



**The Corps**

**Volume 24, Issue 2  
May 2023**

# **Environment**

**USACE leads the way  
in natural solutions for  
coastal flooding in New  
York and New Jersey**

**25**



## **Environmental Operating Principle #4**

**Continue to meet our corporate responsibility and accountability under the law for activities undertaken by USACE, which may impact human and natural environments.**



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Send articles, photos, events, letters or questions to the editor, at [Corps-Environment-Magazine@usace.army.mil](mailto:Corps-Environment-Magazine@usace.army.mil).

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



## Investing in partnerships: Collaboration is essential to addressing climate change

By Maj. Gen. Kimberly Colloton  
Deputy Commanding General for Military and International Operations  
U.S. Army Corps of Engineers

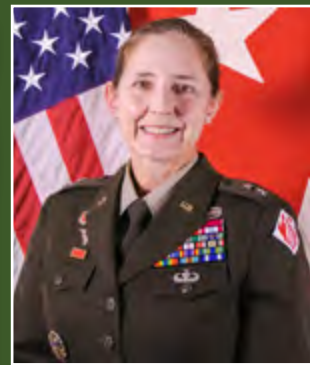
Climate change is a global challenge that demands a holistic approach — teamwork is required across all facets of society — to develop solutions that protect and preserve our environment. The U.S. Army Corps of Engineers (USACE) is a global organization, with approximately 38,000 professionals stationed across 39 different countries and working on projects in 110 countries. At home and abroad, USACE accomplishes nothing on its own; working with and in support of our partners are intrinsic to our business practices and how we deliver innovative solutions that promote sustainability, efficiency and resiliency.

As USACE's Deputy Commanding General for Military and International Operations, I get to work with people and partners to oversee an incredibly diverse portfolio — more than \$35 billion in design, construction and environmental programs — that are executed for Department of Defense (DOD), non-DOD agencies, and foreign countries. Across this diverse portfolio, we are finding success and winning when we incorporate collaborative approaches to engineer solutions to address the nation's toughest challenges, like reducing our impact on climate change and preparing for/adapting to climate change.

Ensuring military readiness through sustainable, energy-efficient, and resilient infrastructure is one way that USACE is addressing climate change. The Army is the largest federal building owner, with more than 70,000 buildings in its inventory. We are partnering within the Army and with the Navy, Air Force, and private industry to carry out pilot construction projects on installations using materials and building techniques that will lower the lifetime embodied carbon emission of infrastructure by at least 30%. Our goal is to meet the sustainability objectives that Congress outlined in the National Defense Authorization Act. You can learn more about these efforts in our [StrongPoint](#) and recent ["Inside the Castle" podcast episode](#) on sustainable and innovative military construction.

We are also using reliable and renewable energy sources, like solar, for mission assurance. The Army Climate Strategy lays out ways to reduce net greenhouse gas emissions by 50% using carbon-free generation, sustainable building techniques, conservation practices, and nature-based engineering. This past year, USACE's Huntsville Engineering and Support Center, at the request of Army leadership, awarded a contract for U.S. Army Installation Management Command (IMCOM) for 367 solar-powered charging stations and a contract for Army Materiel Command (AMC) for 112 stations. These charging stations will provide clean energy sources at 50 installations for IMCOM and at 21 sites for AMC. In addition to energy efficiency, USACE's Construction

Engineering and Research Laboratory (CERL) is also focusing on reducing waste generation and water use and has developed an array of planning and analysis tools that assist installations, bases, camps, posts and stations as they look for sustainable ways to optimize resources. Last month, I had the opportunity to visit CERL's Contingency Basing Integration Training and Evaluation Center (CBITEC) at Fort Leonard Wood, Missouri, that is helping the Army and DOD test battery energy storage systems that can be integrated into microgrids to enhance operational effectiveness and provide reliable power for critical equipment and systems anywhere in the world.



**Maj. Gen. Kimberly Colloton**  
Deputy Commanding General  
Military and International Operations  
U.S. Army Corps of Engineers

Resilient military infrastructure, particularly in locations that are vulnerable to extreme weather events like hurricanes or floods, is also essential to mission readiness. Working with our Air Force partners at two coastal bases — Patrick Space Force Base and Tyndall Air Force Base — USACE is designing and building sustainable infrastructure that protects against climate threats.

At Patrick Space Force Base, we are designing a communications center that will be able to withstand Category 5 hurricane winds. Resilient infrastructure not only protects the equipment and materials inside the building but also protects the people who work there and the economic investment. A resilient workforce and economy, in addition to the environment, provide a multi-layered approach to successfully combating climate change.

We learned a devastating lesson in the fall of 2018 when Hurricane Michael ravaged nearly all of Tyndall Air Force Base, amounting to almost \$5 billion to rebuild. Our military infrastructure must be able to withstand severe weather threats. Currently, we are smartly rebuilding Tyndall — buildings made of durable and low maintenance materials with updated structural standards, increased energy resilience, higher wind loads and flood elevations. As part of the Tyndall rebuild, we are using a Digital Twin platform — software that provides countless visual models and simulations — to make data-informed decisions about preparing for and responding to risks and threats from the environment and assisting in making more informed operations and maintenance investment decisions.

**See ENVIROPOINTS on page 5**

Outside of DOD, USACE's Interagency and International Services Division is working with the U.S. Agency for International Development, U.S. Department of State and other interagency partners in a whole-of-government approach to support the White House Action Plan on Global Water Security. The President's Emergency Plan for Adaptation and Resilience (PREPARE) is one initiative with the primary goal of helping developing countries adapt to and manage impacts of climate change. One example of USACE engagement is our collaboration with the Dominican Republic North Yaque River Basin Commission in the development of climate resilient watershed planning. In partnership with USAID, USACE is helping develop a decision support tool that will evaluate watershed project investment budgets to build resilience to floods and droughts.

We are also developing the next generation of talent — engineers, scientists and architects — so that they join USACE's workforce ready to tackle the challenges of climate change with creative and dynamic ideas. Many of our districts, divisions and centers regularly participate in science, technology, engineering and math (STEM) engagements with students. Last month, our Engineer Research and Development Center hosted an Earth Day STEM event for approximately 120 eighth graders that

featured demonstrations of various technologies that support sustainability and resilience.

Collaboration makes our efforts more efficient and more enduring. Regular participation in working group meetings and engagements across government agencies, private industry, academia, and foreign countries enables USACE to address knowledge gaps and eliminate redundancy. We learn from each other what approaches do or do not work to build on successes and to not repeat mistakes. Across the USACE enterprise, our Military Programs Directorate is working closely with our Civil Works and Research & Development directorates to advance construction, engineering, science and technology solutions. Our whole-of-USACE approach allows us to make informed updates and standardize our training, policies, design and construction criteria, and contracting tools, which are then leveraged by our organization and our partners to achieve sustainability goals.

Protecting and preserving our environment is everyone's responsibility. It is the focus of USACE's fourth Environmental Operating Principle and the theme of this edition of The Corps Environment. As you read this edition, I hope that you will be inspired to collaborate with partners, work together and be innovative to create a stronger, healthier planet!

## Environmental Operating Principles

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

Learn more about the EOPs at:

[www.usace.army.mil/Environmental-Operating-Principles](http://www.usace.army.mil/Environmental-Operating-Principles)

# Huntsville Center answers charge to electrify Army's vehicle fleet

By Kristen Bergeson

U.S. Army Engineering and Support Center,  
Huntsville

**E**lectric vehicle charging stations have begun popping up at Army installations across the nation, less than a year after the Army announced plans to reduce its climate impacts by decreasing fossil fuel use.

The Army's climate strategy, released in February 2022, outlines a plan to reduce its net greenhouse gas emissions by 50%, in part by transitioning to a fully electric vehicle fleet by 2050. For its non-tactical, light-duty fleet, the service plans to be all-electric by 2027.

To take the first step toward meeting this goal, the Army called on the U.S. Army Engineering and Support Center, Huntsville to provide acquisition services, contract management and technical expertise for installing electric vehicle charging stations at more than 70 sites, said Jason Bray, Huntsville Center program manager for electric vehicle charging stations.

"Because we are a one-stop shop with program management, contracting, engineering and other resources under one roof, they know we can execute these types of projects on a tight deadline," Bray said. "We got the charge — no pun intended — in June 2022, and we had to award the contract by the end of the fiscal year on September 30."

Huntsville Center answered the call and awarded contracts for 367 solar-powered charging stations at 50 installations for the U.S. Army Installation Management Command (IMCOM) and 112 stations at 21 sites for the Army Materiel Command.

"Because the stations are solar powered and, therefore, not connected to the utilities grid, they don't require additional construction or electrical work," Bray said. "The solar piece was not part of the original plan for this acquisition, but we were able to get these in place much faster than other options and added the benefit of meeting energy initiatives in resiliency."

Each station uses large solar panels that move throughout the day to maximize the amount of power they can draw from the sun. That power is stored in batteries under the panels to allow charging at night and on cloudy days.



*An electric vehicle charges its battery at one of the seven solar-powered charging stations recently installed at Redstone Arsenal, Alabama. Huntsville Center awarded contracts and is providing technical oversight for nearly 500 of these stations at Army installations as part of the service's initiative to transition to a fully electric vehicle fleet by 2050. (Chris Putman)*

As of February 2023, 30 of the contracted stations for IMCOM had already been installed at six garrisons, including the seven at Redstone Arsenal, Alabama.

Don Henderson, Redstone Arsenal energy manager, noted numerous benefits to using solar power to charge the installation's electric vehicles.

"The solar charging stations are self-sustaining, which means there will be savings that come from not using fuel but also from not having to purchase power from our utility provider," Henderson said. "It also means that they are portable and can be moved from one command to another as the mission or demand changes."

According to Henderson, solar power, in general, is a more secure means of providing power to vital military resources.

"When you have power coming from the grid, it's subject to cyberattacks and natural disasters," he said. "If you're relying on the grid and that power line gets cut or the programming gets hacked, it can delay the mission and impact a plethora of things."

Like other installations, Redstone Arsenal is just beginning its transition to an electric fleet. Redstone Arsenal has plans for seven more charging stations to be installed this year but will need enough stations to charge a full fleet of around 500 non-tactical electric vehicles by 2027, Henderson said.

The Army's climate strategy came as a response to Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability, which was issued in December 2021. The order sets out a range of goals for the federal government, including 100% carbon pollution-free electricity by 2030, 100% zero-emission vehicle acquisitions by 2035, net-zero emission buildings by 2045 and more.

"This project for electric vehicle charging stations was the first of its kind for USACE, and my team was proud to be able to support the Army, and the nation, in this effort," said Bray. "We pride ourselves on our ability to constantly learn and adapt in order to meet the needs of our customers."

# Employee Spotlight

## Cheatham Lake biologist tuned into environmental projects

*Park ranger Steve Acuff observes a bluebird nest along the TSU Trail near Sam's Creek while inspecting the area March 27, 2023, in Ashland City, Tennessee. (Lee Roberts)*

By Lee Roberts  
USACE, Nashville District

A conservation biologist at Cheatham Lake is very much in tune with the significant environmental projects related to overseeing the conservation, preservation, restoration and use of natural and cultural resources.

Park ranger Steve Acuff, with the U.S. Army Corps of Engineers Nashville District, performs traditional ranger duties, routinely engages the public, and provides visitor assistance and water safety initiatives during the recreation season. But like a musician, he performs on a grand stage and remains focused year-round on the management of natural resources and leading interpretive and outreach programs.

The project he serves is near Music City in Ashland City, Tennessee, and his family name is familiar to music fans. He is distant kin to the "King of Country Music," Roy Acuff. As a biologist, however, he is more in harmony with the environment at Cheatham Lake than songs performed by his famous relative.

"We come from the same Acuff that came over from Scotland in the late 1600s," Acuff said. "I half joke he's my grandpa's 32nd cousin as I receive no fame or fortune for

sharing the name. It's cool to be related though."

In his daily duties, he is more of an environmental artist, and stays focused on the great responsibility of managing ecological resources at Cheatham Lake. He collaborates with the park ranger staff to manage 83 acres of wildlife management areas, which include the lock and dam pollinator gardens, and resources at Sycamore Creek, Harpeth River, Marrowbone Creek, and Sam's Creek and TSU Trail.

