologies to support the coastal mapping and charting requirements for the Corps.

The Center also partners with other federal and non-federal agencies, including industry and academia to further develop these technologies to meet their respective programs.

One of those programs is the National Coastal Mapping Program whose mission is to acquire regional, high-resolution, high-accuracy elevation and imagery data along the nation's shorelines on a recurring basis.

To obtain this data, JALBTCX uses an aircraft equipped with government-owned state-of-the-art airborne remote sensing platforms.

These platforms comprise a lidar sensor with both topographic and bathymetric capabilities, and two additional aerial mapping cameras.

The lidar's topographic capability measures the elevation of the coastline's beach and dune systems, and its bathymetric capability measures the seafloor elevations.

The lidar sensor provides highly-detailed and accurate elevation measurements both on land and under the water, while two additional cameras provide detailed images and spectral information from the same

land and water.

This data is acquired along the nation's coastlines approximately every five years. The last time JALBTCX flew over the coasts of New York and New Jersey was in 2017, and it is next scheduled to fly again in 2022.

The New York District wanted to get this information sooner, and when it learned that JALBTCX had a small pocket of time available, the district coastal team quickly worked to take advantage of this opportunity.

"They wanted to understand the current coastal condition and how it compared to the 2017 condition to see what work needs to be done now to improve the condition of the coasts. This work may involve such things as sand replenishment and environmental work," Cusano said. "They also wanted to see if the work they already performed is functioning well."

Over a two-week period in late January, the JALBTCX team flew over portions of the New York and New Jersey coasts collecting data.

Working closely with JALBTCX, they designed flight plans that would produce good data coverage over New York District's coastal projects.

Approximately 157 miles of coast were flown, including a stretch of coast from Manasquan Inlet to Sandy Hook, New Jersey; a portion of Staten Island, New York; and, another stretch on Long Island from Rockaway Inlet to the tip of Montauk Point, New York.

To capture the best data, the flight crew flew primarily during daylight hours at or near low tide at an altitude of 1,300 feet above ground level and at an air speed of 140 knots.

They flew overnight operations only in the vicinity of John F. Kennedy International Airport to accommodate existing airspace restrictions.

The survey aircraft operated out of the Long Island MacArthur Airport, in Ronkonkoma, New York.

Nearby, in Islip, New York, the JALBTCX team stood up a flight operations and data production center in a hotel conference room.

There, the team stored its equipment, conducted twice-daily flight operations meetings, and networked a series of computers that were used to download data from each flight, process and quality control the data, and develop it into data products the district could use.

"They used these sensors to gather a swath of information all along the beach that included between 1,000 and 2,000 meters of the nearshore and onshore area," Cusano said.

In addition, the JALBTCX team will soon provide the district with what is called a change analysis.



(USACE courtesy photo)

Col. Thomas Asbery, former district commander, USACE, New York District, joins members of the JALBTCX team in front of their aircraft at Long Island MacArthur Airport in Ronkonkoma, New York.

To perform this analysis, the team used a newly-acquired 2020 continuous digital elevation dataset, comparing it with their dataset from the last time they flew in 2017.

Results will reveal where erosion or loss of sand occurred and where deposition or accumulation of sand occurred along the two state coastlines between 2017 and the present.

According to Cusano, "we now have valuable information that shows us where there may be storm

damage and sand loss that requires repairs. It also shows us how we are progressing with ongoing coastal projects, of which we have done many in the last three years.

Suzana Rice, senior coastal engineer with the New York District added that the data is a great tool to monitor and understand our coastlines, and to compare data from previous years to use during the 2020 Atlantic hurricane season.

She said that the timeliness of the data, having been delivered only in 10 business days after the last flight,

was helpful and enabled one particular coastal project to move along faster.

"Because of this new data, we were able to expedite the pre-construction engineering and design phase of the Fire Island Inlet to Montauk Point Project," she said.

Rice stated that this data is also being used to cost effectively create the plans and specifications for the Fire Island Inlet to the Moriches Inlet Emergency Stabilization Project.

