



The Corps

# Environment

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## Projects must be relevant, sustainable, flexible

**By Lt. Gen. Thomas P. Bostick**  
*Chief of Engineers and Commanding General,  
U.S. Army Corps of Engineers*

During the past few months I have had several opportunities to speak with some of the partners and stakeholders of the U.S. Army Corps of Engineers on the important subject of climate change preparedness, including, last month, a senior White House adviser. Every engagement has presented me with the opportunity to inform and educate others on what our agency is doing to address our environmental, sustainability and climate change challenges – working to ensure that our actions do not negatively impact the health of both humans and the environment, that our projects and activities are sustainable, and that we are flexible and open to change.

The Army Corps of Engineers continues to lead the way when it comes to sustainability, and we have the potential to do even more. Addressing sustainability challenges requires leadership attention and support throughout the chain of command. We need everyone, not just our environmental, energy, sustainability or climate change folks, to stay focused on taking care of the environment and making sure our activities are sustainable. The sustainability and energy investment dollars we spend today will reduce tomorrow's utility bills and loosen up funds for mission priorities. It will pay off.

One area where hard work has been paying off is climate change. The Army Corps of Engineers was named as one of 30 agencies to participate on a new Council on Climate Preparedness and Resilience that was established as part of President Obama's Nov. 1 Executive Order (EO) 13653 on Preparing the United States for the Impacts of Climate Change. Our role on the council reflects our engineering approach to serving the nation through our water resources, military construction and research and development expertise, as well as our collaborative approach to problem solving. That has been one of the hallmarks of our climate change strategy throughout the years, working in collaboration with other federal agencies, non-governmental agencies, the public, the private sector and international groups.

We have worked, and are continuing to work, to enhance understanding

of climate change to support decision making on a number of levels, from research and development to joint projects with other water resources development agencies. We are continuing to make progress in understanding the impacts of climate change and developing policies, guidance, methods and tools to support climate change adaptation.

A testament to our efforts came in a very public way just four days after the EO was issued. On Nov. 5, the White House Council on Environmental Quality recognized three Army Corps of Engineers professionals during the fourth annual GreenGov Presidential Awards. Jeanette Fiess, the sustainability and energy program manager for our Northwestern Division, was named this year's Sustainability Hero, while Dr. Kathleen White of the Institute of Water Resources and Mark Huber of the Army Geospatial

Center were part of an interagency team that won the Climate Champion award. Fiess has been a sustainability champion and agent of change within the Army Corps of Engineers for more than a decade, serving as an advocate for training in sustainability related fields and inspiring others along the journey to sustainability.

White and Huber contributed their expertise to an interagency team that

developed a Sandy Sea Level Rise Tool, being used by people impacted by Hurricane Sandy as they make more informed decisions on how climate change and rising sea levels could affect their rebuilding options. The Sandy Sea Level Rise Tool incorporates the previously developed USACE sea-level rise calculator, which our folks have been using when looking at our own projects. Other members of the team came from the National Oceanic and Atmospheric Administration, the Department of Homeland Security and the U.S. Global Change Research Program.

These three talented team members represent what so many people within our Army Corps of Engineers family do every day – focus on doing what's right for the environment and how to better promote sustainability. They have learned to be flexible, to assess changing conditions and respond in ways that keep the Army Corps of Engineers at the forefront of the federal government's efforts to be more sustainable.

*We need everyone, not just our environmental, energy, sustainability or climate change folks, to stay focused on taking care of the environment and making sure our activities are sustainable.*

**See Chief of Engineers, Page 6**



*A family takes a ride on Raystown Lake's 2.3-mile Greenside Pathway around the Seven Points Recreation Area. The pathway, made entirely of recycled materials, reduces traffic congestion, increases pedestrian safety and provides a healthy alternative to driving.*

## Recycled tires become park path

**Story and photo by Melissa Bean**  
*Baltimore District, Raystown Lake*

How can 38,000 used tires have a positive effect on the environment and the public? Well, if you are the engineers and staff of the U.S. Army Corps of Engineers at Raystown Lake, then you come up with an answer that involves chopping them up into millions of pieces and creating a 2.3-mile pathway that conserves natural resources, reduces traffic congestion and pollution, improves visitor access and safety, and promotes healthy lifestyles.

The resulting Greenside Pathway, which officially opened in June 2013 with a ceremony featuring the Assistant Secretary of the Army for Civil Works Jo-Ellen Darcy, was the first ever USACE project to receive a grant from the Federal Transit Administration's Alternative Transportation in Parks and Public Lands program.

"The trail here at Raystown is a perfect example of how we in the Corps are incorporating the president's initiative on America's Great Outdoors and his sustainability initiative," Darcy said.

The trail serves as a tangible symbol of environmental stewardship, said Brig. Gen. Kent Savre, North Atlantic Division commander.

"The trail actually does a lot of things – it promotes safety by keeping people off the roads, fitness, environmental stewardship and it's a first-class trail that ties all the facilities here together," Savre said.

**See Pathway, Page 8**

# CONTENTS



*Shenango River Lake Maintenance Mechanic Ed Durch builds the middle rubble hump on a rock star to hold the boards in place. The staff at the U.S. Army Corps of Engineers Pittsburgh District lake and two employees from the Pennsylvania Fish and Boat Commission's Division of Habitat Management completed a two-day fish habitat improvement project in February. The cost-sharing program enabled both agencies to supply materials, manpower and expertise. The project focused on building rock stars and rock rubble humps in the small cove just east of the marina, and the southern and eastern shorelines of the old Mercer Recreation Area. Rubble humps on a point adjacent to the cove where the rock stars were constructed will act as a deep water staging area for fish in the spring before they spawn in the shallows. Since rubble humps are traditionally placed on flats or shoals in reservoirs, the best placement occurs during winter drawdown with heavy machinery. Both types of structures will improve fishing for bank and boat anglers. The structures provide forage type habitats for invertebrates, crustaceans and baitfish, and attract walleye, black bass and panfish. (Photo by Kyle Kraynak, Shenango Lake park ranger)  
See more photos at [www.flickr.com/photos/pittsburghcorps/](http://www.flickr.com/photos/pittsburghcorps/).*

- 3 ENVIROPOINTS:  
USACE to continue sustainability efforts in 2014
- 4 USACE, partners continue hurricane recovery efforts, protect coastal communities
- 8 Window blinds inspire prototype field-portable energy system
- 9 District receives DOD grant to develop energy-saving evaluation tool for installations
- 11 Multi-agency team manages complex FUDS excavation
- 12 Face-lift planned for New York dam to enhance ecosystem
- 13 Blue Grass Army Depot: Contaminated lagoons restored to pasture lands in Kentucky
- 14 Resource efficiency managers help federal agencies, military units identify energy savings
- 16 Explosive detection dogs assist with FUDS project for first time to evaluate potential



## The Corps Environment

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Whenever possible, please enjoy  
*The Corps Environment*  
without using paper.



# ERDC environmental research supports USACE civil works, military missions

**By Dr. Beth Fleming**  
*Director, Environmental Laboratory  
U.S. Army Engineer Research and  
Development Center*

At the U.S. Army Engineer Research and Development Center's (ERDC) Environmental Laboratory (EL), world-class scientists and engineers work to develop sustainable solutions to the nation's civil and military environmental challenges. Researchers understand that solutions developed for civil works challenges can be leveraged to solve military challenges and vice versa. This trans-boundary approach allows EL to focus on durable results for customers that balance social, economic and environment factors as part of a sustainable solution.

ERDC's scientific expertise in environmental research and risk and decision analyses is unique within the Army and Department of Defense. We are committed to sharing the application of these capabilities in a relevant way and demonstrating the environmental impact, risks, benefits and sustainability of new technologies and materials in all of our work initiatives. Three such initiatives are the focus of this column: Environmental Life Cycle Assessment – an early initiative that will provide a comprehensive view of the environmental impacts from the development, production, use and disposal of Army materials and products; Green Remediation Technologies – an initiative in the prototype phase that focuses on minimizing the migration of munitions constituents; and Engineering With Nature – a mature initiative that aligns natural and engineering processes to gain economic, environmental and social benefits.

## **Environmental life cycle assessment**

Environmental life cycle assessment (LCA) seeks to institutionalize a proactive approach to anticipating environmental risks associated with new materials, processes and technologies, and provides a new way

of looking at existing activities such as dredging.

This initiative, while in its introductory stages, is already proving valuable to both the civil works and military missions communities.

The U.S. Army Corps of Engineers, through its dredging-related activities, is responsible for the placement of approximately 230 million cubic yards of dredged material at an annual cost of more than \$1.32 billion. EL is introducing an LCA approach into the dredged material management plan process as a way to understand and consistently compare alternatives by quantifying ecosystem benefits, human health and resource consumption.

In the placement of dredged material, life cycle assessment captures the environmental impacts of extracting raw materials from the earth, the production of equipment and materials needed to handle and transport dredged material and construct placement sites, and the refining process to produce the fuel needed and the subsequent fuel combustion.

Life cycle assessment can also quantify the ecosystem's benefits associated with creating new habitat through dredged material placement, allowing more consistent inclusion in the decision process.

The payoffs of this important effort, the Army Environmental Life-cycle Manual for Acquisition and Costing, or ALManAC, include: a scientifically defensible approach for determining the environmental risk; increased confidence in anticipating product and technology impact with respect to environmental regulatory requirements when fielding; diminished Army liability and improved Soldier safety; and enhanced

sustainability of current and future fielded technologies.