He also interacts and partners with the Tennessee Wildlife Resources Agency, which leases and manages 5,298 acres of land and 2,796 water acres for wintering waterfowl and fisheries at Hudgen's Slough, Pardue Pond Wildlife Refuge, Dyson Ditch Wildlife Refuge, and Marrowbone Creek.

A certified arborist through the International Society of Arboriculture, Acuff says he loves trees way too much. He oversees project forest resources to assure sustained yield timber production, develops short- and long-range forest management plans, and prescribes timber stand improvement projects and forest management practices.

In a 50-year-old pine forest nearby Cheatham Dam, Acuff

has singlehandedly planted 1,500 seedlings in hopes that at least 10% of them would survive and thrive to keep the forest viable well into the future. He also conducted prescribed burns in the pine forest to restore its understory to provide habitat for several plant and animal species that are restricted to or found in longleaf pine communities.

"I'm in charge of a lot of the environmental stewardship business lines," Acuff said. "Primarily the biggest ones would be shoreline management, safeguarding the navigation channel, and allowing for private, exclusive use for residents that are adjacent to public lands or waters. Secondary stewardship activities that we do are wildlife management, forest management, and fisheries management with installation of artificial habitats. A lot of our wildlife management and environmental stewardship tasks are still mostly devoted towards enhancing natural resources for recreation."

A recent project Acuff has taken on involves the reclamation of a park that had become overgrown by vegetation. He is still in the process of restoring the 2-mile TSU Trail at this location that meanders and loops through open fields, pollinator and prairie habitat, bottomland forest, and includes a viewing stand overlooking a wetland. It is adjacent to the 124-acre Tennessee State University Agricultural Research and Education Center on the banks

of the Cumberland River in Ashland City, Tennessee.

Tadd Potter, Cheatham Lake resource manager, said Acuff does a great job of working to enhance natural resources, which is one of their broadly-stated environmental management goals.

"Steve serves as our technical expert and leads our environmental stewardship program by executing conservation and wildlife management programs throughout the year," Potter said. "He is passionate in his work and has been successful in various projects in helping to reclaim public lands to a healthy, manageable wildlife habitat."

With shoreline management and permit actions for development along the shoreline and in the waterway, Acuff said he adheres to the lake's master plan and collaborates with the Nashville District's Regulatory Division to adhere to lawful environmental requirements and interests.

"We try to manage competing interests to protect natural resources to best serve the entire population, whether that be a commercial entity or private citizen," Acuff said.

Acuff first served the nation in the U.S. Marine Corps as a combat cameraman from 2009 to 2013. After being honorably discharged, he really wanted to manage public lands, so he earned a bachelor's degree from Western Illinois University in 2017, and a master's degree in 2018.

His environmental journey with the U.S. Army Corps of Engineers began while pursuing his graduate degree when he accepted a position as a pathways intern park ranger and forester with the Rock Island District. He joined the Nashville District in his current position at Cheatham Lake in May 2021.

"I'm doing exactly what I wanted to do, manage public lands. At the end of the day that gives me a lot of pride to be able to manage these areas for the public and to provide safe and healthy spaces for people to enjoy. It really does put a smile on my face," Acuff said.

He stressed that he relishes his job and his current position because he loves conservation, rolling his sleeves up, and working on environmental projects.

"I love my role here as a conservation biologist at Cheatham Lake specifically because we do have some areas that require a little bit more environmental stewardship than some of our other recreation areas," Acuff said. "Recreation and the safety and health of the public obviously trumps everything, but when I can get out here and put on some old clothes and roll around in the dirt, you best believe I'll be out here."

***"I'm doing exactly what I wanted to do, manage public lands. At the end of the day that gives me a lot of pride to be able to manage these areas for the public and to provide safe and healthy spaces for people to enjoy. It really does put a smile on my face."***  
***- Steve Acuff, Nashville District park ranger***



*Park ranger Steve Acuff, biologist and natural resources specialist at Cheatham Lake, checks a pine seedling March 27, 2023, that he planted in a mature pine canopy near Cheatham Dam in Ashland City, Tennessee.*

Additional information about Nashville District is available on the district's [website](#), on [Facebook](#) and on [Twitter](#). The public can also follow [Cheatham Lake on Facebook](#). The latest Nashville District employment and contracting opportunities are available on [LinkedIn](#).

*Park ranger Steve Acuff observes the underbrush along the TSU Trail near Sam's Creek while inspecting the area March 27, 2023, in Ashland City, Tennessee. (Lee Roberts)*



*Park ranger Steve Acuff checks a portion of a pine forest March 27, 2023, where he conducted prescribed burns to restore the understory to provide habitat for several plant and animal species that are restricted to or found mostly in longleaf pine communities. (Lee Roberts)*



*Park ranger Steve Acuff conducts a prescribed burn Feb. 14, 2022, in a pine forest near Cheatham Dam in Ashland City, Tennessee, to restore its understory. (Tadd Potter)*

# U.S. climate risk tool gets French, Arabic translations

By Ana Allen

USACE Institute for Water Resources

The Climate Risk Informed Decision Analysis (CRIDA) methodology has been translated into French and Arabic, increasing global acceptance of the U.S. Army Corps of Engineers (USACE) climate change adaptation tool.

The USACE Institute for Water Resources (IWR) developed CRIDA in 2018 through its International Center for Integrated Water Resources Management (ICIWaRM) to help United Nations leaders plan for an uncertain future, mainly as it relates to climate change and water. After being presented and adopted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), CRIDA was then translated from English into Spanish in 2019.

With French and Arabic translations having occurred this year, IWR international program manager Guillermo Mendoza says these translations move the tool closer to global adaptation.

“Every nation is concerned about climate change, but mitigation levels, capabilities and approaches vary from country to country,” Mendoza said. “By working from the same methodology, the global community benefits from a shared wealth of knowledge, while also moving in the same direction.”

Mendoza says that even though nations using the tool have unique cultural views on water management, the priorities that are native to this tool are universally beneficial. “CRIDA embraces public participation, a bottom-up approach to identify water security hazards and is sensitive to indigenous and gender-related water vulnerabilities. These are all areas of global concern and should be factored in when exploring the feasibility of climate change mitigation projects,” Mendoza said.

The French translation has been published to the UNESCO website, with the Arabic translation to be posted soon. Translation of the methodology to Portuguese and possibly other languages is in the works.

In addition to ICIWaRM and its parent entity, IWR, the primary authors of the CRIDA handbook were from the

## CRIDA now in French and Arabic

Analyse décisionnelle basée  
sur le risque climatique (CRIDA)

تحليل القرار المستنير  
(CRIDA) بالمخاطر المناخية

Planification collaborative des ressources  
en eau en prévision d'un avenir incertain

التخطيط التعاوني للموارد المائية  
لمواجهة مستقبل من عدم اليقين



*The Climate Risk Informed Decision Analysis (CRIDA) methodology has been translated into French and Arabic, increasing global acceptance of the USACE Institute for Water Resources' climate change adaptation tool. Pictured is an edited combined cover of the French and Arabic translations. (File image)*

Alliance for Global Water Adaptation (AGWA) and Climate Adaptation area of Deltares (Delft, The Netherlands) and UNESCO's Intergovernmental Hydrological Programme. Much of the methodology was developed in collaboration with the Hydrosystems Group of the University of Massachusetts and the Global Water Practice of the World Bank.

A CRIDA case study was also featured at UNESCO's International Conference on Climate Risk, Vulnerability and Resilience Building April 19-21, 2023, in Paris.



*A Kemp's ridley sea turtle nests on a new beach near the corner of Seawall and 86th Street. The new beach is giving marine life an added habitat for nesting thanks to an ongoing partnership between USACE Galveston District, the Galveston Park Board of Trustees, the city of Galveston, and the Texas General Land Office.*  
(Theresa Morris)

# Kemp's ridley sea turtle lays eggs on replenished beach

By Carlos Gomez  
USACE, Galveston District

Galveston's beaches are no strangers to visitors, especially during the summer. Each year, more than 7 million people come to vacation here.

This year, however, a very special visitor made Galveston its preferred summer getaway destination. A Kemp's ridley sea turtle — the world's rarest and most endangered sea turtle species — nested on a new beach near the corner of Seawall and 86th Street.

The U.S. Army Corps of Engineers (USACE) Galveston District's beach renourishment project helped make the nesting possible.

The sand used to replenish Babe's Beach is provided through the district's routine maintenance dredging of the Galveston Channel, said Chris Frabotta, Galveston District operations chief. The routine

dredging keeps the channel deep enough for large ships to access the port facilities at Galveston, Texas City, and Houston.

"This is all done in keeping with the Corps of Engineers' navigation mission to provide safe, reliable, efficient, and environmentally sustainable navigation channels for the movement of commerce," Frabotta said.

Since 2015, the Galveston District has partnered with the Galveston Park Board of Trustees, the city of Galveston, and the Texas General Land Office in getting fresh sand to replenish Babe's Beach. The partnership was part of an ongoing effort to maintain and protect Galveston's beaches at no additional cost to residents.

"The Galveston District pays for dredging of the sandy material from the channel while the [Galveston] Park Board and the Texas General Land Office cost-share the incremental amount required to transport the sand to the beach," Frabotta said.

USACE has replenished the beach three times: first in 2015; then in 2019; and most recently during the summer of 2021, Frabotta said. The sand is dredged from the Galveston Channel and then placed along the Galveston shoreline, primarily the area known as Babe's Beach. To date, USACE has placed about 1.7 million cubic yards of sand onto Babe's Beach.

"This is a new beach thanks to the Babe's Beach renourishment project, where we previously had no historical records of nests occurring," said Theresa Morris, rehabilitation hospital manager at Texas A&M's Gulf Center for Sea Turtle Research.

When turtles nest on Galveston, Morris and her team excavate the entire clutch and transfer it to Padre Island National Seashore for incubation and release, she said.

"This is because almost all nests in the upper Texas coast zone would become inundated, crushed, or predated if left in place," Morris said. "We are very excited about this event. As

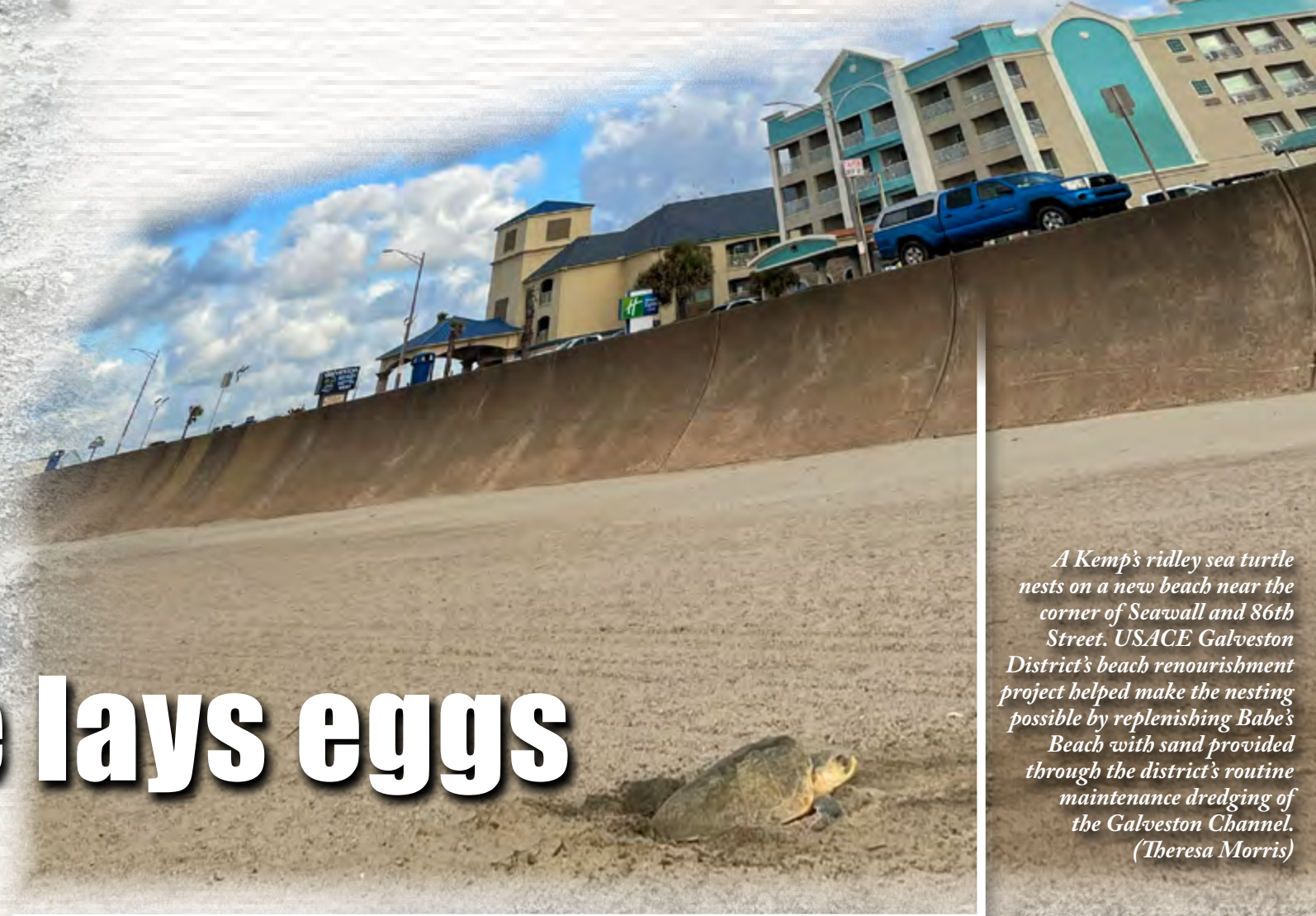
this project brought new nesting habitat to an endangered species."