See JALBTCX, page 45

When plans and specifications are created, the team needs to have an idea of how much sand will be needed to replenish the beach.

Without this JALBTCX data, traditional surveying techniques would have to be conducted at additional cost and project delays.

This data is also being used to perform environmental work on some coastal projects.

Robert Smith, senior biologist, New York District said, “the data is being used to design and track changes to habitats we built for endangered species, such as the piping plover, an endangered bird that nests along the shore in the summer. We built habitats for the plovers for it to nest and forage.”

Not only is this data valuable to Corps’ projects, it also serves to educate the public about existing projects.

“This past fall we had a number of nor’easters that caused coastal damage. Because of this, residents contacted us seeking information about damages and if rebuilding was needed,” Cusano said. “We were able to use the data to better respond to their inquiries.”

This data is also available to the public and other agencies.

The JALBTCX team posts the data on

the National Oceanic and Atmospheric Administration’s Digital Coast website, a multiyear archive of survey data acquired along U.S. coasts by partners in the federal mapping community and some state agencies.

A person is able to search for a specific coastal area, learn about available data, customize exactly what they want to view — using the multiple layers of information available, and save the information in the format they can use for their intended purpose.

To view the dataset the JALBTCX gathered recently for the New York

District, please visit: <https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=9000>.

“In my opinion, this data is a win for everybody,” Cusano added. “It helps the Army Corps monitor and cost-effectively improve our coastal projects and it helps our agency educate the public about their coasts and the work we are doing for them as we begin a new Atlantic hurricane season.

“This all would not have been possible if the Corps’ coastal team didn’t have the drive to pursue this valuable data,” he said. “They saw the opportunity and they took it.”

New York District Coastal Projects

The New York and New Jersey coastal projects being executed by USACE, New York District and benefiting from the Joint Airborne Lidar Bathymetry Technical Center of Expertise, include:

- Manasquan to Sandy Hook, New Jersey Project
- South Shore of Staten Island, New York Project
- East Rockaway to Rockaway Inlet and Jamaica Bay, New York Project
- Jones Inlet to East Rockaway Inlet Long Beach, New York Project
- Fire Island Inlet to Montauk Point, New York Project and its sub project the Fire Island Inlet to Moriches Inlet Emergency Stabilization Project

To learn more about these projects visit: <https://www.nan.usace.army.mil/Missions/Civil-Works/>.



(USACE courtesy photo)

Col. Thomas Asbery, former district commander, USACE, New York District, tours the interior of the JALBTCX aircraft.

Knauss fellow, EWN initiative a perfect match

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

To Samuel Fielding, the U.S. Army Corps of Engineers' Engineering With Nature initiative seemed like a perfect fit.

As a prospective John A. Knauss Marine fellow, Fielding was searching for a host organization where he could utilize his interdisciplinary education in economics, international relations and biology.

His doctorate research was focused on the economics of coastal adaptation and the socioeconomics of coastal hazards within flood insurance markets.

The graduate student's expertise sounded like an ideal match for the Corps' EWN initiative to Dr. Jeff King as well.

As EWN deputy national lead, King was looking for a scholar from the National Oceanic and Atmospheric Administration's Sea Grant John A. Knauss Marine Policy Fellowship Program with a special skillset to take EWN projects to the next level.

King described how Fielding became involved with various EWN efforts since February 2020; the Knauss fellow is contributing state-of-the-practice knowledge accrued from his doctorate research.

"Sam has been looking at ways we can justify natural infrastructure and natural and nature-based feature projects, because the usual justification methods haven't been working for us," King said.

"We need to identify new strategies that accurately quantify the economic, environmental and social benefits these projects offer," he said. "We're getting so much more from them in coastal environments than we do from traditional or 'hardened' infrastructure, such as levees and sea walls."

Fielding has seen the benefits natural infrastructure and natural and nature-based features deliver, including protection from storms, water quality improvements, aesthetics, better fish and wildlife habitats, and better fishing opportunities for communities.