For more on environmental LCA, contact Amy Borman, associate technical director for Environmental Quality/Installations (EQ/I), at [Amy.L.Borman@usace.army.mil](mailto:Amy.L.Borman@usace.army.mil).

## **Green remediation technologies for munitions management**

EL researchers are working closely with the range community to test prototype green remediation technologies to reduce the concentration of munitions constituents (MC) in the environment. These new tools will allow range managers increased flexibility in reconfiguring range impact areas and decrease the risk of exceeding environmental regulatory guidelines related to MC migration off-site in surface and ground water, as well as potential uptake into ecological systems.

Green remediation technologies allow range managers to anticipate future contamination problems from changes in training scope and magnitude; assess

remediation technologies on contaminant levels; and expand range management options to extend the life and availability of valuable impact areas.

Examples of green remediation technologies include rapid revegetation using organic polymer; inexpensive, replaceable sediment traps – or range socks – to prevent migration of sediment fines, Research Department Explosive (RDX) and lead while better protecting surrounding bodies of water; fixed bed bioreactors that passively treat MC surface water contamination prior to running off the impact area without impacting training activities; and transgenic plants that degrade RDX in soil with high efficiency.



*Beth Fleming*

For more information on green remediation technologies and sustainable training ranges, please contact Elizabeth Ferguson, lead technical director for EQ/I, at [Elizabeth.A.Ferguson@usace.army.mil](mailto:Elizabeth.A.Ferguson@usace.army.mil).

## **Engineering With Nature**

Engineering With Nature (EWN) is a USACE initiative that seeks to align natural and engineering processes to efficiently deliver economic, environmental and social benefits through collaboration. EWN's essential ingredients include science and engineering to produce operational efficiencies that support sustainable delivery of project benefits; natural processes to reduce demands on limited resources and minimize a project's environmental footprint; broadening and extending the base of project benefits to include substantiated economic, social and environmental benefits; and science-based collaborative processes to organize and focus interests, stakeholders and partners to reduce social friction, resistance and project delays while producing more broadly acceptable projects.

The capabilities developed through EWN are applicable and relevant across all USACE missions and business areas. The EWN initiative has achieved significant accomplishments since 2010:

- Implementation of the EWN strategic communications plan, which has engaged hundreds of representatives across the federal government, private industry, non-governmental organizations and academia
- Construction of an innovative environmental breakwater for Cleveland Harbor to support the Great Lakes Restoration Initiative, which was recently awarded a Working With Nature Certificate

of Recognition; the Cleveland Harbor project will be recognized at the 33rd PIANC World Congress in San Francisco in June 2014

- Initiating EWN demonstration projects in collaboration with districts across the country
- New technical and engineering guidance for the DOD, Army and USACE that will reduce the costs for environmental restoration projects while increasing the projects' environmental benefits
- Development of a web-based GIS database of more than 200 projects illustrating innovative environmental practice for water resources infrastructure
- Initiating research to support resilient coastal systems in relation to climate change through the use of natural and nature-based features

For more information on EWN, please visit [www.EngineeringWithNature.org](http://www.EngineeringWithNature.org) or contact Dr. Todd Bridges, senior research scientist for Environmental Science, at [Todd.S.Bridges@usace.army.mil](mailto:Todd.S.Bridges@usace.army.mil).

Lessons learned and technologies developed through environmental LCA, green remediation technologies and Engineering With Nature support the military missions of USACE, the Army and DOD, but also have broad application to the USACE civil works mission.

The Environmental Laboratory, in conjunction with all ERDC laboratories, leverages expertise across disciplines, programs and geographic boundaries to address the most critical needs facing our nation today. Our research is informed by the needs and requirements of the warfighter and the nation. We are committed to providing innovative solutions for a safer, better world.

# ENVIROPOINTS

# Partnering to continue Hurricane Sandy recovery efforts

By Brig. Gen. Kent D. Savre  
North Atlantic Division

In January 2013, Congress passed the Disaster Relief Appropriations Act of 2013 to provide relief in the wake of Hurricane Sandy. The legislation was broad and historic, with Congress funding recovery efforts of more than 20 federal agencies, including the U.S. Army Corps of Engineers. Among other things, our agency's duties included overseeing the massive recovery efforts centered on the North Atlantic coastline. And in the months since the passage of this law, it is evident that USACE and its partners have made significant progress.

The law resourced USACE with more than \$5 billion to restore damaged projects, reduce risk to coastal communities and support long-term sustainability. The recovery effort is best thought of in three distinct phases: near-term restoration, long-term recovery and future resilience.

Teams across the North Atlantic Division are simultaneously working on each phase

of the recovery. Operations have been and will continue to be fast-paced because everyone understands the urgency to help communities.

## Near-term restoration

USACE and its contractors have physically completed more than half of the near-term beach restoration work in the Northeast and are on a path to complete all of these projects by the end of the year. The restoration work involves the dredging, pumping and placement of about 27 million cubic yards of sand onto beaches along the coastline. For some perspective, that's enough sand to fill MetLife Stadium in New Jersey 13 times!

All of the near-term restoration work is designed to fully restore previously constructed USACE projects. Practically speaking, this means rebuilding robust dune and berm systems along stretches of the coastline that had an engineered beach in place before Hurricane Sandy hit. The near-term restoration work also includes repairs to jetties and seawalls and dredging federal channels to ensure safe maritime navigation.

Restoring these projects has been a monumental effort by USACE teams, local sponsors and private industry. This same level of partnership will be necessary to help reduce risk from future coastal storms.

## Long-term recovery

While the near-term restoration work alone represents one of the largest beach building efforts in Northeast history, the long-term recovery is an even larger endeavor. USACE is preparing to construct 18 additional projects authorized by Congress before Hurricane Sandy hit, but had not yet been built. The projects involve the placement of about 50 million cubic yards of sand onto beaches along the Northeast coastline. To stick with the football reference, that is enough sand to fill all 31 NFL stadiums and then some.

Teams are preparing these projects for construction by conducting thorough reviews; coordinating with environmental resource agencies; and working with sponsors on the necessary agreements.

This work is not without challenges. It is complex and can take time, but teams are committed to building the best projects possible to help reduce risk for communities across the Northeast. USACE set aggressive project schedules; we hope to award contracts for at least half of the 18 projects by the end of the summer.

## Future resilience

It is important to reflect on progress, but perhaps even more critical to focus on the future. The Hurricane Sandy legislation directed USACE to conduct a comprehensive study to address the flood risks of vulnerable coastal populations.

This study, which the North Atlantic Division spearheads, brings together experts from government, non-government organizations, academia and industry to develop a framework for mitigating coastal storm damage. The effort is designed to be broad and holistic, but also involves developing tools, evaluating the performance of different types of systems and identifying

future risk. The study's goals are to provide strategies to reduce risk to vulnerable coastal populations and to promote a sustainable and robust coastal landscape system that considers future sea-level rise and climate change scenarios.

The \$19.5 million study, which will include a coastal framework as well as storm suite modeling, coastal GIS analysis and related evaluations for the affected coastlines, is currently in the second of three phases and will be completed in 2015.

Although it took only a matter of hours for Hurricane Sandy to cause widespread damage throughout the region, recovering from the second costliest hurricane in our nation's history and improving coastal storm damage risk reduction will be a long and complex task. Thankfully, we are not in this recovery alone. We stand ready and eager to collaborate and, most importantly, communicate with everyone who has a stake in hurricane recovery. We're grateful for the support and assistance we've received and we're committed to continuing these valuable partnerships. This has been a team effort to prepare for, respond to and recover from the largest Atlantic hurricane on record. We must remain dedicated to not only recovering, but also to enhancing resilience to future extreme weather, which we know is a new reality.

*Crews place millions of cubic yards of sand as part of the Army Corps of Engineers' efforts to repair and restore coastline severely damaged by Hurricane Sandy. Once the work is complete, USACE will have restored Rockaway Beach to its originally constructed size, which hasn't been done since the 1970s. (Photo by Jean Lau)*



# Protecting Northeast coastal communities

**By James D'Ambrosio**  
New York District

When Hurricane Sandy barreled into New Jersey with 90-mph wind gusts and a ferocious storm surge in October 2012, it damaged and destroyed 346,000 housing units, nearly 19,000 small businesses (\$8.3 billion in losses), flooded entire communities and severely eroded the shoreline. A 21-mile stretch of coastline from Sea Bright to Manasquan in Monmouth and Ocean counties was hit especially hard, losing approximately 5 million cubic yards of sand and damaging residential and commercial structures, leaving heavily populated coastal communities and infrastructure vulnerable to future storms.

As part of recovery efforts, the Army Corps of Engineers has been repairing and restoring beach berms through four sand-replenishment contracts since summer 2013. This extensive erosion-control repair and restoration project will, at completion, place nearly 8.2 million cubic yards of sand dredged from an approved offshore borrow area. The 100-foot-wide berm — approximately 12 feet above sea level and spanning the entire length of the project — provides significant coastal-storm risk management. Part of the North Atlantic Division's hurricane recovery efforts to restore previously constructed beach erosion control and coastal-storm risk-management projects. The immense scope of work for the project — divided into four contracts totaling \$109.2 million — is pumping sand onto nearly 18 miles of shoreline with completion planned for spring 2014. A project for the final 3-mile stretch is in the planning stage.