While the placement of dredged sand along Babe's Beach creates more beaches for Galveston residents and beachgoers from all over Texas, the creation of a nesting habitat for the sea turtles was an unintentional benefit, Frabotta said.

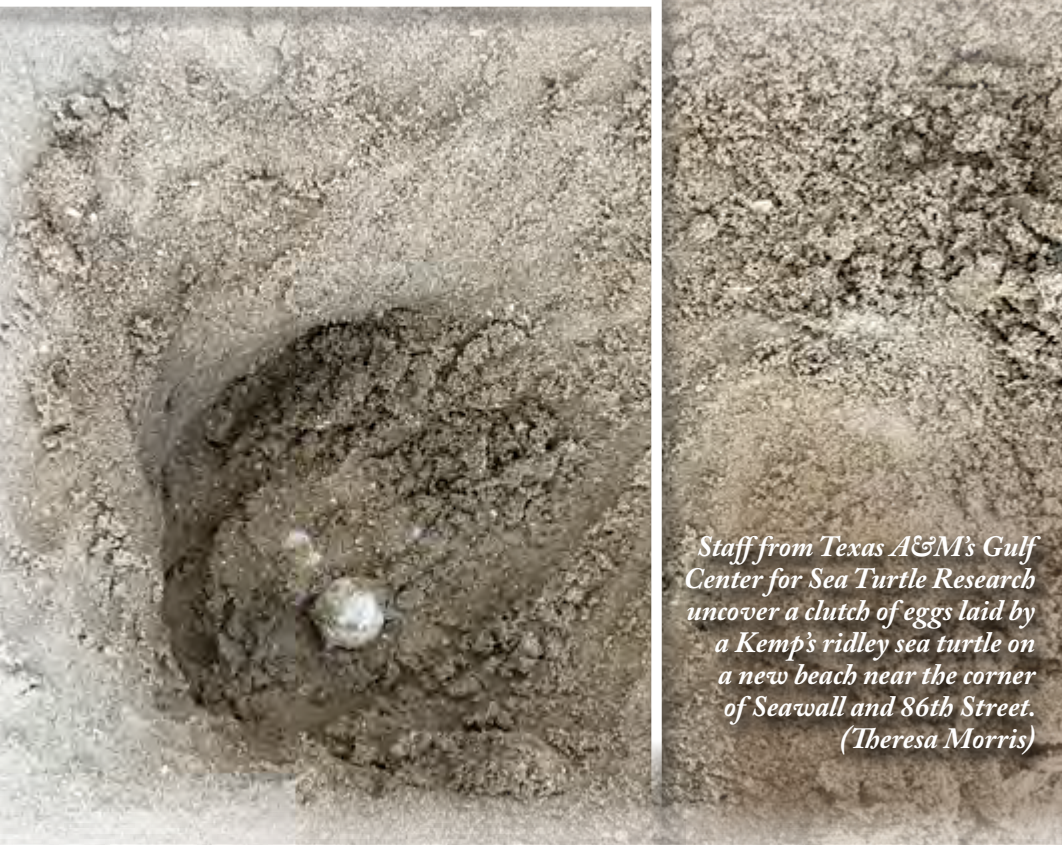
"We're really proud to know the dredging and sand placement is doing more than creating recreational opportunities for Galveston, but also benefitting local marine life by creating more nesting grounds for a critically endangered species," Frabotta said.

For more information on the sea turtle species of the Texas coast, visit: <https://www.tamug.edu/GulfCenterforSeaTurtleResearch/>.

For more news and information, follow Galveston District on [Facebook](#), and on [Twitter](#).



*A Kemp's ridley sea turtle nests on a new beach near the corner of Seawall and 86th Street. USACE Galveston District's beach renourishment project helped make the nesting possible by replenishing Babe's Beach with sand provided through the district's routine maintenance dredging of the Galveston Channel.*  
(Theresa Morris)



*Staff from Texas A&M's Gulf Center for Sea Turtle Research uncover a clutch of eggs laid by a Kemp's ridley sea turtle on a new beach near the corner of Seawall and 86th Street.*  
(Theresa Morris)

# Inaugural Federal Agencies Fisheries Summit focuses on collaboration to improve conservation of aquatic species

**By Mindy Simmons**  
USACE, Headquarters

**Dr. Kathryn McCain**  
USACE, Institute for Water Resources

Over 120 participants from various federal agencies, tribes, and organizations assembled at the National Conservation Training Center in Shepherdstown, West Virginia, to participate in the inaugural Federal Agencies Fisheries Summit Feb. 22-24.

The intent of the summit was to initiate efforts to improve management and conservation of aquatic species and their habitats at the landscape scale by advancing relationships and collaboration across federal agencies and tribes.

Federal and tribal collaboration is vital for project planning and the successful restoration of fisheries and aquatic resources. Collaboration with federal agencies, tribes, and non-federal partners early and often builds trust through improved communication, leverages technical expertise, and moves toward a shared understanding of an “all hands” vision for fisheries and aquatic resources management.

Participants in the summit represented such agencies as the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Forest Service, U.S. Environmental Protection Agency, Federal Emergency Management Agency, National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, American Fisheries Society, Association of Fish and Wildlife Agencies and tribes.

During the summit, several challenges and opportunities were identified across agencies. Challenges identified included the need to hire more people, lack of a shared vision, and limited recognition of the value of enhanced



*The Federal Agencies Fisheries Summit consisted of a mix of plenary and interactive breakout sessions. (Mark Cornish)*

federal coordination at all levels of an agency. Opportunities identified during the summit included pursuing the hiring of new staff and using interagency personnel agreements and support agreements to share across agencies; developing a shared agency voice and future vision for federal fisheries and aquatic resources; and initiating a process to develop a collaborative federal agencies collaboration framework to tell the story of why collaboration is important.

Additional summits will be held in the future. For additional information on future opportunities to engage on fisheries and aquatic resources management and restoration, please contact Mindy Simmons, [Mindy.M.Simmons@usace.army.mil](mailto:Mindy.M.Simmons@usace.army.mil), or Kat McCain, [kathryn.mccain@usace.army.mil](mailto:kathryn.mccain@usace.army.mil), on the Summit Coordination Team.

# USACE breaks ground on massive Everglades Agricultural Area Reservoir project

By Jennifer Brande  
USACE, Jacksonville District

**G**roundbreaking ceremonies have been used for centuries to celebrate the start of a new venture and give thanks to those who blazed a trail and made it possible. On February 22, the U.S. Army Corps of Engineers (USACE) Jacksonville District and the South Florida Water Management District (SFWMD) teamed with federal, state and local officials along with stakeholders to break ground on the Everglades Agricultural Area (EAA) Reservoir, a major component of the Comprehensive Everglades Restoration Plan that reconnects Lake Okeechobee water to the central Everglades.

Jacksonville District commander Col. James Booth reminded everyone in attendance of the rich history, present construction, and the path ahead of construction for the EAA Reservoir project. With the backdrop of two massive granite piles used for the construction site, he welcomed the crowd and quickly assured everyone of the commitments both USACE and SFWMD have made to advancing Everglades projects that make a difference for the environment and the quality of life for people in south and central Florida.

“This is a timely ceremony, a great opportunity to recognize all the efforts of the USACE team, South Florida Water Management District, and you because many consider the EAA Reservoir project to be the ‘crown jewel’ of the Comprehensive Everglades Restoration Plan,” said Booth. “The reservoir is a game-changer for the Everglades and south Florida.”

SFWMD is constructing the stormwater treatment area, which is a 6,500-acre treatment wetland that will allow more water to flow south into the Everglades. The treatment wetland is scheduled to reach completion this year. The wetland will use three separate treatment cells of aquatic vegetation to naturally remove nutrient pollution and clean water before it flows south into the Everglades.

USACE is constructing the reservoir, which will be 10,500 acres with 240,000 acre-feet of static water storage. This project will capture, store, treat and deliver more clean water to

the Everglades and Florida Bay, where it is needed, while protecting the St. Lucie and Caloosahatchee estuaries from harmful and damaging releases from Lake Okeechobee.

In conjunction with other Central Everglades Planning Project (CEPP) features, this project will deliver an annual average of 360,000 acre-feet of clean water south to the Everglades.

Booth said the project will be able to capture, store, treat and release water from Lake Okeechobee to the central and southern Everglades instead of diverting water or having to send it east and west to the estuaries.

“When completed, this massive reservoir will cover 10,500 acres, or approximately 16 square miles, an area similar to the cities of Stuart and Fort Myers put together,” said

Booth. “More than 17 million cubic yards of earthen material will be used to construct an embankment that is about 37 feet tall and will store water about 23 feet deep. That translates to a capacity of approximately 240,000 acre-feet of water, or about 5,000 spaceship earth balls at Epcot Center.”

The ceremony celebrated the start of work on the EAA Reservoir and showcased the progression of work on the EAA A-2 Stormwater Treatment Area currently being built by SFWMD.

The total cost of the CEPP EAA phase is estimated at \$3.9 billion, a huge investment in Everglades restoration.

“It’s always good to be here with the mighty USACE Jacksonville District and the South Florida Water Management District team,” said Assistant Secretary of the Army for Civil

Works Michael L. Connor. “Today we celebrate a crucial milestone for Everglades restoration, and this is another hallmark project by USACE. The Biden administration remains committed to ensuring the success of Everglades restoration by continuing to dedicate major resources to this project.”

Building Everglades restoration also builds resiliency for south Florida. Being able to store more water from the lake and ultimately send more water south will benefit the entire region — improving the health of Lake Okeechobee, reducing releases to the estuaries, rehydrating wetlands in the central Everglades and Everglades National Park, and improving the health of Florida Bay.

“When we started this project in 2018, it was hard to imagine that we would get here, much less in under five years,” said Chrissie Figueroa, EAA project manager with the

Jacksonville District. “Our USACE team has worked very hard to get to this point and it is nice to take the opportunity to break ground on an innovative project of this size while solving some of our nation’s toughest challenges through engineering.”

The EAA Reservoir project will benefit both Florida’s environment and economy. In addition to more clean water for the Everglades, the project is creating jobs and providing a significant boost to the nearby local economies south of Lake Okeechobee.

Drew Bartlett, SFWMD executive director, thanked USACE, his staff at SFWMD, the community, legislators, and contractors for their hard work to get to this point.

“Breaking ground on the long-anticipated EAA Reservoir is a monumental achievement for the restoration and protection of America’s

Everglades,” said Bartlett. “When have we turned a concept and an idea from Senate Bill 10 into finishing a wetland treatment system and starting a massive, incredible reservoir in six years? That doesn’t happen,” said Bartlett.

“Do not ever doubt the folks at the Jacksonville District and the South Florida Water Management District; we are ready to get busy and get stuff done,” said Bartlett. “This is it. This is what we are going to get done.”

The EAA Reservoir project is a joint Everglades restoration project between the SFWMD and USACE.