"These are real benefits not typically

brought to the table in planning discussions," he said.

"Historically, when we try to prioritize natural infrastructure projects, we encounter several challenges when attempting to achieve a favorable benefits-to-cost ratio, which is what's needed for these projects to be implemented," King said. "To do this, we must find better ways to quantify all of the benefits derived from natural infrastructure projects."

"Having this ability would make natural infrastructure projects more competitive with traditional infrastructure," he said.

Fielding is investigating a business case project for resilience with Margaret Kurth, a research engineer who has worked six years with the ERDC's Environmental Laboratory's Risk and Decision Science Team.

"For this project, we're thinking in terms of projects that achieve Corps-specific missions to create the most actionable information possible for the agency," she said.

"We're moving the needle on what resilience means for the organization," Kurth said.

"We just published a paper on what sorts of resilience benefits we could get from coastal natural and nature-based features," she said. "The next step is to quantify it as a project benefit so it can be incorporated into the Corps of Engineers' practice alongside other costs and benefits."

She feels that if the Corps is not able to quantify costs and benefits of innovative projects, internal mechanisms for these projects won't exist.

Kurth stresses the necessity of having measurements and the resources to monitor and foster innovation.

From Fielding's perspective, the opportunity to work on these projects has been wonderful.

"In doctorate work, the research is very theoretical," he said. "It's great to see how professionals deliver in a real-world setting — I'm exposed to high-level thinkers, and I've learned something new every day."

Maddie Kennedy, a program analyst for



Samuel Fielding

NOAA's National Sea Grant Office and manager of the Knauss Marine Policy Fellowship, agrees.

"I am very excited for Sam and the work that he is doing at the Corps of Engineers, making a difference and moving the needle forward on ecosystem-based management," she said.

"The NOAA Sea Grant Knauss Marine Policy Fellowship was established specifically to engage graduate and very recent graduate students in marine and coastal policy-making," she said. "I hope that Sam can gain meaningful connections with individuals inside and outside the Corps."

Kennedy sees value in positioning a NOAA Knauss Fellow within the Corps and other agencies.

"By offering opportunities outside of NOAA, we not only provide a wide range of opportunities for our fellows; many times, fellows or alumni work together to develop these long-standing partnerships for the successful protection of our coastal spaces," she said.

Veteran's transition from service leads to Corps career

By Ferdinand Detres Jr.
USACE, Omaha District

Many servicemembers who retire or separate from the military continue to serve their country as Department of Defense employees because they possess specialized training and experiences highly sought after by the federal civilian workforce.

Michael Schnetzer, a former sergeant in the U.S. Army, is one of those servicemembers who transitioned from the military into a federal career with the U.S. Army Corps of Engineers.

Schnetzer enlisted in the military right after graduating high school in 2000.

After graduating basic training at Fort Sill, Oklahoma, and advanced individual training at Fort Jackson, South Carolina, as a wheeled vehicle mechanic, he was assigned to his first permanent duty station with the 1st Brigade, 2-5 Cavalry Regiment, 1st Cavalry Division at Fort Hood, Texas.

During the Iraq war the military began implementing stop-loss and stop-movement orders on many servicemembers.

Stop-loss was an involuntary extension of a servicemember's enlistment contract, allowing the military to retain servicemembers past their initial expiration of term of service, or ETS date.

Stop-movement orders during that time prevented servicemembers from relocating to other military bases known as a permanent change of station.

Both of his deployments came down on stop-loss and stop-movement orders, preventing him from a PCS to Schofield Barracks, Hawaii, and Germany.

Schnetzer recalled his first deployment in 2004 with the 1st Cavalry Division while stationed at Forward Operating Base War Eagle near Sadr City, Iraq.

"It was early in the U.S. involvement with Iraq, so 90% of the battalion had never deployed except the senior leadership who served in the Gulf War," Schnetzer said.

"Our FOB (forward operating base) was attacked daily by mortar rounds and RPGs (rocket propelled grenades)," he said.