## Protecting coastal communities

Jenifer Thalhauser, project manager, New York District Coastal Restoration and Projects Branch, oversees the initiative and

is keenly aware of its importance.

"It is both economically and socially important to minimize the loss of New Jersey's beaches and to preserve coastal resources through construction and maintenance of our beach-erosion-control projects. Beaches are often the last line of defense between the ocean and coastal communities," she said.

The protection provided by a wider beach berm cannot be overstated: constructed berms help absorb and dissipate energy from large waves and storm tides, helping manage the coastal-storm risk to coastal communities. The storm surge, an offshore rise of water pushed ashore as a hurricane makes landfall, is often the most destructive — and deadly — part of the storm. In such situations, restored beaches reduce how far inland sea water travels, limiting flooding and damage to smaller areas closer to shore. In general, communities with projects in place suffered less damage from Sandy.

## Operations and safeguards

All work is performed in ways that maximize safety and minimize inconvenience to residents. In cooperation with state and local authorities, only 1,000-foot sections of beach are closed where construction is active.

Once a section is complete, it is reopened to the public and work moves to the next area. Sites are enclosed with orange safety fencing and staffed 24/7 during sand placement on the beach. Each 1,000-foot parcel takes about seven to 10 days to complete.

## Federal funding

This current 100 percent federally funded initiative to repair damage done by Hurricane Sandy and restore the project to its original design template is being accomplished in conjunction with the non-

federal sponsor, the state of New Jersey, and the Department of Environmental Protection. Other federal stakeholders include the U.S. Fish and Wildlife Service and National Marine Fisheries Service, each enforcing requisite safeguards in relation to their mission.

The Sandy Recovery Improvement Act of 2013 (P.L. 113-2) allows placement of an additional 3 million cubic yards of sand project-wide, creating beaches much wider than before Sandy — a welcome development for coastal residents and business owners who have and still are suffering significant hardships.

Read more about Corps Hurricane Sandy Coastal Recovery efforts at <http://www.nad.usace.army.mil/Sandy.aspx>.

*Numerous projects are underway across the Northeast to repair and rebuild jetties damaged during Tropical Storm Irene and Hurricane Sandy. Phase II of the 1,400-foot-long Newburyport Harbor south jetty repair project in Massachusetts (pictured) began in January, and in mid-February work began to repair the Point Judith Harbor east jetty in Narragansett, R.I., to replace core and armor stones displaced during the hurricane and fill in existing gaps and low points along the jetties. Work is scheduled to start this summer on Green Harbor East and West jetties in Marshfield, Mass. These projects are managed by the New England District. Repair work also has begun on the north jetty at Barnegat Inlet, which protects the southern tip of state-owned Island Beach State Park in New Jersey. Shaped by storms and tides, Island Beach State Park is a narrow barrier island stretching for 10 miles between the ocean and Barnegat Bay. Philadelphia District is managing this project that serves to protect one of New Jersey's last significant remnants of a barrier island ecosystem and one of the few remaining undeveloped barrier beaches on the north Atlantic coast. (Photo courtesy New England District)*

# Huntsville Center, Rock Island Arsenal kick off \$61 million energy savings project

By Rhys Fullerlove  
Rock Island Arsenal

Col. Robert Ruch, commander of the U.S. Army Engineering and Support Center, Huntsville, participated in a March 19 ceremony to kick off a \$61 million infrastructure modernization project at the Rock Island Arsenal Joint Manufacturing and Technology Center (RIA-JMTC).

The project will support critical infrastructure improvements that will cut energy use by approximately 35 percent, and generate up to \$5.3 million in annual energy and operational savings at the industrial facility in Illinois.

The Army launched the technology center upgrades through two task orders on a 20-year energy savings performance contract with Honeywell that was awarded by the U.S. Army Corps of Engineers' Huntsville Center. Honeywell guarantees the improvements will generate the target savings, which should repay the investment used to fund the work. As a result, the project requires no capital or additional taxpayer dollars up front.

Ruch joined RIA-JMTC Commander Col. David J. Luders; Kevin Madden, vice president and general manager of Honeywell's Federal Systems Group; and Rep. Dave Loebsack, who represents Iowa's second congressional district, in the ceremony.

"This is the new way we measure success in the Army," Ruch said when referencing the importance of energy conservation. "It is important for us to celebrate events like this."

The Huntsville Center is the Corps of Engineers' Center of Expertise for energy savings performance contracts.

In the ceremony, Luders discussed the importance this brings to the Army's only vertically integrated metal manufacturer.

"We have been providing the best products and services to our armed forces for more than 150 years," Luders said. "This project lets us tackle our aging infrastructure head on – a difficult task in light of budget cutbacks – so we can operate as efficiently as possible and support mission readiness."

RIA-JMTC accounts for two-thirds of the arsenal's overall energy consumption. Along with the immediate savings, the project will help the arsenal meet the requirements of a Presidential Executive Order that calls for federal facilities to reduce energy consumption 30 percent by 2015.

As part of the project, Honeywell will implement a variety of facility improvements, which include installing high-efficiency HVAC systems and on-premise natural-gas heating that will allow the facility to disconnect from the garrison's central coal-fired steam plant.

Another major upgrade is new plating and paint systems for the technology center. Almost 90 percent of the parts produced at the facility go through plating and paint, receiving the surface coatings necessary to build hardened, durable components for Army equipment.

"The plating department is critical to our operations," Luders said. "It is one of our oldest operations with the first plating shop being installed in 1885. Today marks another evolution."

"The project will save nearly 5.5 million kilowatt-hours of electricity each year – enough energy to power almost 490 homes on average," Madden said. "In addition, the Honeywell work is expected to deliver environmental benefits. As a result of transitioning to natural-gas heating, for example, annual coal use at the central plant will drop by approximately 12,000 tons."

RIA-JMTC is the nation's largest government owned and operated arsenal. Their 16 critical manufacturing capabilities makes RIA-JMTC the Army's one-of-a-kind, state-of-the-art, vertically integrated metal manufacturing and fabrication arsenal.



## Engineering careers: Not just for boys

*Beth Williams, Savannah District dam and levee safety program manager, uses a floodplain model to demonstrate the functions of levees at Girls Engineer It Day in February. The Savannah District partnered with the Society of Women Engineers for this year's Girls Engineer It Day Expo at Woodville Tompkins High School. The Army Corps of Engineers — along with about 20 other companies, schools and organizations — discussed potential STEM-related career paths with an estimated 350 middle and high school-age girls and their parents. Williams, along with Regulatory Specialists Sherelle Reinhardt and Sarah Wise, presented an interactive floodplain model to demonstrate the Army Corps of Engineers' role in water resource projects. "There are a lot of smart girls here who want to be engineers, and they asked us a lot of good questions," Williams said. "We asked them about solutions for flooding, and they were creative and eager to come up with ideas." (Photo by Tracy Robillard, Savannah District)*

## Chief of Engineers...

*Continued from Page 1*

Our efforts include making our own facilities and activities sustainable, as well.

We have unveiled a new Sustainability OPORD that continues to place emphasis on meeting our greenhouse gas, energy, water, non-tactical fleet management and fuel consumption goals, while placing an increased focus on sustainable acquisition and sustainable buildings. These are the areas that the Office of Management and Budget grades us on every year – areas where we are slowly seeing some improvement, but still not enough. We have a great deal of work to do, such as pursuing Energy Savings Performance Contracts whenever possible for our Civil Works projects and looking at increasing our use of renewable energy.

The success of our Sustainability Program, and our entire environmental program, depends on leadership attention and support throughout the command, not just the talented staffs who are already committed to establishing USACE as a leader in sustainability, energy initiatives and environmental stewardship. As always, this is something that we have to focus on each and every day, not just on Earth Day each April 22.

I'm committed to these efforts, and I know you are, as well. We need your leadership and support in this important area. Thank you!

Essayons ... Building Strong ... Army Strong!



## USACE transfers first completed project of Comprehensive Everglades Restoration Plan

Jacksonville District

The U.S. Army Corps of Engineers has transferred the first completed Comprehensive Everglades Restoration Plan (CERP) project to the local sponsor, the South Florida Water Management District (SFWMD).

The Jacksonville District completed construction of the Melaleuca Eradication and Other Exotic Plants Research Annex in August, and after completing required documentation, the letter of official transfer was submitted to the SFWMD, which is now responsible for the operation and maintenance of the facility. The district received the signed transfer letter in January, marking the successful completion and transfer of the project.

"The successful transfer of this project demonstrates the Army Corps of Engineers' commitment to getting projects not only constructed, but also officially turned over to our local sponsors after completion," said Jacksonville District Commander Col. Alan Dodd. "We have a lot of projects in the works, and we will continue to push forward in our project execution and completion goals."

The Melaleuca Eradication and Other Exotic Plants Research Annex, located in Davie, Fla., will serve as a new facility to raise insects that will be used as a biocontrol measure to manage invasive plants. Facility construction began in July 2011 with federal funding provided through the American Recovery and Reinvestment Act of 2009.