The public can obtain news, updates and information from the Jacksonville District on the district’s [website](#), on [Facebook](#), on [Twitter](#) and on [Instagram](#).



*Drew Bartlett, SFWMD executive director, addresses guests during the groundbreaking ceremony. (Brigida Sanchez)*



*USACE Jacksonville District and SFWMD celebrated with a groundbreaking ceremony at the EAA Reservoir project Feb. 22. (Brigida Sanchez)*



*Assistant Secretary of the Army for Civil Works Michael Connor stands in observance of the National Anthem during the groundbreaking ceremony. (Brigida Sanchez)*



*Col. James Booth, Jacksonville District commander, addresses guests during the groundbreaking ceremony. (Brigida Sanchez)*



*The EAA project will reconnect Lake Okeechobee to the central and southern Everglades and Florida Bay. (Brigida Sanchez)*



*The EAA project will set the foundation for restoring the central portion of the Everglades ecosystem and sending water south. (Brigida Sanchez)*

# St. Paul District makes waves with a new aquatic invasive species program

By Melanie Peterson  
USACE, St. Paul District

**T**he U.S. Army Corps of Engineers (USACE) St. Paul District is paving the way with the first USACE-led aquatic invasive species, or AIS, cooperative program, in the Midwest region. Invasive species cost the public more than \$137 billion annually, according to the U.S. Army Engineer Research and Development Center, and more than 100 nuisance species are introduced to U.S. waters annually.

The program was recently expanded from five watersheds to now national-level availability. The program includes three components: direct funding for research and development for AIS, cost-share funding for the control and prevention of AIS, and emergency action to provide immediate support.

Hydrilla and flowering rush are specifically listed as invasive species, but through research and development efforts, treatment can be applied to other invasive or nuisance species as well.

The first part of the program, research and development to combat AIS, is 100% federally funded. States can submit a proposal that the federal government can approve and fund.

The second part of the program is a 50% cost-share program with non-federal sponsors. It involves the state's submittal of annual workplans, performing the work and then requesting reimbursement. This part of the program is to control and prevent the spread of AIS and could include watercraft inspections, equipment purchases, supplies, services, along with outreach and education.

The third component of the program includes emergency action. This could involve a brand-new presence of AIS in

a sensitive area. Once this program is established, USACE can immediately provide support.

"From my position, the biggest role we play is helping communities collaborate and prevent the spread of invasive species across borders — international

borders and state boundaries. Aquatic invasive species don't stop at state lines. Now we can reach out to multiple states, and even Canada, to prevent the spread," said Eric Hanson, senior ecologist for the St. Paul District.



*Hydrilla, an aquatic invasive species.  
(Photo courtesy of the University of Florida  
Center for Aquatic and Invasive Species)*



*Flowering rush, an aquatic invasive species.  
(Photo courtesy of the Early Detection and  
Distribution Mapping System)*

# It's **no accident** this **environmental cleanup** project's a leader in worker safety: Team shares safety best practices

By JoAnne Castagna  
USACE, New York District

It's the 1940s in Maywood, New Jersey. A new residential community has sprouted up and the homeowners want to beautify their front lawns, so they go to a nearby property to gather some fresh topsoil. Little did they know that they're helping to plant the seeds for one of the largest and most high-profile environmental cleanup projects in the nation.

The soil they gathered was from the grounds of Maywood Chemical Works, a company that disposed of radioactive waste onto their property, as well as on a nearby wetland that's the headwaters for the Lodi Brook. This waterway carried contamination downstream and spread it onto its floodplains where these new residential communities were being built during the construction boom following World War II.

Decades ago these residents and the company were unaware of what they were starting, but today the U.S. Army Corps of Engineers New York District is resolving it.

The agency, in cooperation with partners, is cleaning up the community to make it safe for residents, while at the same time keeping their own workers safe. They've been so successful that they achieved 1 million man-hours without a lost time accident. This is a significant milestone for the U.S. Army Corps of Engineers. It is not often achieved in the industry, and it is especially important on environmental cleanup projects. The team reached this success by carrying out safety best practices that will be shared here.

## FUSRAP Maywood Superfund Site

This project is being addressed by the U.S. Army Corps of Engineers under the Formerly Utilized Sites Remedial Action Program (FUSRAP), which is responsible for cleaning up radioactive waste generated during the early years of the nation's atomic energy program.

The U.S. Army Corps of Engineers New York District is the lead agency implementing the cleanup effort at the Maywood site and has four other active sites in the greater New York City area that it leads.

Dan Kennedy, project manager with New York District's Environmental, Interagency & International Services Branch, said, "The FUSRAP has some of the most technically challenging remedial projects in the nation and doing it safely is the most important factor during any remedial action."

The Maywood FUSRAP site is located in a highly developed area of northeastern New Jersey, just 12 miles west of New York City.

The property where wastes were disposed of covers 153 acres across the boroughs of Maywood and Lodi and the township of Rochelle Park in Bergen County, New Jersey.

In the early 20th century, Maywood Chemical Works sat on 63 acres of this land. For over 50 years, the company processed monazite sand to extract thorium and other rare earth minerals used in industrial products, including mantles for gas lanterns, as well as processed lithium ores for use of lithium in commercial products.

The chemical and radioactive thorium waste that resulted from this production was stored, treated or disposed of on the site into pits, piles and man-made lagoons.

During flooding events, this waste ran into the Lodi Brook and was carried downstream into other waterways, contaminating sediment and soils over a large area near the brook. Fortunately, the groundwater was not contaminated.

Spread from the Lodi Brook was the primary way the contamination spread in the community, but some residents also used soil from the site as fill on their properties, which added to the contamination. This spread the contamination throughout acres of land and into 92 residential, governmental and commercial properties. Since this waste contained radioactive thorium, a potential human carcinogen, this posed a threat to human health and the environment.

The U.S. Army Corps of Engineers is addressing the radioactive portions of the contamination under FUSRAP

in collaboration with the U.S. Environmental Protection Agency's Region II, the New Jersey State Department of Environmental Protection, the contractor, Cabrera Services, Inc., and with stakeholders such as the Stepan Company, a current owner of a portion of the site that is responsible for removing the non-radioactive material from in and around its property.

Radioactive material and soil are being remediated and potential groundwater contamination is being treated. All residential contaminated remediation has been completed.

In addition, on the former Maywood Chemical Works site, the U.S. Army Corps of Engineers safely removed radioactive soil, contaminated buildings, and metal drums that contained remnants of harmful solvents and degreasers.

Presently, the U.S. Army Corps of Engineers is removing contaminated soil from underneath highways and roads that include hard-to-reach areas around utilities, including beneath the streets in the borough of Lodi.

To date, over 830,130 cubic yards of contaminated soil and debris have been safely removed from the site. "This is equivalent to more than 11,000 railcars that we used to transport the material to landfills designed to safely contain these materials," said John Canby, project engineer, New York District. He added, "One hundred thirty-five million gallons of groundwater have been treated, which is equivalent to five oil supertankers."

The project is expected to be completed in three years and includes the restoration of the wetland that is the headwaters of the Lodi Brook that carried much of the contamination downstream and throughout the region.

Throughout the project's progress, public safety measures have been in place for the community. These measures include continuous air monitoring, disposing of contaminated material to approved off-site locations, decontaminating the trucks that are transporting waste material off the properties, dust suppression measures, and traffic controls. In addition, regular community meetings are held to keep the public informed about the progress of the project and to address their concerns.



*New York District commander Col. Matthew Luzzatto tours the Maywood FUSRAP site in New Jersey in February 2023. (Nayelli Guerrero)*



*The Maywood FUSRAP site staff was recently presented an award by New York District commander Col. Matthew Luzzatto for successfully achieving 1 million man-hours without a lost time accident. (DeShawn Bowser)*



*Work continues at the Maywood FUSRAP site in New Jersey in February 2023. (Nayelli Guerrero)*



*Workers on the Maywood FUSRAP site in New Jersey in February 2023. (DeShawn Bowser)*

See **WORKER SAFETY** on page 17

Worker safety best practices

Not only is the health of the community important, but also the safety of the project’s workers, especially when it comes to FUSRAP projects.

“Safety is very important for all construction projects and especially for FUSRAP projects because these projects introduce the workers to potential exposures to contaminants above and beyond your typical construction project hazards,” said Michael Johnson, New York District team leader.

Because of this, the team has implemented a series of worker safety best practices for its workers. The team has been so successful in doing this that they achieved 1 million man-hours without a lost time accident.

“This type of achievement is rare. This is the only project that I have worked on in the Army Corps that has achieved this milestone,” said Johnson, who has worked on this project for 15 years.

The following are some of the key worker safety best practices the team is performing that make this project a leader in worker safety:

- **A.M. Safety Counseling:** Every morning, the workers take part in a short Daily Tailgate Meeting. According to Johnson, this 30-minute meeting sets the day for the team. During the meeting, they discuss several things including the project’s safety analyses that can include discussing the steps needed to get through the potential hazards of a specific job. They also discuss a safety topic of the day that can include near misses or accidents that happened in the construction industry recently. Following this, they hold a question-and-answer session which is then followed by the workers getting up and taking to the floor for some stretching exercises before heading out to the job site.
- **Worker Empowerment:** Workers are encouraged to have open dialogue to reduce workplace accidents. Johnson said, “For example, the workers have Stop Work Authority which means

anyone on the job has the authority to stop the project if they observe unsafe conditions or behavior.”

- **Safety Incentive Award Program:** Each month, workers receive safety incentive awards for proactively taking steps to ensure safety on the project. According to Johnson, this program is a way to ensure inclusion for the project’s safety commitment. The program is designed to have targeted goals that empower personnel to have “skin in the game” and encourages workers to proactively take ownership of the project safety culture by meeting those safety-oriented goals. In addition, each quarter, workers are selected by their peers as the “Quarterly Safety Performer” recognizing exemplary safety performance and achievement.

“We are recognizing and rewarding our employees, not only for noticing and taking actions to eliminate hazards from the job site, but also for making positive observations that illustrate a commitment to safety for everyone on the project,” said Bill Lorenz, vice president of Cabrera Services, Inc., a contractor who plays an integral part in the project’s safety measures. Cabrera Services, Inc. is headquartered in East Hartford, Connecticut.

Out of sight, but not out of mind

Johnson said that hazardous waste projects, and this one in particular, have a unique danger — radiological hazards that are not visible to the naked eye.

According to Kennedy, another hazard of radioactive materials is that they emit ionizing radiation, which means that a person can be exposed to radiation without even coming into contact with the material.

Because of this, specific precautions are being taken to protect workers through how the project is designed and through the use of personal protective equipment.

The project site is designed to minimize

safety hazards. This includes making sure there is ventilation in all work areas and misting water on the soils during excavation to suppress dust and contaminants from becoming airborne.

In addition, zones are set up on the site to limit worker’s exposure and reduce or eliminate potential cross contamination. The Exclusion Zone is where the workers are performing the remediation work and dealing with the contaminated material; the Contamination Reduction Zone supports the workers in the Exclusion Zone; and the Support Zone supports the Reduction Zone workers and it’s where workers prepare themselves to enter the Exclusion Zone.

To further limit worker exposure, workers wear personal protective equipment to protect their skin including wearing an outer layer of protective disposable clothing, hard hats, safety glasses and shields, and steel-toe safety footwear.

And at the end of the day, before worker’s leave the site, their hands, feet, and clothing are monitored using radioactive detection instruments to ensure that radioactive materials are not adhered to a person before they leave the work site.

Although contaminated soils were accidentally placed onto Maywood, New Jersey’s, residential properties, it is no accident that the U.S. Army Corps of Engineers’ workers who are cleaning up the community have done so without



New York District commander Col. Matthew Luzzatto tours the Maywood FUSRAP site in New Jersey in February 2023. (DeShawn Bowser)

harming the residents or themselves in the process. This can be directly attributed to the safety best practices the workers perform every day that other project managers and engineers can learn from.

“Our team’s ability to achieve 1 million man-hours without a lost time accident while working on a FUSRAP project is remarkable,” said Lorenz. “There is constantly some sort of high-risk, high-hazard type of activity occurring. We developed, emphasized, and implemented our approach to safety from the start and have routinely engaged employees so that they know they have direct involvement in the program, and its success. With these employees, we’ve been able to create and sustain a safety culture where our people actively care for one another, and everyone is looking out for each other to make sure we all go home at the end of the day safely.”