At the time, Sadr city was one of the

most dangerous places in Iraq and Schnetzer recalls losing many of his fellow Soldiers there during an attack on April 4, 2004.

"We were involved in a really bad ambush and lost a lot of good guys," Schnetzer said.

Afterwards, he recalls attending a memorial service back at the compound.

When the command sergeant major was doing a roll call and called out the names of those who had fallen," he said. "There was a dead silence."

A 21-gun salute followed.

"It was one of the hardest things to sit through," he said. "After that, I refused to attend another memorial service.

"I'm your stereotypical guy who gets uncomfortable showing sad emotions, so I rather avoid those emotions if I can," he said.

During his second deployment in September 2006, Schnetzer was more experienced and able to mentor many of the younger Soldiers who were on their first deployment.

"I shared many stories with the incoming troops as well as adjusting training to meet new requirements," Schnetzer added.

He admits that things were a little different from his initial deployment to the Persian Gulf.

Non-commissioned officers, or NCOs, conducted the training and there weren't a lot of amenities, he said. Today, deployments include changed tactics and more comforts of home.

"The second deployment was a cake walk," Schnetzer said. "We were stationed at Camp Victory where we had a large PX (post exchange), Burger King, Popeye's chicken and a large bazaar."



Michael Schnetzer

After his second tour in 2008, Schnetzer opted out of the Army and began an internship at the Oahe Dam, North Dakota.

After his internship, the former wheeled vehicle mechanic and Soldier applied for a job with the U.S. Army Corps of Engineers, Omaha District as a powerhouse mechanic.

Nine years later, Schnetzer is a senior mechanic at Gavins Point Dam near Yankton, South Dakota.

He attributes much of his success to what he learned in the military.

"Discipline, integrity, work ethic and team cohesion," Schnetzer said. "A hard work ethic along with team cohesion is needed if you desire to excel."

Employee awarded for new contracting process

By **Ferdinand Detres Jr.**
USACE, Omaha District

A 25-year employee of the U.S. Army Corps of Engineers, Omaha District, was awarded the Omaha-Lincoln Federal Executive Association 2019, Federal Employee Leadership Award in the Managerial/Supervisor/Leader of the Year category.

Lee M. McCormick, civil branch chief, formally received notification of the award earlier this month for his efforts during the 2019 flooding of the Missouri River Basin recovery operations.

The catastrophic flood hit parts of Iowa, Nebraska and Missouri causing damage to more than 500 miles of levees on the Missouri, Platte and Elkhorn rivers.

After the flood, McCormick volunteered with the Omaha District System Restoration Team as the acquisition lead.

“McCormick led a team of military and civilian personnel to successfully execute a myriad of contracts to support critical life, health and safety needs of our local area,” said Ginger Gruber, chief of contracting, USACE, Omaha District.

Due to an unforeseen emergency situation that followed the flooding, McCormick needed to expeditiously train several contracting specialists in emergency contracting procedures.

“Lee immediately stood up the team and implemented on-the-job training over a weekend to ensure the entire team was trained, operating consistently and efficiently,” Gruber said.

“We had to act immediately in doing emergency contracts,” McCormick said. “Interstate 29 was shut down and many small towns became islands as they became flooded with water all around.”

McCormick’s team, in collaboration with the project delivery team, developed and gained expedited approval of \$151 million from the Omaha District’s Acquisition Plan for Prequalification of Sources List, providing flood response to over 30 levee repair contracts.

“This was the first time ever that Omaha District has utilized a PSL approach and the first time in the history of the U.S. Army Corps of Engineers that this acquisition approach has been utilized for small projects,” Gruber said.