While the Melaleuca project was the first CERP project to be officially completed and transferred, the district also recently transferred another CERP component to the SFWMD: the Lake Okeechobee Aquifer Storage and Recovery (ASR) pilot project and facility, located adjacent to the Kissimmee River in Okeechobee County. The facility, which includes pumps, structures, buildings, wells and treatment system, was transferred to the SFWMD Dec. 18, 2013, for operations and maintenance upon completion of the pilot study. The pilot project tested ASR performance for future facility expansions. In coordination with the SFWMD, the Army Corps of Engineers is leading efforts to finalize a technical data report documenting the findings and recommendations of the aquifer storage and recovery system. For additional information on the Melaleuca Eradication and Other Exotic Plants Research Annex, the Lake Okeechobee ASR pilot project and other Everglades restoration efforts, visit [www.evergladesplan.org](http://www.evergladesplan.org).

# Restoration progress subject of Everglades Coalition Conference

By Jenn Miller  
Jacksonville District

Collaboration, innovation and long-term solutions were key discussion points at the 29th Annual Everglades Coalition Conference, where federal and state officials, environmental organizations, and members of the public and academia came together to celebrate what's been accomplished so far and discuss what needs to be done to continue making progress in Everglades restoration.

Department of Interior Secretary Sally Jewell, U.S. Reps. Patrick Murphy and Mario Diaz-Balart, Assistant Secretary of the Army for Civil Works Jo-Ellen Darcy, State Sen. Lizbeth Benacquisto, and U.S. Army Corps of Engineers Jacksonville District Commander Col. Alan Dodd were among the 300 people in attendance at the conference Jan. 9-11 in Naples, Fla.

"Since I've been in my position, I'm honored to say that the Obama Administration has been committed to Everglades restoration," said Darcy, who also praised the efforts of the Everglades Coalition. "I want to congratulate the coalition for recognizing that the future is the only thing we should be looking to."

The theme of this year's conference was "Everglades Restoration: Protecting Coastal Communities," and topics of discussion included climate change, nutrient pollution, restoration progress, sea level rise and water quality.

Dodd spoke on a panel titled, "Where is all the Water Coming From? A Coastal Perspective on Solutions for Water Management in the Northern Everglades and Lake Okeechobee." He provided an overview of the water management decisions the Army Corps of Engineers has made this past wet season and the

importance of considering public safety in the decision-making process.

"We can't get lake water out as quickly as it comes in – it comes in six times faster than we can get it out," Dodd said. "When we make decisions today, we base it on where we think the lake will be 30 to 60 days out."

During the panel discussion, Dodd was asked for his position on the recommendation by the Florida Senate's Select Committee on Indian River Lagoon and Lake Okeechobee Basin to give the state of Florida authority over Lake Okeechobee regulatory releases when the risk of dike failure is less than 10 percent and to temporarily release authority to the federal government when the risk of failure exceeds this threshold.

"When we talk about getting up to 10 percent risk, water levels are getting higher than we can manage," Dodd said. "Responsibilities should not be handed over during a crisis."

Dodd also was asked about the committee's recommendation for congressional assistance in legislation or rulemaking to revise the Lake Okeechobee Regulation Schedule, also known as LORS.

"It's the best system we have right now to balance all the various needs," said Dodd, who noted that additional rehab work on the Herbert Hoover Dike needs to be completed prior to considering revising LORS. He also said USACE is conducting an assessment, known as the Dam Safety Modification Study, scheduled to be completed in 2015. The results of that study will be used to guide future rehabilitation efforts on the dike.

Also in attendance at the conference were members of the Jacksonville District, which has the largest environmental restoration program within USACE and manages the Army Corps of Engineers'

Everglades restoration program.

At the "Caloosahatchee River: Getting the Water Right" panel discussion Jan. 11 Jacksonville District Planning and Policy Division Chief Eric Bush discussed the Lake Okeechobee Regulation Schedule and the public process involved in developing the regulation schedule.

"This is your Lake Okeechobee Regulation Schedule, not [ours]," said Bush. "You adopted it."

Bush also stressed the importance of planning for climate change as part of restoration efforts.

"If we don't consider climate extremes and climate vulnerabilities, by the time we complete these projects, we are going to have the same problems."

Restoration progress was discussed by Jacksonville District Ecosystem Branch Chief Howard Gonzales Jr. at the Jan. 11 breakout session entitled, "From Restoration Visions to Ribbon Cutting."

"As we're looking at the big picture across the nation, other projects propose restoration success, what we have [with the Everglades restoration program] is realized success," said Gonzales, who also walked conference attendees through the USACE planning process and the importance of public participation. "When you hear that a document is available for public review, that is your opportunity to get involved. There are no comments that go unanswered. We take this process very seriously."

The Everglades Coalition Conference showcased the connection all coastal communities have with the Everglades and how Everglades restoration is central to Florida's future. A steady theme throughout was the need for everyone to do their part to help restore this irreplaceable ecosystem and that no one single agency or individual can accomplish this feat alone.

# Window blinds inspire field-portable power supply system

**By Carl Feickert and Charles Marsh**  
*U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory*

Common venetian blinds, fluttering in the gentle breeze of an open window, were the inspiration for a new field-portable power supply system invented for forward operating bases. Researchers observed that the blinds could become a prime mover for low wind speed energy capture and set out to find a way to harvest that energy for forward-deployed units. Called the Flutter Mallard, the technology is being developed at the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory (CERL) Forward Operating Base (FOB) Laboratory in Champaign, Ill.

The Flutter Mallard approach is to harvest the low energy portion of the wind that is otherwise too weak to be usable for conventional wind turbines of the type used worldwide. These wind turbines are typically tall structures found in large groupings, often called "wind farms," capable of generating many kilowatts of green power.

However, they will not operate efficiently (or at all) if the wind is too weak, typically for speeds less than about 4 meters per second. Further, they are not feasible structures for FOBs because they present a large, vulnerable target and would pose a severe logistic burden for deployment.

Researchers replaced the rigid slats of common venetian blinds with an articulated flexible membrane capable of deforming and storing elastic energy in real time. They then affixed to the membrane a pick-up coil and magnet that can convert the vibrating membrane energy into an electrical current. This electrical energy requires power conditioning to compensate for the variability in wind speed and presented a significant challenge.

The team's solution was to capture the fluctuating electrical energy along with that from similar generating strips and perform

rectification, so that the resulting direct current power can then be stored in a super-capacitor. The super capacitor represents a new class of electrical energy storage devices that can store very high energy densities. The CERL team developed one such device as an outgrowth of their research, which resulted in a patent application.

To determine the quality and availability of low-speed wind resources, the research team measured the near-ground wind velocity around the clock at the CERL campus from late February to mid-July 2012. During this time team members amassed more than 400 million data points of wind velocity and confirmed that during evening hours, 70 percent of the average wind speed available was less than or equal to 3 meters per second, with only 46.4 percent available during daylight hours. These results suggest that, for climates similar to those in Illinois, any means of capturing the 70 percent nighttime availability could greatly help supplement a FOB's low-energy requirements. To get some measure of the energy available using the prototype Flutter Mallard, CERL compared the active wind capture area (about 0.65 square meters) required of a typical small wind turbine to that of the combined equivalent areas of several Flutter Mallards operating at low wind velocities (less than or equal to about 3 meters per second). The Flutter Mallard generated about 3 watts of power versus the equivalent of nearly zero watts for an under-powered turbine at these low wind speeds.

As the research continues to progress, the team's vision is to replace the vibrating membranes with a highly elastic membrane made out of flexible photovoltaic solar cells. Doing so will capture and store additional available solar energy during the day to complement the harvested wind energy.

This research is part of an ongoing ERDC Center Directed Research project. Reliable, sustainable and Net Zero Energy use is a top priority for both installations and forward operating bases.



*Cadet Daniel Brownfield works on a prototype Flutter Mallard field-portable power supply system in an experimental B-Hut setting at the ERDC-CERL Forward Operating Base Laboratory in Champaign, Ill. The U.S. Military Academy cadet worked at CERL as part of West Point's academic individual advanced development program. (Photo by Scott Lux)*

## Pathway.....

*Continued from Page 1*

Visitors took advantage of the path throughout last summer, fall and even left footprints in the snow this winter. The pathway has proven to be so popular that it has become a destination walking opportunity for local visitors.

If a trail constructed of 100 percent recycled material isn't good enough for the environment, consider the additional impact of its location within the sprawling Seven Points Recreation Area – the No. 1 revenue-generating campground in the Army Corps of Engineers and home to Pennsylvania's largest marina.

If just 10 percent of the parks' visitors – approximately 43,000 people – use the path instead of driving from one location to the next within the park, that translates to nearly 48,000 fewer miles traveled by vehicle per year.

The driving force behind developing the path was visitor safety. Seven Points can resemble an urban area in the summer. Imagine families walking and riding their bikes competing for space on a winding shoulderless two lane road that's congested with vehicles, giant motor homes and boat trailers. It was an accident waiting to happen.

The majority of visitors applaud the improved safety for pedestrians and bicyclists, however, visitors are also discovering wildlife and natural features that can't be seen from passing car windows.

Shortly after the initial loop was opened an extension added two more camping loops into the pathway system. Interpretive exhibits are also being incorporated into the pathway design to explain the multiple benefits of the trail and encourage more people to take advantage of the path.

One of USACE's greatest partnerships is with the people who use the facilities, Darcy said.