The team working on the Maywood FUSRAP site in New Jersey in February 2023. (Nayelli Guerrero)



New York District commander Col. Matthew Luzzatto is shown a map during a tour of the Maywood FUSRAP site in New Jersey in February 2023. (Nayelli Guerrero)



New York District commander Mathew Luzzatto and members of the FUSRAP team watch soil being placed into a railcar during a tour of the Maywood FUSRAP site in 2019. (JoAnne Castagna)



# Munitions cleanup advances at Culebra's Flamenco Beach Maneuver Area Formerly Used Defense Site

Story and photo by Wilberto Cubero  
USACE, Jacksonville District

The U.S. Army Corps of Engineers (USACE) is prepared to receive proposals for the cleanup of Culebra's Flamenco Beach Maneuver Area, with intentions to award the contract before Sept. 30, 2023, the end of the current fiscal year. Flamenco Beach Maneuver Area cleanup activities are anticipated to be completed by 2028.

Culebra Island, located 17 miles east of Puerto Rico's main island, is known for its white, soft sand and Flamenco Beach is one of the top 50 beaches in the world. If you are a history buff, you could enjoy a tour that would inform you of the several naval tanks the United States left in this territory in the 1970s and gain a deeper understanding of the island's history. This makes it a favorite vacationing spot for tourists seeking to snorkel and find treasures in its waters. Unfortunately, some of those treasures may be unexploded ordnance due to the island's history.

Beginning in 1901, the U.S. military used Culebra and adjacent cays as a coaling station and a radio transmitter facility. After World War II began, the Culebra Archipelago became the primary gunnery and bombing practice site for the U.S. Navy in 1939 and continued to be used for these purposes until 1975. As a result, unexploded ordnances remain present on Culebra's land and in its surrounding waters.

The island was approved for inclusion in the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS) in 1991, except for the area known as the Northwest Peninsula, as the use of federal funds for its cleanup is prohibited unless expressly authorized by Congress.

USACE executes the FUDS program on behalf of the U.S. Army and Department of Defense. The program cleans up properties formerly owned by, leased to, or otherwise possessed by the United States and transferred outside of Department of Defense control prior to October 1986.

Culebra Island is part of the FUDS inventory and the USACE Jacksonville District is responsible for the day-to-day management and cleanup of munitions on the portions of the island where authorized. Based on historical research and a USACE Site Inspection, the Culebra property has been prioritized for remedial investigation for munitions and explosives of concern and munitions debris.

The U.S. Marine Corps used the Flamenco Beach Maneuver Area (also known as Munitions Response Site 04) as a maneuver area for amphibious landing exercises and setting up camps. Firing points were present within the impact areas for the firing in Flamenco Bay and on the Northwest Peninsula. Historical maps and findings of munitions debris indicate that Flamenco Beach and the lagoon area also served as a buffer area for targets likely located further north on the Northwest Peninsula.

Based on historical records and former military use of the area, the Site Inspection recommended to proceed to the Remedial Investigation/Feasibility Study phase to further evaluate munitions and explosives of concern and munitions constituents at the Flamenco Beach Maneuver Area.

The Remedial Investigation determined that there is a potential for

additional munitions and explosives of concern due to historical use and the dynamic beach environment where munitions items may be washed ashore or uncovered by wave action. The Remedial Investigation included searching for munitions, collecting environmental samples to analyze for the metals and explosives that comprise munitions (known as munitions constituents) and conducting risk assessments.

Based on the results of the Remedial Investigation, different alternatives to address the risk were evaluated in the Feasibility Study. The preferred alternative/remedy was identified and presented in a Proposed Plan in November 2021.

The Decision Document for Flamenco Beach Maneuver Area was signed in September 2022. The selected remedy is Surface and Subsurface Removal of Military Munitions Using Advanced Geophysical Classification with Land Use Controls (LUCs) at the Flamenco Beach Area and LUCs only for the Inland Area. The Remedial Design phase for Flamenco Beach Maneuver Area is scheduled for completion in fiscal 2023 and the Remedial Action-Construction phase to implement the selected remedy is scheduled for initiation in fiscal 2024. USACE anticipates that Response Complete will be achieved in fiscal 2028.

*Portion of Flamenco Beach within the Flamenco Beach Maneuver Area.*

# Safety data sheet management – A novel approach

By Julie Halstead  
U.S. Army Aviation and Missile Command

The Occupational Safety and Health Administration (OSHA) requires that employers provide their workers with access to pertinent safety information regarding the products they use in the workplace. That information is provided by the product manufacturers and comes in the form of the vendor's safety data sheet (SDS).

For products that could be hazardous or dangerous, the SDS provides vital information that is essential to treatment and care of any worker who encounters the product. The SDS also provides routine information about the product and its formulation, constituents effects on the environment and hazard classification.

OSHA 29 CFR 1910.1200(g) (8) states, "The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). Electronic access and other alternatives to maintaining paper copies of the safety data sheets are permitted if no barriers to immediate employee access in each workplace are created by such options."

A common practice is to keep a large notebook with SDS paper copies used by the workers. This can be cumbersome because sites with large material usage can have very thick notebooks and quickly finding an SDS can be problematic, especially where kits and small containers may not have an easy-to-find stock number on the container. It can be a full-time job to ensure that these notebooks are kept current with multiple manufacturers and periodically updated SDSs.

Another approach that has been tried is to use shop computer terminals and have employees use either an online SDS lookup or attempt to keep a disc of SDSs in each shop. These approaches usually involve a system with a centralized SDS library or keeping a current SDS disc in each shop. This can make it easier for workers to look up SDSs and is much less labor-intensive for someone to maintain a single

SDS library, rather than individual notebooks at all shop locations. However, if facility power or internet connectivity goes down, the process fails to meet OSHA requirements. At Fort Novosel, Alabama, maintenance support contractor M1 has identified and implemented an effective solution.

M1 combined the ease and convenience of an electronic SDS lookup system with a low-cost backup file and power solution to ensure OSHA compliance and SDS access during short-term power or internet outages. As their primary means of SDS lookup, the Fort Novosel M1 shops use computer stations within the shops to access the SDS library within the Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOH-MIS) found at <https://eesoh-sds.cce.af.mil/eesoh-sds/sds/loadSdsSearch.action> on the Air Force portal (requires CAC-login). To ensure SDS access during internet and power failures, or if an employee has let their EESOH-MIS portal permissions lapse, the M1 team has created a back-up system that could also serve as the primary system for any site that does not use EESOH-MIS.

The first part of this solution was to install an uninterruptible power supply (UPS) for each shop computer station that is used for SDS access. Costing about \$200 per computer station, they ensure sufficient battery backup to run each station for approximately one hour in the event of a power failure.

Secondly, to ensure SDS access even when the internet is down, or when personnel do not have permissions to get on EESOH-MIS, the M1 industrial hygienist periodically goes into the EESOH-MIS SDS lookup system and downloads all current SDSs from the authorized users lists into a central file.

As the third key element to this solution, each shop computer station is programmed to look for updates to the central SDS files once an hour. If they detect any updates, they download updates to a file folder that will keep the most current version of the SDSs within the SDS computer station hard drive.

The result is a standard file folder on each computer station desktop that can be easily accessed and can be searched by product name or stock number. For shops not using EESOH-MIS, or

some other database with an SDS library, this method could be used as the primary SDS lookup process and managed by the site's Safety, Logistics or Environmental office.

This three-part solution keeps a centralized SDS library that is much less time-intensive to maintain than paper copies or discs and ensures uninterrupted shop access to current SDSs, even during power or internet outages. In short, using a centralized SDS repository that is automatically pushed to shop computer stations supported by UPSs allows technology to do the heavy lifting to ensure employees have access to the most current SDSs and shops stay compliant with 26 CFR 1910.1200.

It saves paper and tens of hours of labor a year in keeping SDS books current. It eliminates the likelihood of any findings related to out-of-date SDSs or SDS access and is a solid solution worthy of consideration as a SDS management plan for other sites.



Standard Fort Novosel M1 SDS computer station setup in each shop. The computer has an uninterrupted power system (shown to the right) to ensure power stays on even during power outages. Laminated sheets provide a step-by-step guide on how to use the SDS tool. (Britt Dave)

SAFETY DATA SHEETS

DATA PROVIDED BY EESOH-MIS

Basic Search

Search by Container ID

Search by Issue Date

Search AUL

USAFSAM Use Only

Safety Data Sheet Search Filters

Installation: FT RUCKER

Shop: AMSS\_SUPPLY - (ACLC) AMSS SUPPORT SUPPLY

SDS #:

MSN:

Manufacturer:

Product Identifier:

Specification:

CAGE Code:

HMIRS id:

This search only displays MSNs that have been received in EESOH-MIS with their most current SDS

Generate AVL Report

Clear Filters

Search

Safety Data Sheet Search Results (1641)

Download SDSs as Zip

Export

MSN	Manufacturer	City	State	Product Identifier	CAGE Code	Specification	SDS #	Prep. Date	Download	Status
0016015907944	HENTZEN COATINGS INC	MILWAUKEE	WI	34031 AIRCRAFT GREEN WHF ZENTHANE MIL-DTL-53039E, TYPE IX	09225	MIL-DTL-53039, MIL-DTL-53039 TY IX	447809	2019/03/28	PDF	Active
00160PH000324205	HENTZEN COATINGS INC	MILWAUKEE	WI	34031 AIRCRAFT GREEN WHF ZENTHANE MIL-DTL-53039E, TYPE IX	09225	MIL-DTL-53039E, TYPE IX	447809	2019/03/28	PDF	Active
00160PH000347617	HENTZEN COATINGS INC	MILWAUKEE	WI	34201 WOODLAND DESERT SAGE ZENTHANE, MIL-DTL-53039E, TYPE IV	09225	MIL-DTL-53039	453822	2019/03/28	PDF	Active
9156001414481	SULFO INC.	NORTH TONAWANDA	NY	PLASTILUBE MOLY 3	1V074	NO SPECS IDENTIFIED	444678	2019/03/27	PDF	Active
9156009610995	AEROSPACE LUBRICANTS INC	COLUMBUS	OH	TRIBOLUBE-16	68164	MIL-PRF-27617, MIL-PRF-83483	470792	2019/03/26	PDF	Active
6856013963362	NO INDUSTRIES INC/ N-O INDUSTRIES MIDWESTERN DIV	CLAYSON TROY	MI	VT541, VIBRA-TITE RETAINING COMPOUND	04866	NO SPECS IDENTIFIED	451747	2019/03/95	PDF	Active
9156014189008	WD-40 COMPANY (BUSINESSPARK AVE)	SAN DIEGO	CA	WD-40 MULTI-USE PRODUCT AEROSOL CALIFORNIA CARB COMPLIANT	10771	NO SPECS IDENTIFIED	449766	2019/03/95	PDF	Active
0046001449774	ACCRABOND CORPORATION	OLIVE BRANCH	MS	INSTABOND 1645 GRAY	5V071	MIL-A-46145, MIL-A-46146 TY III	459878	2019/03/91	PDF	Active
0046013754806	ACCRABOND CORPORATION	OLIVE BRANCH	MS	INSTABOND 1645 GRAY	5V071	MIL-A-46145, MIL-A-46146 TYGP2	459878	2019/03/91	PDF	Active
0046014467381	HENKEL CORPORATION (ONE HENKEL WAY)	ROCKY HILL	CT	LOCTITE EA 9359.3 AERO PART A QT KNOWN AS EA 935 & LOCTITE EA 9359.3 AERO PART B PT KNOWN AS EA 935	80UG9	NO SPECS IDENTIFIED	454952	2019/02/20	KIT	Active
6816009954804	THE DOW CHEMICAL COMPANY (2030 DOW CTR / WILLARD H)	MIDLAND	MI	DIETHYLENETRIAMINE	71963	A-A-59182, O-D-1271	473608	2019/02/19	PDF	Active
8038006644017	DAUBERT CHEMICAL COMPANY, INC.	CHICAGO	IL	TECTYL 275	0YMU2	MIL-C-15074	467809	2019/02/19	PDF	Active
8038014710663	CYTEC INDUSTRIES INC	WEST PATERSON	NJ	DAPCO 2260 PRIMERLESS FIREWALL SEALANT, PART A & DAPCO 2260 PRIMERLESS FIREWALL SEALANT, PART B	0V7G8	AMS3374, AMS3374 TY4	445696	2019/02/15	KIT	Active
80460PH000347692	LORD CORPORATION	CARY	NC	LORD 294	9J509	NO SPECS IDENTIFIED	401774	2019/02/13	PDF	Active
0016016677411-1	AKZO NOBEL AEROSPACE	WAUKEGAN	IL	SPRAY2FIX INTERGARD 10215 CARC 10215C340315C	91342	MIL-DTL-53039	443863	2019/02/12	PDF	Active

Screenshot from EESOH-MIS hazardous material system showing an example screen a Fort Novosel user would see when looking up SDSs using the primary lookup method. (Britt Dave)

# U.S. Army Corps of Engineers Transatlantic Division invests in our planet, plans to use native plants in landscaping



*Lauren Wouk (right), a Department of Army intern, poses with a colleague, Ricky Aquino (left), Far East District construction control representative, at the project site for Type II Aircraft Parking Apron and Taxiway located at U.S. Army Garrison Humphreys. Wouk recently completed her intern rotation at the Far East District. (Chong Yun Kim)*

**By Lt. Col. Angela King-Sweigart**  
USACE, Transatlantic Division

A project manager assigned to U.S. Army Corps of Engineers Transatlantic Middle East District, one of two districts under USACE's Transatlantic Division's umbrella, shares how the district is continuing to invest in green initiatives.