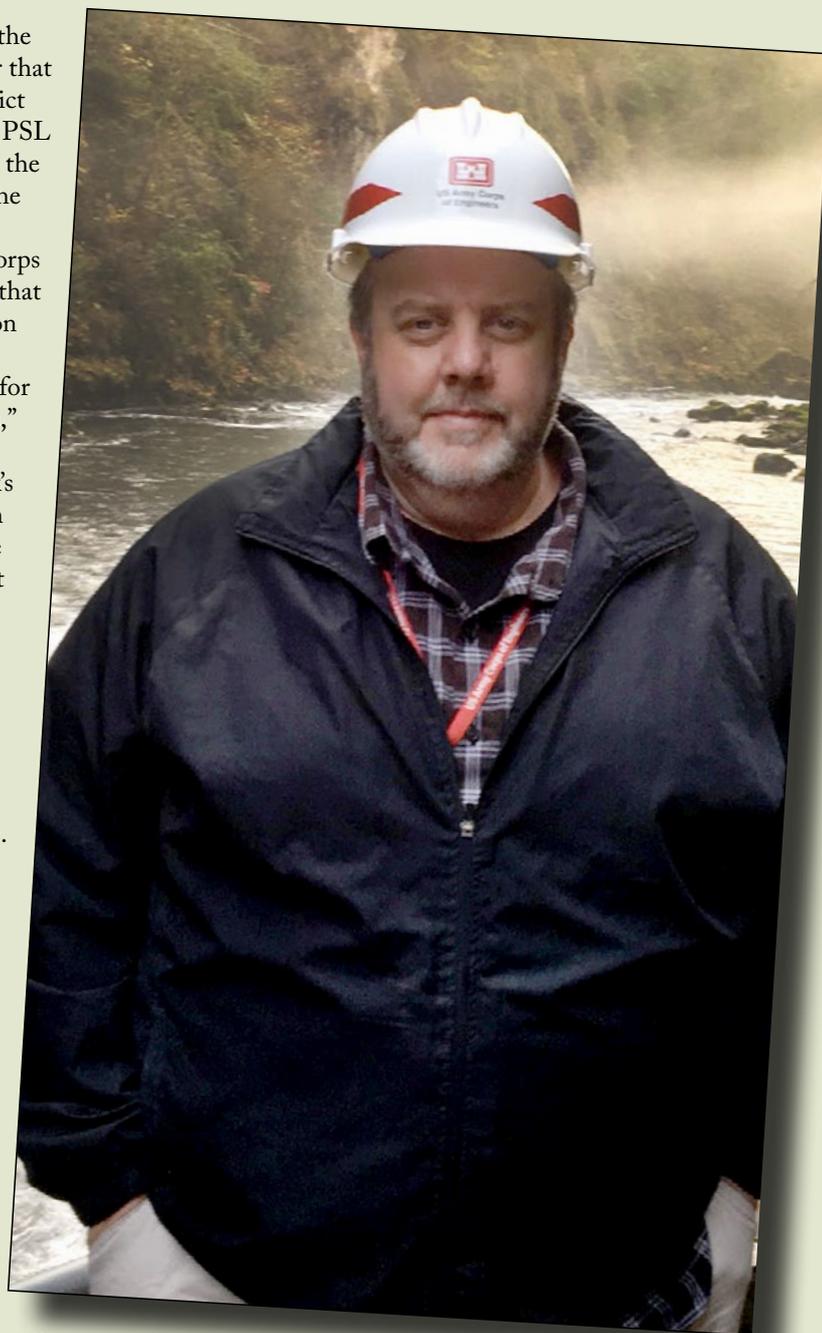
McCormick’s new approach shortened the advertisement and award periods for contracts — a process that usually took months took us a couple weeks or days.

“The phenomenal success of these contracts also served to enhance the public image of the U.S. Army Corps of Engineers during a time of extreme public scrutiny,” Gruber said.

“Due to its success, it has since been mimicked across USACE,” he said. “Lee’s role in launching and perfecting this process cannot be understated.”

McCormick did not wish to take all the credit without thanking the many people that made a team effort in the success of the mission and offering words of advice for those wishing to be successful.

“It was definitely a collaborative effort,



Lee McCormick

not one person can do all this alone,” McCormick said.

“I’d tell people not to only focus on your job requirements. Focus on the impact of what you’re doing and how that affects the community, and put that first,” he said. “Put how to make the world a better place in everything you do.”