"It's the people that live nearby who truly treasure these resources and help us to provide our recreational services," Darcy said. "We've had 55,000 volunteers to help us [nationwide]. We have recreation sites in 43 of our 50 states."

For more information on USACE-run recreation sites nationwide, visit [www.corpslakes.us](http://www.corpslakes.us).



# Fort Worth District receives DOD grant to develop energy-saving evaluation tool for installations

By Jim Frisinger  
Fort Worth District

The Fort Worth District received a \$1.22 million grant from the Department of Defense to develop a new analytic tool to help cut energy consumption at military installations worldwide.

The grant, awarded in January, is from the DOD's Environmental Security Technology Certification Program. ESTCP helps identify and demonstrate promising technology and then transfer it into daily use. The grant was made in competition against some of the nation's premier national energy labs and included a formal presentation in Washington, D.C.

The two-year grant will support a collaborative effort led by the district's Planning Support Center within the Regional Planning and Environmental Center, said Dr. Rumanda Young, chief of the district's Master Planning Section. Other program partners include the U.S. Army Engineer Research and Development Center-Construction Engineering Research Laboratory in Champaign, Ill.; and two military installations where the technology will be deployed – Fort Hood, Texas, and Joint Base Pearl Harbor-Hickam, Hawaii.

"This is the first time a division has partnered with USACE labs to obtain this type of DOD research and demonstration grant funding," said Young, the Southwestern Division energy development manager. "This is an important step in bringing all sustainability, energy reduction and planning mandates into one comprehensive and usable tool."

DOD facilities spent \$4.1 billion on energy in fiscal year 2011. The Pentagon is the nation's largest single tenant in the country, managing 300,000 buildings with 2.2 billion square feet of space.

At the end of the program, the district will present its findings and DOD will determine its future use, Young said. The program supports the USACE goal of helping the Army and the nation achieve energy security and sustainability goals – reducing energy dependence, increasing energy efficiency, and adopting renewable and alternative energy sources.

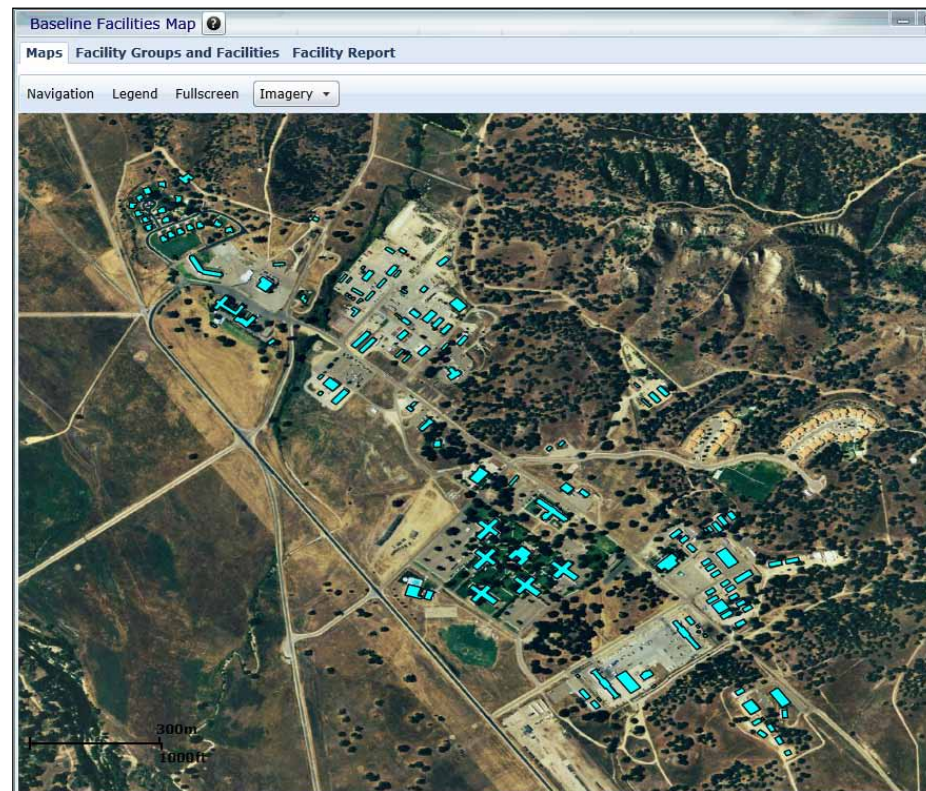
With the grant, the team will integrate the capabilities of two existing analytic tools to more quickly, effectively and routinely evaluate ways to cut the Pentagon's energy bill at each installation, Young said.

One tool is the Comprehensive Army Master Planning Solution (CAMPS) dashboard, which includes facility inventory and meter data. The other is the Net Zero Planner, which provides energy use life-cycle analysis and forecasting. CAMPS lacks the scenario planning and energy use projection capability of the Net Zero Planner. However, the Net Zero Planner requires significant and costly data collection of building inventory and meter data at the beginning of a study.

By combining the two tools with up-to-date master planning practices, energy planning can deliver understandable results more quickly and at lower cost than the tools used individually. The team will integrate the unified tool into the daily workflow.

Automated meter data collection data will feed the analytic tool, which will require less expertise to calibrate energy models. Each installation can then flag facilities that show excessive energy use and easily identify appropriate measures to trim energy costs.

Young is the CAMPS lead for the project; Dr. Michael P. Case, ERDC-CERL's installations program manager, is the Net Zero Planner lead.



**This screen shot of Fort Hunter Liggett, Calif., is used as part of the U.S. Army Corps of Engineers Net Zero Planner system to calculate estimated energy use for each building. The grant will integrate this tool, with the Army Corps of Engineers' Comprehensive Army Master Planning Solution dashboard, to develop a new analytical system to more quickly, effectively and routinely evaluate ways to cut the Pentagon's energy bill at each installation.**

# Making strides at Ohio FUDS

By Katie Newton  
Louisville District

During the past seven years, the Huntington District has completed soil remediation activities in two manufacturing areas at the former Plum Brook Ordnance Works (PBO). In the third and final manufacturing area, known as TNT Area A, soil remediation is coming to a close.

The formerly used defense site (FUDS) in Sandusky, Ohio, manufactured explosives in support of World War II. An estimated 1 billion pounds of nitroaromatic explosives were manufactured at PBO during its four-year operating period in the early 1940s.

TNT Area A was one of three TNT manufacturing areas at PBO and is the last to undergo soil remediation. The two-phase project began in January 2012 and is scheduled to be complete in May. Phase I involved excavation of 18 areas of concern (AOCs), where approximately 17,000 cubic yards of soil was dug up. Then, it required characterization of the excavated material to determine if the soil was hazardous, soil sampling for confirmation, and closure of the excavations with backfilling and reseeded. At the completion of Phase I, there were six AOCs that could not be closed because the soil exceeded established risk criteria.

Phase II, which began in May 2013, called for expanding the six remaining AOCs to identify the extent of the contamination, identify boundaries of the clean soil, and then excavate and remediate of the contaminated soil.

"All nitroaromatic contaminated hazardous soil is remediated using an alkaline hydrolysis (AH) process," said Lisa Humphreys, Huntington District project technical coordinator. Alkaline hydrolysis is the process of adding a caustic material to hazardous soil to degrade the contaminants.

"Once the chemicals are mixed into the soil, they start breaking down the nitroaromatic compounds to where they are no longer considered hazardous," she said.

"This is the same process that was successful with TNT Area C in remediating nitroaromatic contaminated soils and allowing the reuse of those soils on-site as backfill," said Rick Meadows, Huntington District project manager.

Upon completion of the AH process, the clean soil will be returned to TNT Area A and used to backfill the six open excavations. These areas will be seeded with native prairie grasses such as Indiangrass and Little Bluestem.

The successes at Area A mirror those at TNT Area B and TNT Area C, where remediation is already complete. Area B closed out in March 2010 and Area C was projected to close out this spring.

"Remediation of the three manufacturing areas is a huge success for USACE because they not only represented the majority of the contamination for the site, but also presented the most risk to human health and the environment," Meadows said. "Alkaline hydrolysis has proven to be a viable innovative remediation technology that can now be used at other DOD facilities. Of the 16 original projects identified for PBO, nine [including TNT Area A] will have been successfully remediated by 2014, which puts us closer to reaching our remediation goals for unrestricted use."

*Note: The Great Lakes and Ohio River Division FUDS program is managed by the Louisville District, which is responsible for all projects within Kentucky, Indiana, Illinois, Ohio, West Virginia and Michigan. Because of its existing involvement with Plum Brook Ordnance Works (PBO), Huntington District continues to manage this project.*

# Partnership sustains lake's natural resources

By Carl Nim and Christina Barker  
Pittsburgh District

As natural gas production from Marcellus and Utica shale beds continues to grow, wells and pipelines are popping up all over the country, including ones adjacent to the Pittsburgh District's reservoir projects. As a result, the Shenango River Lake staff conducted a water quality survey on the streams and tributaries in the area.

Shenango Lake Manager John Kolodziejcki and Rangers Jason Cote and Christina Barker escorted Pittsburgh District Biologists Rose Reilly, Carl Nim and Autumn Rodden to the well and sampling sites in December.

"As expected, chloride and specific conductivity levels were higher downstream of the two completed wells, and turbidity levels were higher downstream of the Halcon well that is under construction on Pew Road – they are moving a lot of dirt," Reilly said.