"One of the things we look at when we begin designing projects is using native plants for landscaping," said Lauren Wouk, a project manager for the Middle East District.

"We do this to help the environment and support our partner's initiatives for a greener planet, as well as continue our own commitment."

Using native plants supports biodiversity of local areas. It also decreases pesticide use, reduces energy consumption and pollution (limited need for mowing), and native plants are less likely to be invasive or overly competitive with other native plants, according to the U.S. Forest Service.

This is only one of many initiatives the organization has undertaken to support sustainability.

"The environment is very important to me," said Wouk. "I like to celebrate Earth Day. Working here was a great fit for me. As a younger person I wanted to find a job that was connected to the environment and connected to helping the planet."

Wouk is a project manager and a former summer hire and Army Fellow currently working in Winchester, Virginia, on the Kingdom of Saudi Arabia Transformation Program. She recently completed a trip overseas to assist with recruitment efforts where she gained a deeper understanding of the district's support to the U.S. Central Command's region.

## Charleston District regulatory chief takes “playing with dirt” to new heights

Story and photo by **Francisco G. Hamm**  
USACE, Charleston District

Sand sifts through her fingers as a small clump of dirt attracts her attention. Standing in the marsh with a tall, hefty pair of boots and a ball cap to shade the sun, she studies it, looks in her sample book and decides this is a hydric soil. Meet Amanda Heath, a regulator with the U.S. Army Corps of Engineers Charleston District, who has taken “playing in the dirt” to new heights.

The regulatory field includes a unique and diverse group of specialists including biologists, ecologists, botanists, engineers, environmental engineers, environmental protection specialists, geologists, physical scientists, and administrative support specialists. They have an important role, responsible for protecting many of the nation's aquatic environments, including oceans, rivers, lakes, streams, ponds and wetlands, while balancing them with development.

It's the role of this regulatory team to balance reasonable economic development with environmental protection. Leading this important mission is Heath, who was recently selected as the new Regulatory Division chief.

From Maine, Heath discovered and caught the travel bug early. She went to California and earned an undergraduate degree in Chemistry from Sonoma State University in 2002 and then traveled to New Mexico, where she received a Masters in Chemistry from the University of New Mexico in 2008.

After several years living back in Maine, she packed her bags once again and ended up as a chemist for the USACE Alaska District's Engineering Division. It's there in the last frontier where she discovered her future was in regulatory.

“I worked really hard learning all about regulatory from the ground up and was happy to be in a position where I could work in the field and also help the public,” said Heath, who made Alaska home for nine years.

Bags packed once again, she landed in Charleston, South Carolina. Heath has now been with the Charleston District for five years. She says the regulatory program has

been rather dynamic over the past few years with numerous regulation changes that have required more coordination with outside agencies and the public, not to mention internal training.

“The regulatory field is very challenging,” said Heath. “We represent the federal government and we're telling people what they can do with their private land. It's a difficult requirement for folks, but it's due to laws that say water, whether the water is a wetland, a stream or a harbor, is a public resource.

“It's our job to help the public navigate these legal requirements,” she added.

In fiscal 2022, the Charleston District's Regulatory Division processed 1,515

regulatory permits, reviewed 1,457 jurisdictional determinations and over 860 other actions, including pre-application meetings.

One of Heath's favorite aspects of the regulatory process is working with her team. “I love my team,” she said, beaming with pride.

Although she now works mostly behind a desk, any chance she gets, she goes out to the field.

“Out in the field is where you can see and feel the environment,” she said. “And it often helps the legislative words we read and interpret come to life.”



*Amanda Heath, Charleston District's regulatory chief, stands in a marsh where she was studying soil.*

# U.S. Army Corps of Engineers leads the way in natural solutions for coastal flooding in New York & New Jersey

By JoAnne Castagna  
USACE, New York District

Last spring, Dr. Todd Bridges and his colleagues were visiting a part of the San Luis National Wildlife Refuge in California, a remote region that encompasses 45,000 acres of rivers, woodlands, wetlands and grasslands.

Over the years, the refuge has experienced flooding many times. Bridges, who heads the U.S. Army Corps of Engineers' Engineering With Nature initiative, was there to see how the refuge and associated restoration were working as a nature-based solution for flood risk reduction.

Bridges was pleased with the results, which included the restoration of 7,000 acres of floodplain habitat through a combination of conventional, natural and nature-based engineering features. Conventional features included levees and pump stations and natural features included the planting of 600,000 native trees.

While touring the project, Bridges came across a group of men who traveled several hours to visit the refuge for the first time. He asked them what they thought, and one man said, "It looks prehistoric and heavenly. We're visiting what we're losing ... it's painful too."

Bridges understood. He's spent much of his career researching how conventional and nature-based engineering features can be used together in projects to provide storm risk reduction, maintain wildlife habitats, provide recreational space, and most importantly, maintain the natural resources cherished by so many.

"People need nature. Concrete can't satisfy all the needs people have. Projects that include natural engineering features also provide social benefits," said Bridges.

Bridges' research is helping to make USACE an international leader in the use of natural and nature-based engineering features. Many are benefitting, including the USACE New York District, which is increasing the use of these features in its projects.

Natural and nature-based engineering features are landscape features used in combination with conventional engineering features. Natural features occur naturally in the landscape and nature-based features are engineered, constructed or restored to mimic natural conditions.

Examples of these features include beaches and dunes; vegetated environments, such as maritime forests, salt marshes, freshwater wetlands, fluvial flood plains and seagrass beds; coral and oyster reefs; and barrier islands.

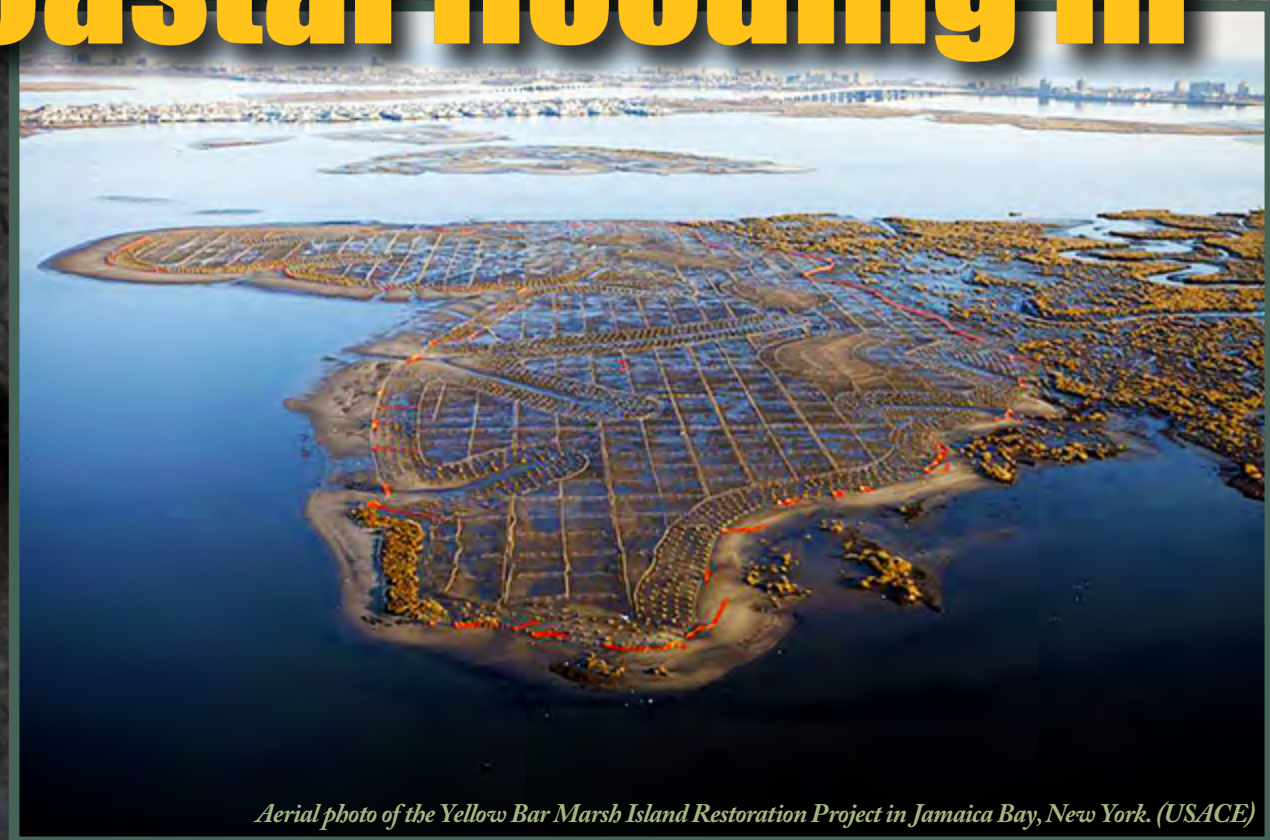
"By combining something natural and nature-based with something conventional, we make the system better overall. This is nature supporting engineering and engineering supporting nature," said Bridges.

He said, for example, when a concrete flood wall is designed to include an expansive reef and marsh in front of it, the wall provides flood protection benefits during storms while the reef and marsh system reduce the power of waves, can grow with sea level rise, captures carbon, improves water quality, and provides recreational opportunity. The combination is better than either of them apart.

USACE has been working with natural and nature-based features for years, but recently there's increased interest due to climate change.

On Earth Day in April 2022, President Joe Biden issued Executive Order 14072: Strengthening the Nation's Forests, Communities, and Local Economies, which directs multiple actions designed to tackle the climate crisis, make our nation more resilient to extreme weather, and strengthen local economies, including focusing considerable attention and federal effort on nature-based solutions.

As a result, Bridges and other USACE staff worked with the White House to develop a report on how the federal government can accelerate the use of nature-based solutions. In addition, USACE and collaborators recently released a set of guidelines for how to use natural and nature-based features. The award-winning guide called "International Guidelines on Natural and Nature-Based Features for Flood Risk Management," involved five years of collaboration with scientists and engineers from around the world and is one of the first guidelines of its kind.



*Aerial photo of the Yellow Bar Marsh Island Restoration Project in Jamaica Bay, New York. (USACE)*

See **NATURAL SOLUTIONS** on page 27

These guidelines are now being used by engineers inside and outside USACE, including those with the New York District. The following are two New York District projects that include natural and nature-based engineering features — the Fire Island Inlet to Montauk Point, New York, Coastal Storm Risk Management Project and the Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project.

Fire Island Inlet to Montauk Point, New York, Coastal Storm Risk Management Project

This project is taking place along the south shore of Long Island, New York. Long Island extends out east into the Atlantic Ocean from New York City. Along the south shore of the island there are barrier island chains from Coney Island to Shinnecock Inlet. A barrier island is a long, narrow island that lies parallel and close to the mainland, protecting the mainland from erosion and storms.