"However, chloride levels were also elevated in the unnamed Pymatuning Creek Arm of the lake downstream of the proposed well site north of Carlisle Road, which was surprising."

The water samples were sent to the laboratory for further analysis.

To understand the potential impacts of this development on water quality before and after a shale gas well is put in, Pittsburgh District biologists wanted to deploy a continuous recording data logger downstream from a proposed shale gas well. Nim worked with Pittsburgh Engineer Warehouse and Repair Shop (PEWARS) staff to design and fabricate a platform and housing for the data logger.

In early January the Shenango Lake staff gained hands-on experience when Nim reviewed the operation and data retrieval of a Solinst Data Logger. Then, he and the Shenango staff deployed the data logger in an unnamed Pymatuning Creek Arm of the lake, downstream of the proposed well site.

The rangers will collect the data on a monthly basis and email it to the biologists.

The data logger collects data on temperature, water level and conductivity. Conductivity data, if elevated, may indicate unusual amounts of metals and salts, both indicators of residual waste from the hydraulic fracturing process. Water quality surveys will then be conducted on an as-needed basis. By deploying the data logger prior to the developed well site, a baseline of data can be established, the district can see what happens with the water quality during the construction, completion and operation of a shale gas well.

The partnership between Pittsburgh District biologists, field project staff and PEWARS employees is an excellent example of teamwork, and one of many efforts made toward sustaining Shenango Lake's natural resources.



**Carl Nim, Pittsburgh District biologist, deploys the data logger into the stream to test the water quality at Shenango River Lake downstream of a proposed well site. (Photo by Christina Barker)**

# Saving Edisto Beach

Story and photo by Sara Corbett  
Charleston District

**Imagine you are at your favorite beach and every day nearly 40 dump trucks haul the sand away from the beach – approximately 14,400 dump trucks of sand a year. That's a lot of sand.**

Something similar to that is happening at South Carolina's Edisto Beach. Each year 144,000 cubic yards of sand is washed away with the waves at the beach and nearshore, creating major erosion that endangers structures and the main evacuation route on the quaint island.

Reducing the impacts from storm related erosion is exactly what the Charleston District project delivery team members discussed with the residents and city council members of the town of Edisto Beach in late summer.

At the request of the town, the Charleston District stepped up to help and signed a cost-sharing agreement with the town in 2006. Since then, the district has completed an extensive draft environmental assessment and feasibility report under the Coastal Storm Damage Reduction Study and provided a recommendation.

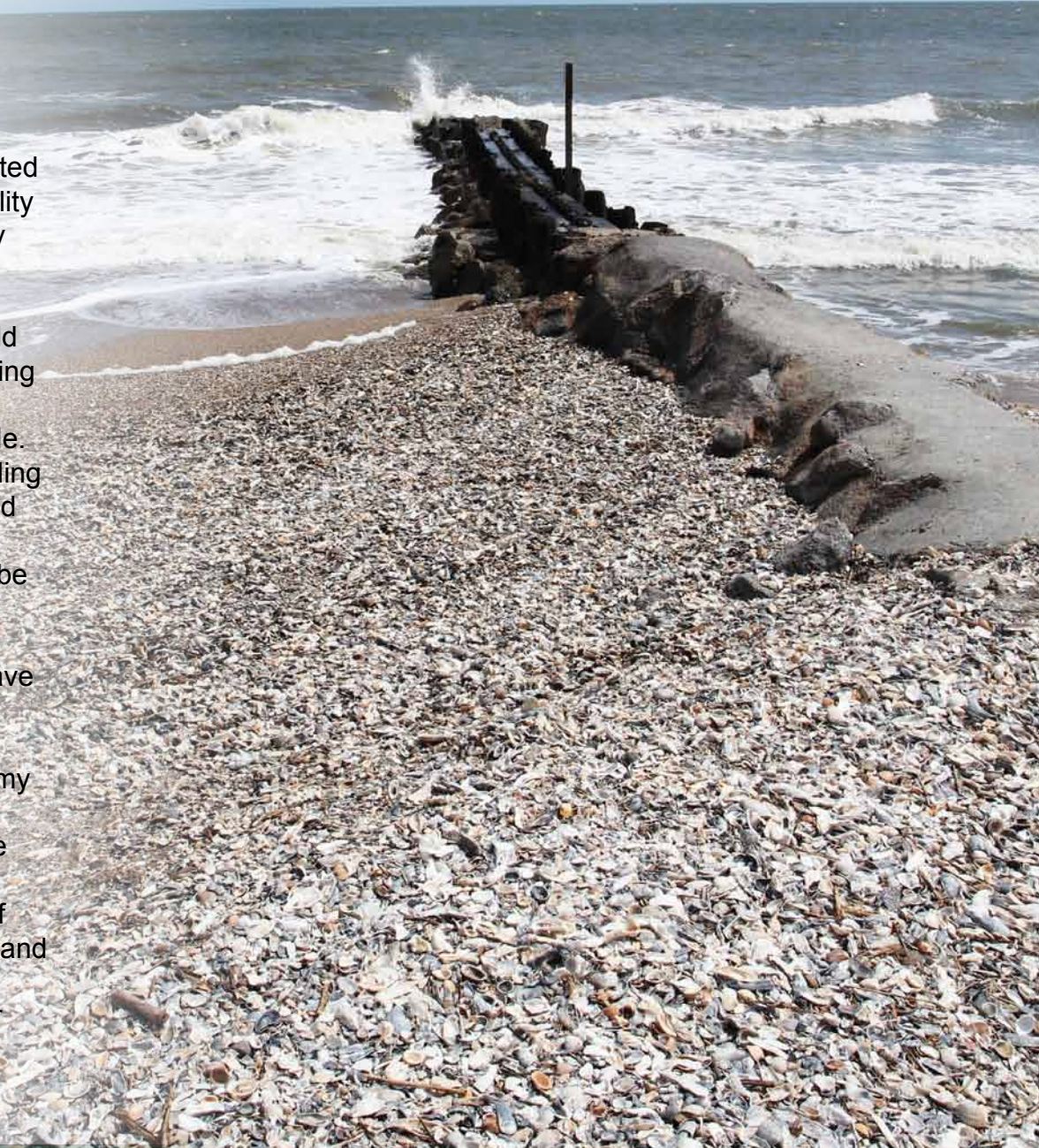
The plan includes constructing a dune and berm and lengthening existing jetties. The first section of dune would be nearly a mile long, 14 feet high and 15 feet wide, starting at the southwest end of the beach. This is followed by a 3-mile section of dune that is 15 feet high and 15 feet wide.

The 4-mile beach consists of a dune and berm extending in width from 50 feet to 75 feet at jetty number one located at the north end of the project. In total, 23 existing jetties would be lengthened by 1,130 feet and the beach would be renourished every eight years.

If everything goes according to plan, the construction could be completed by winter 2019. But several things have to happen prior to construction even beginning, including appropriation and authorization from Congress. In spring 2014, the draft feasibility study will be sent to the U.S. Army Corps of Engineers' Chief of Engineers for his signature. Following that it would be up to the Congress to authorize and appropriate the project.

The residents and city council members of the town of Edisto Beach were thrilled with the district's presentation and gave a standing ovation at the end of the meeting.

"[We] were well pleased with the Corps' interest in our community and felt that Edisto was a part of the Corps' mission," Mayor Burley Lyons said.



# Multi-agency team manages complex excavation at Spring Valley

Baltimore District

After almost a year of preparation that included equipment placement, intense training and multi-agency coordination, Baltimore District's Spring Valley team started turning dirt in September, excavating the key investigation site in the Spring Valley neighborhood in Washington, D.C.

People passing by 4825 Glenbrook Road probably noticed the site's enormous transformation. A stately colonial brick house once stood on this half-acre property now owned by American University. After thorough coordination and input, the house was demolished in November 2012, making it the first house to be removed at a formerly used defense site (FUDS).

The house demolition marked completion of the first phase of the property cleanup. The property is on the edge of the former American University Experiment Station (AUES), which was used in World War I for research and testing of chemical agents, equipment and munitions. Once crews demolished the house they began preparing the site for high probability operations, a term used to emphasize the likelihood that they will find and remove chemical warfare material in specified areas of the property.

"Staff from across the Corps of Engineers, Department of the Army, Environmental Protection Agency, District Department of the Environment and American University worked tirelessly to get to this point of the investigation," said Brenda Barber, project manager. "This is a very complex environmental cleanup project, and we are using proven engineering control technologies to protect our workers and the community throughout the process."

Each of these key pieces of equipment has been tested and used for years at Spring Valley and other FUDS across the country.

Where the house formerly stood, passersby now see the Engineering Control Structure (ECS), a large tan tent with its polyurethane material pulled taut over a metal skeleton. This tent is secured to the ground and kept under negative air pressure by the Chemical Agent Filtration Systems (CAFS), which ensures no air will escape from under or around the tent. The U.S. Army Edgewood Chemical Biological Center, one of the multi-agency team members, tests and provides assurance the tent is under negative pressure. Under the ECS, workers in full personal protection equipment are using an excavator and, at times, digging by hand to excavate soils down to bedrock to find and remove any AUES debris.