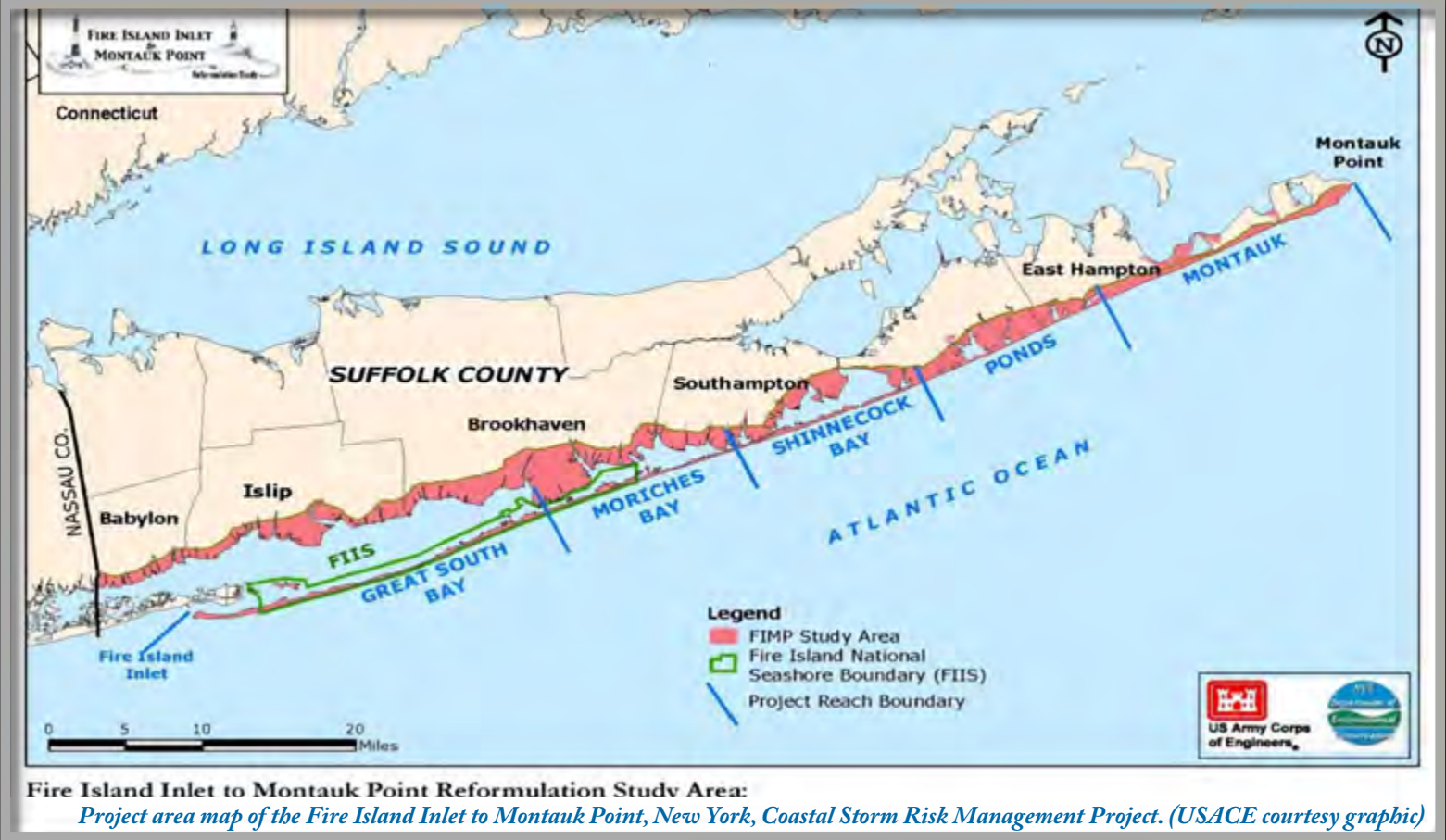
The project encompasses an 83-mile subset of the barrier islands of the south shore of Long Island — from Fire Island Inlet to Montauk Point and extends inland 2 miles. In between Long Island’s mainland and these barrier islands are the Great South Bay, Moriches Bay and Shinnecock Bay.

Over the years, the south shore of Long Island has become very populated. Today, there are approximately 150,000 residents within the project area. The region also receives a large influx of seasonal beachgoers and visitors annually.

The south shore is also very developed. Within the project area, there are 46,000 buildings that include 42,600 homes and 3,000 businesses, and critical infrastructure including 60 schools, two hospitals and 21 firehouses and police stations.

In the past century, especially in the last 20 years, Long Island’s developed coast has experienced storm damages. Elevated tides and waves from these storms caused extensive flooding and sand erosion, leaving communities and shore life vulnerable.

In 1992, a Nor’easter breached a barrier island in several locations. Water from the ocean side of the island washed over



Fire Island Inlet to Montauk Point Reformulation Study Area: Project area map of the Fire Island Inlet to Montauk Point, New York, Coastal Storm Risk Management Project. (USACE courtesy graphic)

and into the bay side, splitting the island, creating a breach or gap. The breach quickly turned into a full-blown major inlet that swallowed up 160 homes.

Most recently was Hurricane Sandy in 2012. Storm surge from Sandy eroded 40% of the beach sediment from some areas and created three breaches in the barrier islands, leaving the area vulnerable to significant damages.

This project is a collaboration between numerous agencies and communities that will manage the risks and attendant loss of life from tidal flooding, waves and erosion, in part by restoring the natural coastal processes while minimizing environmental impacts for the barrier islands and back bay communities on Long Island’s south shore. The project utilizes conventional, natural and nature-based features that include the restoration of barrier islands, beaches and dunes.

Restoration of Barrier Islands

According to the International Guidelines, barrier islands are a critical element in the

multiple lines of defense when it comes to coastal flooding. They provide multiple benefits including reducing coastal erosion and flooding from wind-driven waves and extreme water levels on the nearby habitats and shorelines. In addition, they provide critical habitat for threatened and endangered species and migratory birds,



Sand being pumped through pipelines onto Gilgo Beach, one of several beaches receiving sand replenishment with the Fire Island Inlet to Montauk Point, New York, Coastal Storm Risk Management Project. (USACE)

as well as provide access to recreational opportunities and navigation.

As part of this project, the eroded barrier island chains from Fire Island Inlet to Shinnecock Inlet and the shorefront area east of Shinnecock Bay to Montauk Point will be built back up using dredged sand.

“Building these barrier islands up will also help to restore the natural cross barrier island transport of sand,” said Peter Wepler, Environmental Analysis Branch chief with the New York District. “This sand will naturally flow to areas where it’s needed, augmenting the resiliency, and enhancing the overall barrier island’s natural system coastal processes.”

Maintaining barrier islands is so critical that USACE established a range of breach response plans that will close barrier island breaches immediately after storms for the next 30 years.

Restoration of Beaches & Dunes

According to the International Guidelines, beaches and dunes are valuable to flood risk reduction because they dissipate wave energy, can trap sediments, and have the potential to grow with rising sea levels. In addition, they provide habitat for diverse species.

Dunes are areas of the beach where sand is elevated several feet to act as a buffer between the waves, wind, stormwater levels and the structures landward on the beach.

Over the years, much of Long Island’s south shore has eroded, removing the natural beachfront and dunes that provide coastal protection to the communities from storm surge.

The beaches and dunes will be restored with sand dredged from several federal channels including Fire Island Inlet and shoals, Moriches and Shinnecock inlets and shoals, and from offshore sand borrow areas. The sand will be placed in a way to mimic natural features and native vegetation will be planted to create nesting and foraging habitats for endangered wildlife, including the piping plover, least turn, black skimmers, yellow oystercatchers, and sea beach amaranth.

A sand-replenished beach with dunes can prevent elevated ocean waters caused by storms from inundating coastal communities.

“Post-Hurricane Sandy analysis showed that beaches that had previously received sand placement and dune construction sustained less damages and saved an estimated \$1.3 billion in avoided damages on New York and New Jersey shorelines,” said Anthony Ciorra, New York District project manager.

Aram Terchunian, coastal geologist and president of First Coastal Consulting Corporation, saw this first-hand on the south shore of Long Island. He said, “Superstorm Sandy is the event that really proved the importance of beaches and dunes as effective natural features. Sandy was a violent storm that broke three inlets through Long Island’s barrier beach system. At West Hampton Dunes, it was a nonevent. The beaches and dunes withstood the storm’s fury with only a small incursion over the dune near a vehicle overpass, which was rectified within hours! The Village of West Hampton Dunes was up and running within 24 hours of Sandy’s visit.” Terchunian has worked with USACE for decades as a representative of several south shore villages and towns on the east end of Long Island.

Storms, like Hurricane Sandy, may occur more frequently in the future due to relative sea level change. The project is monitoring relative sea level change and adjusting the project when necessary, so that it will continue to perform as planned. This may mean over time increasing the volume of sand that is placed on beaches and increasing the height of dunes to account for observed increases in relative sea level change.

“It’s predicted that future low, intermediate and high rates of Army Corps relative sea level change projections could increase anywhere between approximately 1 to 6 feet over the next 100 years, resulting in more frequent and severe storm damages,” said Joseph Vietri, director of the USACE North Atlantic Division’s Coastal Storm Risk Management National Center of Expertise, and who also lives on one of the barrier islands.



**Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project**

The Hudson Raritan Estuary is located within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty National Monument.

An estuary is a partially enclosed, coastal water body where freshwater from rivers and streams mixes with saltwater from the ocean. Estuaries can include a variety of habitats including salt marshes, mangrove or maritime forests, mud flats, tidal streams, rocky intertidal shores, reefs, and barrier beaches.

The Hudson Raritan Estuary is a complex ecological system located within a highly urbanized region of 20 million people that includes New York Harbor, rivers, wetlands, coastlines, and open waters.

Over the years, industrialization has degraded the estuary and hardened the coastlines resulting in the tremendous loss of habitat. The estuary has lost more than 85% of its tidal wetlands, 99% of its freshwater wetlands, and 100% of its oyster reefs.

Restoring the estuary is important because the ecosystem provides habitat for birds, fish, shellfish and other wildlife, maintains water quality by filtering out contaminated sediments, provides recreational opportunities, boosts the region’s economy, and acts as a buffer from flooding for coastal communities during destructive and powerful storms.

One study done by Lloyd’s of London showed marshes play a critical role in reducing damage to infrastructure from coastal storms. The study showed that during Hurricane Sandy, marshes prevented \$625 million in direct flood damages across 12 states. In New Jersey, coastal marshes reduced property damages by more than 20%.

“The plan for the Hudson Estuary Program is to restore a mosaic of 621 acres of habitat at 20 individual project sites,” said Lisa Baron, New York District project manager. “These projects will restore estuarine and freshwater wetlands,

shorelines, fish passage, oyster reefs, shallow water habitat, coastal forests and marsh islands while providing maximum ecological and societal benefits to the region.”

Work is starting up on several of these restoration sites. The natural and nature-based features being used include salt marshes and oyster reefs.

**Hudson Raritan Restoration of Salt Marshes**

According to the International Guidelines, coastal wetlands and intertidal areas can reduce flood and erosion risks in coastal environments because they can dampen wave, surge, and current energy, trap sediments, and, in the correct settings, be self-sustaining under rising sea levels and other pressures. They provide additional benefits including fish production, filtration of pollutants from upland runoff, water quality mediation, recreation, and carbon sequestration.

Within the Hudson Raritan Estuary is Jamaica Bay. The bay is in portions of the boroughs of Brooklyn and Queens in New York City and is part of the Jamaica Bay Park and Wildlife Refuge, the country’s first national urban park and one of the Gateway National Recreation Areas that is visited by millions of people each year.

The bay covers 26 square miles and opens to the Atlantic Ocean. The land surrounding the bay is heavily developed and includes John F. Kennedy International Airport, the Belt Parkway, and several landfills.

Inside the bay there is a marsh island complex. In the last century, these once vibrant islands have been rapidly disappearing, resulting in extensive habitat loss. Eighty-five percent of the wetlands have been lost in the region.

This loss is primarily due to human development that’s included the filling in of marshes and open water areas, hardening of shorelines, sewer overflows, and landfill leachate or water containing contaminants seeping from landfills.

The disappearing marshes pose a threat to wildlife and coastal communities. It’s been estimated that the marsh islands if left alone would vanish completely by 2025.



*A flock of cormorants, a type of bird, in Jamaica Bay. (Don Riepe)*

Fortunately, due to work USACE has performed over the years, this won’t happen. USACE, along with partnering agencies, has restored approximately 160 acres of marsh islands in Jamaica Bay through several successful restoration projects.