The CAFS are connected to the ECS by a large duct, a large aluminum tube similar to HVAC ducting that allows the air inside the ECS to be transferred from the ECS to the CAFS for treatment. The three CAFS are large pieces of equipment,

each with multiple carbon filters to clean the air coming from the ECS. The CAFS has a unique feature called noise dampeners to ensure the operating noise level is within the Washington, D.C., guidelines (55 decibels) at the edge of the project.

Additionally, a continuous near real-time air monitoring system, called MINICAMS, has been installed on the site in trailers near the CAFS. While it looks like a trailer from the outside, the inside of the MINICAMS is a high-tech monitoring and near real-time analysis of the air coming out of the ECS. Its monitors, located in the CAFS, look for key chemicals in the airflow. If a sensor notes a chemical of concern, the technicians from the Edgewood Chemical Biological Center alert site leadership. Coordinated protocols have been established with extensive situational training on how to respond. Coming up a steep hill at the back of the property sits the command trailer and the workers' break trailer. This is the nerve center

for the entire site. From here, project leaders have radio communications and visual oversight of the project area. In addition, 360-degree-view cameras inside the ECS provide site leadership with an immediate update on excavation operations as the three-person dig team works deeper and deeper into the soil. The dig team wears a full personal protection equipment ensemble, including a breathing apparatus. Site leaders carefully review the weather each day and adjust work schedules if local conditions could cause a safety issue.

A site crew of approximately 50 workers, representing multiple agencies and organizations, are on site every day during this work. This includes USACE colleagues from the U.S. Army Engineering and Support Center, Huntsville, Army representatives from the Edgewood Chemical Biological Center and 20th Support Command, and District of Columbia police personnel. For safety, an ambulance is parked near the command trailers, ready to respond to any injuries that may occur on the site.

During the almost 21-year Spring Valley FUDS project, nearby residents have not needed to shelter in place to avoid a chemical release. However, as an added safety layer, the Army Corps of Engineers has implemented a shelter-in-place system that includes an evacuation zone, a notification system with a strobe light and siren alerting system to alert residents, and a ring down call system.

Members of eight neighborhood residences and designated American University staff would be notified if any chemicals of concern are released into the atmosphere. Project leaders have met with these families, and tested telephonic and email notification systems in English and Spanish. This system is tested monthly throughout high probability operations.

Recognizing this is a high-profile project, Barber and her team have maintained a robust and transparent communication effort. This includes meetings with community members, weekly updates on the district's website, and multiple news media interviews, emphasizing project safety.

"Our communication efforts will continue throughout the remainder of the project," Barber said.

The Army Corps of Engineers expects to finish excavation work in spring of 2015 and restore the site to residential standards before returning the property back to American University in summer 2015.

For an interactive tour of the Glenbrook Road project, visit <http://youtu.be/yVws5UnBuZw>.

Learn more about the entire Spring Valley project at [www.nab.usace.army.mil/Home/SpringValley.aspx](http://www.nab.usace.army.mil/Home/SpringValley.aspx).

Brenda Barber, Clem Gaines and Andrea Takash contributed to this article.



Crews continue excavations under high probability operations at 4825 Glenbrook Road, part of the Spring Valley formerly used defense site in Washington, D.C. (Photo courtesy Baltimore District)



# Face-lift for New York dam to enhance ecosystem

**Story and photo by Andrew Kornacki**  
*Buffalo District*

**N**estled back in the woods near Springville, N.Y., stands Springville (Scoby) Dam on Cattaraugus Creek. Once used to generate hydroelectric power for the homes, towns and villages in the area, the dam was last opened in 1995 and the pool has since filled with sediment. Through an environmentally friendly and green initiative, the 93-year-old structure has a chance to get a face-lift and enhance the ecosystem.

“Currently the dam is altering the natural sediment dynamics of Cattaraugus Creek by trapping sediment at the dam pool. As a result, the creek immediately downstream of the dam is sediment starved; a factor that may contribute to bank erosion and scour,” said Geoff Hintz, Buffalo District project manager. Until the mid-1980s, dam operators had opened sluice gates annually to allow accumulated sediments to pass downstream.

By lowering the spillway, sediment would more easily flow downstream and allow the creek to return to a more natural state. Some advantages of a more natural flow of sediment in the creek are increased spawning habitat downstream of the dam for certain native species of fish

and potential long-term bank stabilization.

While the 34-mile stretch of Cattaraugus Creek and its adjoining tributaries from the mouth of Lake Erie to Springville Dam provide important spawning areas for a number of Lake Erie fish, approximately 70 miles of some of the highest quality fish spawning areas in the watershed exist upstream of the dam. These areas are currently inaccessible to Lake Erie fish species because of the 40-foot-high, 338-foot-long Springville Dam.

Under the Great Lakes Fishery and Ecosystem Restoration Authority, the Buffalo District is working on a feasibility study with the New York State Department of Environmental Conservation (NYSDEC) and Erie County to determine how the dam could be modified so the spawning waters upstream of the dam could also be made accessible to native fish species.

“A primary constraint in conducting this study is to ensure that the invasive sea lamprey will not gain access to the upstream watershed,” said Hintz.

“The benefits of this project, once completed, will have a significant positive impact on the Cattaraugus Creek ecosystem and sediment budget while continuing to block the migration of sea lamprey,” Hintz said. “A number of alternatives were analyzed.”

The preferred alternative being considered is to

completely remove a section of the existing dam down to the river bed and install a 10-foot sea lamprey barrier where the dam is removed and construct a fish ramp on one side of the barrier, he said.

“The ramp would have a stop-log barrier with a jump pool and a fish trap at the upstream end. The stop-log barrier would remain in place during the lamprey migratory season and divert fish into a trap for sorting. Sea lamprey would be removed and not allowed to access waters upstream of the dam while all other species would be allowed to pass upstream. Outside of the lamprey migratory season, the stop-log would be removed and all fish species allowed to move upstream.”

Sea lamprey entered Lake Erie in the 1920s with the opening of the Welland Canal, but they were not considered a major fisheries concern until restoration of native lake trout began in the late 1970s. Sea lamprey attach themselves onto other fish using a suction-cup like mouth, then grind away at the skin of the fish with their sharp tongue to create a wound. The lamprey’s mouth secretes an anticoagulant, allowing it to suction bodily fluids from the fish. The host fish usually does not die from one attack, but is weakened by the loss of blood and fluids, leaving it susceptible to other attacks

or disease.

The U.S. Fish and Wildlife Service traps sea lamprey to monitor their populations in Cattaraugus Creek and has stated they would be willing to perform trap and sort activities during the monitoring period of the spring lamprey spawning run.

During a public meeting in March 2013 a representative from the NYSDEC said, “If this project was successful, this would make the Cattaraugus Creek watershed one of the top fisheries in the Northeast.”

Cattaraugus Creek supports a diversity of native fish and highly valued sport fish that will benefit from increased access to the high quality waters upstream of Springville Dam. The creek is one of New York’s largest salmonid fishery tributaries to Lake Erie with runs of steelhead (rainbow) trout, as well as wild brook trout and naturally reproducing populations of brown trout.

“To be a part of a project that will provide benefits to the native fish, stream restoration and improve sediment transportation, yeah, that’s pretty neat. I can honestly say that this has been one of the most rewarding projects to manage,” Hintz said. “Imagine the positive mark this will leave on the Great Lakes for the next generation and the ones after that. That’s something to tell friends and family.”

# Blue Grass Army Depot: Contaminated lagoons restored to pasture land

By Katelyn Newton  
Louisville District

The Blue Grass Army Depot (BGAD) faced a great regulatory challenge in 2010 with wash-out facility operations due to contaminated lagoons. In a record time of less than three years, the contaminated lagoons at the central Kentucky ammunition and storage depot have been successfully restored to pasture lands with the help of the Louisville District.

The wash-out facility at BGAD, known as Solid Waste Management Unit No. 25 (SWMU), had long been used for washing and removal of energetic material from munitions items. The area consisted of two lagoons: an upper and a lower lagoon. In a nearby building the wash-out facility removes explosive materials such as TNT and Composition B from obsolete ammunitions using jets of hot water. The explosive materials dry and form into flakes that are packaged for storage and shipment, but the excess water is cleaned with carbon filtration and pumped into holding tanks to be tested before being discharged into the lagoons.

In July 2010 the Kentucky Department of Environmental Protection (KDEP) ordered immediate cessation of discharges due to potential contamination problems. The U.S. Army Corps of Engineers was called in to perform a Resource Conservation Recovery Act investigation and remediation, which immediately got underway.

“The installation’s commitment to environmental stewardship really helped guide this project,” said Clayton Hayes, USACE project manager. “Our coordination with them and the KDEP allowed us to chart the path and achieve a successful full restoration.”

By the summer of 2011 soil and surface water sampling began in the lagoons to determine the nature and extent of contamination.

“Ultimately, the investigation found no indication of contamination in the upper lagoon,” Hayes said. “But the lower lagoon – which was the primary point of water discharges – had contamination caused by decades of operation.”

Excavation and disposal of the soils at the lower lagoon was recommended. The depot faced great regulatory challenges in their effort to correct the situation, and the BGAD installation commander ultimately made a stewardship decision to permanently sever the lagoons from the wash-out facility. Additionally, operational changes prevented further contamination.

In February 2013, USACE awarded the project to ERT Inc. The company was instrumental in developing an approved work plan which involved the use of decision units and multi-increment soil sampling. This method enabled the generation of data that showed the constituents were below the screening levels. Subsequent efforts involved regulatory coordination that led to expeditiously completing a full restoration.