According to Baron, “Restoring these marsh islands provides significant benefits to the region. The restored marsh islands keep the sediment within the Jamaica Bay system; wetland vegetation stabilizes the island; the islands reduce waves and erosion of surrounding shorelines and adjacent islands; the wetlands improve water quality within the bay; and the marsh islands that we construct will continue to build the ecological resilience of the bay to respond to increasing sea level rise.”

In fact, according to a report released by the U.S. Army Engineer Research and Development Center, USACE’s restoration of a Jamaica Bay marsh island in 2011 likely mitigated storm surge during Hurricane Sandy the following year and helped to protect the community. The Cross Bay Bridge — which is near this island — was not damaged due to Hurricane Sandy and was only temporarily closed. In contrast,

bridges east of this structure suffered substantial damage and were closed until the following year.

Stakeholders attribute the bridge’s survival to the nearby restored marsh island.

USACE, in collaboration with the New York City Department of Environmental Protection, plans to restore five additional marsh islands as part of the Hudson Raritan Estuary Restoration Program and is currently advancing one of these marsh islands that sits in the heart of the bay — Stony Creek Marsh Island.

Sixty-two acres of the island will be restored. To perform this work, approximately 150,000 cubic yards of sand will be beneficially used from the dredging of the Jamaica Bay Federal Navigation Channel or nearby Ambrose Channel and placed on the island. The material will be graded and contoured to appropriate elevations suitable for a marsh and then planted with native vegetation.

When completed, the island will have 26 acres of low marsh, 22.5 acres of high marsh, 3.5 acres of scrub-shrub wetland, 8.7 acres of shallow marine habitat, and 1.4 acres of tidal channels or narrow inlets.



*Team visiting the successful Elders West Marsh Island Restoration Project in Jamaica Bay, New York. (USACE)*



See **NATURAL SOLUTIONS** on page 31

This will create a healthy marsh island within one of the most biodiverse regions in the northeastern United States. Jamaica Bay provides critical spawning and nursery habitat for more than 80 migratory and estuarine fish species, as well as terrapins and four species of endangered or threatened turtles.

In addition, 300 bird species — or 20% of the nation’s birds — call the bay their home and visit it every year as a stopover point along the Atlantic Flyway migration route to their breeding grounds. They include many species of sparrows, warblers, thrashers, crows, herons, and urban birds. Many of the species are listed as threatened and endangered by the U.S. Fish and Wildlife Service, including the threatened piping plover and red knot.

Restoration of Oyster Reefs

According to the International Guidelines, coral and shellfish reefs can act as the first line of defense against flooding, storm damage, and erosion in coastal areas. Reefs do this by buffering wave energy. Reefs also provide additional benefits, including fisheries production, habitat and biodiversity, recreation, tourism, and revenue.

Unfortunately, in the Hudson Raritan Estuary, oyster populations are practically extinct. Up until the late 1800s, the bottom of the estuary was blanketed with oysters. The eastern oyster populated 200,000 acres of the estuary and today it’s considered ecologically extinct, primarily caused by water pollution, dredging, poor land management, and overharvesting.

USACE, in collaboration with the New Jersey Department of Environmental Protection and the NY/NJ Baykeeper, is aiming to bring the oyster back with the Oyster Restoration at Naval Weapons Station Earle Project in New Jersey.

The Naval Weapons Station Earle is a secluded naval location on the coast of New Jersey, on the Raritan Bay. The plan is to expand a .25-acre oyster reef constructed by the NY/NJ Baykeeper to create a 10-acre

oyster reef habitat under the station’s 2.9-mile pier that is close to the land and away from naval ship activity.

“Oysters bring a range of benefits to the estuary,” said Stacey MacEwan, project manager with the New Jersey Department of Environmental Protection’s Office of Natural Resource Restoration. “Oysters improve water quality through filtration processes, but the reef itself provides a vertical structure that supports a diverse community of fish and invertebrate species, and the reef structure can also help to protect the shoreline from erosion. This type of project can provide large-scale benefits in a relatively small footprint.”

Meredith Comi, coastal restoration program director with the NY/NJ Baykeeper agreed, “Knowing that protecting our shorelines is leading to an increase in species diversity is very cool and is even more of a reason to use natural and nature-based features in resilience projects.”

Bridges may have felt a pang of sadness when the tourist he encountered in the San Luis National Wildlife Refuge expressed that the survival of our natural resources is fleeting. But there is also hope that many of these natural resources will continue to thrive for future generations, especially with the increased use of natural and nature-based engineering features.

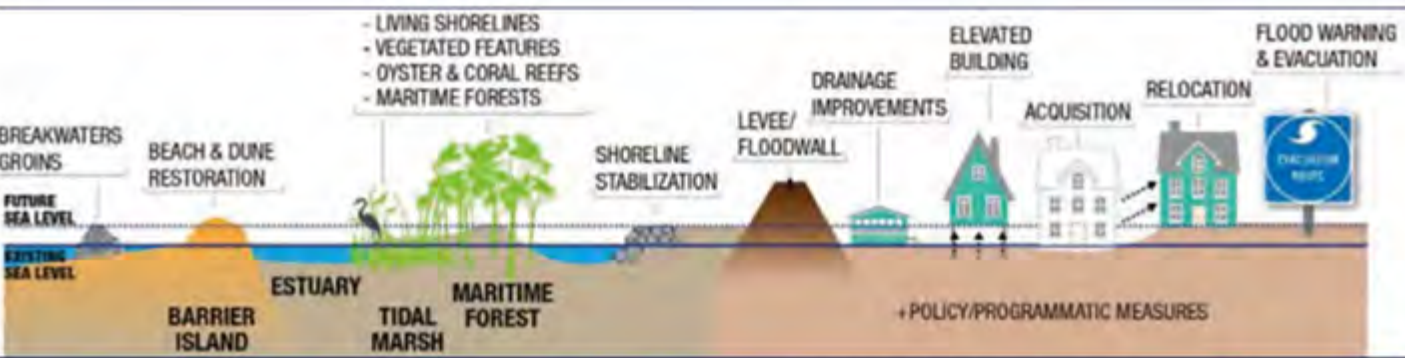
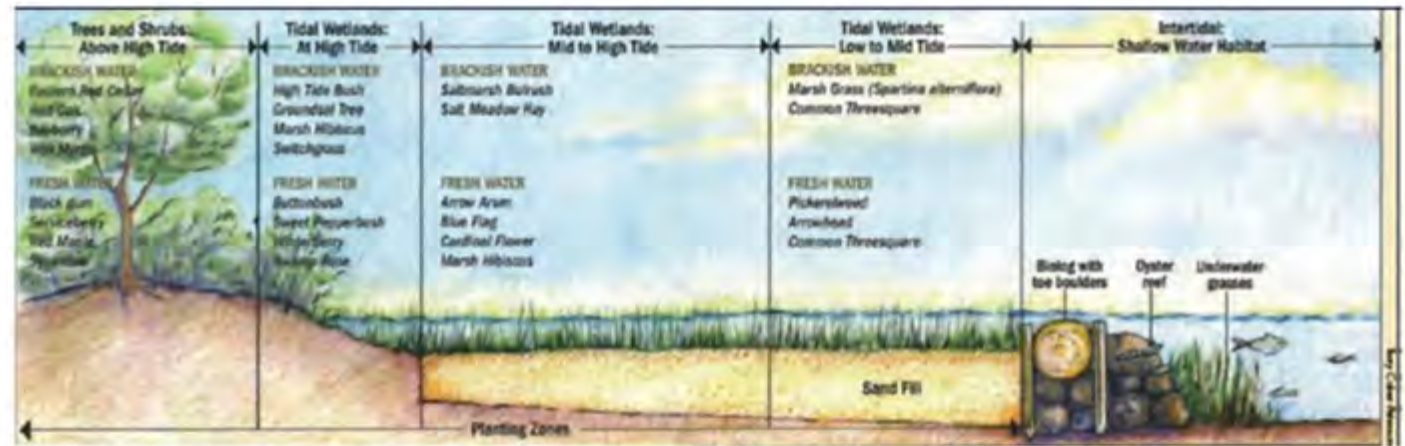
Terchunian is optimistic. “Natural features provide multiple benefits, including flood and erosion protection, habitat creation, open space, and recreation. These benefits accrue to multiple segments of society from naturalists to property owners and the average citizen. Building natural beaches and dunes will ensure that there is room on the beach for everyone.”

To receive a free copy of the “International Guidelines on Natural and Nature-Based Features for Flood Risk Management,” visit <https://www.ewn.erdcdren.mil>.



Dr. Todd Bridges (left) and his colleagues visit the San Luis National Wildlife Refuge in California, a remote region that encompasses 45,000 acres of rivers, woodlands, wetlands, and grasslands. (USACE)

NATURAL/NATURE BASED FEATURES  
GREEN ENGINEERING  
Coastal Storm Risk Management Benefits



Types of natural and nature-based features used in coastal risk management projects. (USACE courtesy graphic)

# EARTH DAY 2023: Galveston District installs solar electric vehicle charging station

By Trevor Welsh  
USACE, Galveston District



*Click image to watch video.*

Here at the U.S. Army Corps of Engineers Galveston District, we take pride in making trees smile. In supporting the mission of keeping mother nature happy and reducing our carbon footprint, we have recently installed an electric vehicle charging station.

This device stores clean, solar electricity to charge vehicles up to 265 combined miles in a single day.

The solar panel is designed to follow the sun across the sky, which results in 25% more stored energy. This unit is capable of withstanding winds up to 125 miles per hour, is flood-proof up to 9.5 feet and is also ADA compliant.

Most importantly, the electric vehicle project supports Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.

Signed Dec. 8, 2021, this executive order requires agencies to achieve 100% carbon pollution-free electricity by 2030, including 50% on a 24-7 basis.

At the U.S. Army Corps of Engineers, we pride ourselves in being environmentally conscious and this solar electric vehicle charger supports USACE's Environmental Operating Principle of fostering sustainability as a way of life throughout the organization.

With this and projects like it, we can proudly say, "We are the Corps of Engineers, and we believe in a sustainable future."

Thanks for [watching](#) and happy Earth Day.

# Sustainable art challenge continues to inspire creative reuse of materials

**By Jenn Miller**

USACE, Headquarters

In commemoration of Earth Day, the Environmental Division within U.S. Army Corps of Engineers Headquarters hosted its second annual sustainable art challenge to promote the creative reuse of materials.

This year's challenge extended beyond Environmental Division and was open Headquarters-wide. Submissions had to include at least 60% reclaimed, reused or recycled materials and had to be created by a USACE employee and/or their families. Two entries were selected for "Best in Show," to include a youth and adult category.

The Best in Show for the youth category was awarded to Aubrey Shedd, daughter of Brian Shedd, and her art piece, FUDS "Green" Dragon. The FUDS Dragon has become the unofficial mascot of the Formerly Used Defense Sites (FUDS) program. This green reincarnation is made from an old board, popsicle sticks, some paint, lawn/grass trimmings, and glittery stickers.

According to Brian Shedd, putting the FUDS "Green" Dragon together with his youngest child and wife was a blast. Aubrey really enjoys activities and "stayed up late in a sugar-fueled frenzy to complete this entry (with help from Mom and Dad)," explained Shedd in his submission package. "Dragons and sustainability, all in one ferocious package?! Essayons!"

The Best in Show for the adult category was awarded to Nicole Toth and her art piece, Love Birds. This piece was made with the assistance of Toth's husband, Lorian, and daughter, Mia. The Love Birds are made of toilet paper rolls, black ink, white ink and a googly eye.

Nicole Toth's creation started with an ask to her husband and daughter while she was leaving the house for an appointment. "I gave a toilet paper roll to my husband and daughter and said, 'please turn this into an owl,' which they did," explained Toth in her submission package. "They made the one on the left that is winking. On the following day, I made the one on the right." Toth photographed them with some flat rocks that they collected near Lake Michigan in Gary, Indiana, last summer.



*Aubrey Shedd's art piece, FUDS "Green" Dragon.  
(Brian Shedd)*



*Nicole Toth's art piece, Love Birds.  
(Nicole Toth)*



# EARTH DAY

APRIL 22  
2023

**SUSTAIN THE MISSION. SECURE THE FUTURE.**