“Coordination with the installation and KDEP was paramount in getting all permits and reports processed quickly to get this project closed out,” Hayes said. “Thanks to all for great teamwork which resulted in success for this project.”

The depot received a letter of approval for site closeout/response complete for SWMU No. 25 from KDEP in November 2013, which helped BGAD meet its regulatory and environmental commitments while ensuring the health and safety of the public and the environment.

“The former lagoon area is now fully remediated and restored with rolling hills and native grasses to match the topography,” Hayes said. “It’s like the lagoons were never there.”



**ABOVE:** The contaminated lower lagoon in May 2010 before work began to drain the lagoon and restore it to pasture land. **BELOW:** The former lagoon area in September 2013, just eight weeks after remediation, shows re-established vegetation. (Photos courtesy Blue Grass Army Depot)



# Smokeless fire assists in reactivation of retired disposal area

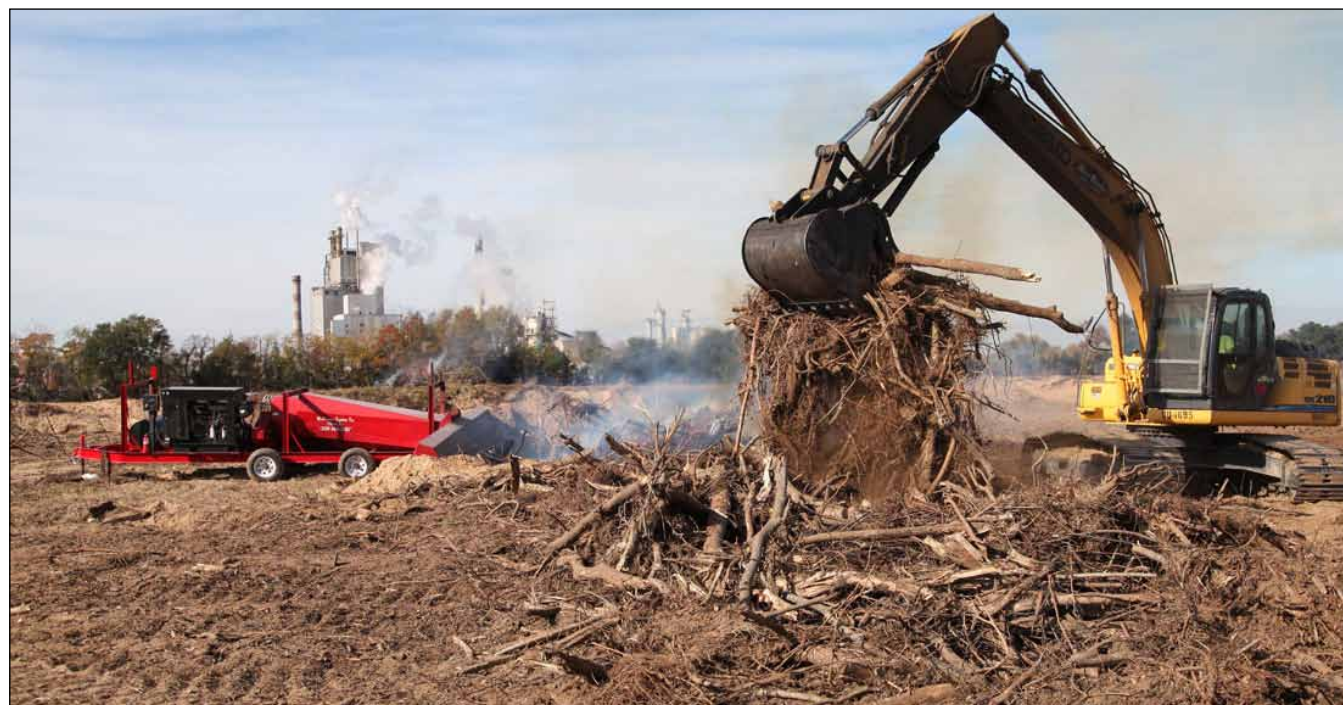
By Rashida Banks  
Savannah District

Air may not seem like an effective barrier for some things, but when coupled with a trailer-mounted blower and heat, it provides a very efficient barrier and environmentally friendly way of clearing land with little smoke. The Savannah District is using this method – known as air curtain burning – as part of the reactivation process for one of its dredge disposal sites in Georgia.

The 130-acre area on Onslow Island, officially referred to as Dredged Material Containment Area 1N, once consisted of 95 acres of heavily vegetated and wooded land. After clearing the area, workers for the Savannah District used the air curtain for quick, clean disposal of piled-up vegetation. Air curtain burning involves a trailer-mounted air blower that generates a barrier or curtain of air over a fire burning pit. The process limits the amount of smoke released into the air during the burning process. The curtain of air traps the smoke and forces it back into the hot, burning fire to be combusted instead of escaping into the atmosphere.

“The process is more efficient because the air being blown over it makes it burn faster and at a higher temperature, so it’s less burning time and less smoke, which makes for a much cleaner burn,” said Army Corps of Engineers Civil Engineer Jessica Power. “Once the waste flows through the burner, the ashes are also a very useful soil additive.”

The project, which began in October, aims to rehabilitate the disposal area back into a functional state to store



**A worker piles debris from Dredge Material Containment Area 1N into a pit of fire. The 130-acre dredge disposal area, located on Onslow Island in Georgia, is being reactivated by the Savannah District through a process called air curtain burning. (Photo by George Jumara)**

dredged material and create habitat for a variety of birds and other species.

Owned by U.S. Fish and Wildlife Service (USFWS), the site was used by the Army Corps of Engineers as a dredge disposal area years ago, but has not been used for dredging in almost 15 years. As a result, the area had become overgrown with vegetation, including many invasive species. The USFWS had been using the site for sand mining and equipment storage until construction started this past October. Now that the land has been totally cleared, Power said the existing perimeter dike, or outer surrounding wall of the disposal site, will be raised to a more uniform height to gain additional capacity to contain Savannah Harbor dredge material. By restoring the site, USACE will gain around 600,000 cubic yards of sediment storage capacity.

“This increased capacity is very important for the Savannah Harbor Expansion and all dredging projects,”

Power said. “It helps to keep costs down on dredging contracts, because contractors don’t have to pipe dredge material as far.”

As part of an agreement with the USFWS, half of the area will be used as a water fowl wildlife sanctuary. This includes improving the existing bird island to create an optimal habitat for bird nesting.

“Currently there are many small hills and excavation cuts on the land, some of which are now overgrown and ponding with water, so our next step is to smooth the existing bird island and its slopes out to create a more suitable environment for the birds,” Power said.

A ditch will also be added to provide a protective barrier to deter other animals from inhabiting the area. The area surrounding the bird island will be closed off and filled with water, creating an island for the bird nesting area. The project is scheduled for completion in June.

# Resource efficiency manager helps identify energy savings

By Debra Valine  
Engineering and Support Center,  
Huntsville

The National Training Center at Fort Irwin, Calif., is getting a replacement hospital that will improve patient care and incorporate measures that will save millions of dollars in energy costs.

A Resource Efficiency Manager (REM) working under contract with the U.S. Army Engineering and Support Center, Huntsville, was part of the design and energy planning team that helped identify seven major conservation measures that will decrease energy use by 33.2 percent. The design team, led by the Los Angeles and Sacramento districts, included Huntsville Center’s Medical Center of Expertise and Mobile District, as well, and earned an Honor Award for Conceptual Design from the 2012 Chief of Engineers Awards of Excellence Program.

Huntsville Center has an Indefinite Delivery Indefinite Quantity contract with a pool of four REM contractors available to any federal agency.

According to Hossam Kassab, the REM at Fort Irwin, the Weed Army Community Hospital replacement project was conceived by the Army to improve the medical care provided to Soldiers, military families and retirees in the Fort Irwin community.

“This mission-critical project includes the design of a replacement hospital, clinic alterations, utility plant building, ambulance shelter and helipad,” Kassab said. “The project combines a state-of-the-art facility design with innovative energy conservation and generation features. As the nation’s first carbon-neutral hospital, this project will establish Fort Irwin as a leader in energy independence in the health care and military sectors – setting a precedent for future military facilities. My involvement as the REM at Fort Irwin was instrumental in the design process helping to coordinate the sustainable

features of the design to work with the local climate and the existing base infrastructure.”

Sustainable principles, including life cycle cost-effective practices, are integral at each phase, from design and development through construction.

“As part of the project team, I worked to incorporate seven major conservation measures that will decrease energy use by 33.2 percent,” Kassab said. “These measures will reduce greenhouse gas emissions by 1,403 metric tons per year below the baseline. Additionally, renewable energy systems, including a photovoltaic (PV) array and a solar thermal array, take advantage of the site’s solar irradiance potential and meet all the hospital’s energy needs. Clean power sources include a 2.4 megawatt solar photovoltaic array and a solar thermal array that provides a majority of the hot water the hospital requires.

“I successfully worked with the local utility company to help secure more than \$2 million in rebates that will help minimize initial costs. In addition, I will be helping commission the hospital once completed to ensure the mechanical and electrical systems perform as designed.”

“The Huntsville Center places REMs at installations to work with local energy program managers to identify cost-effective programs and practices to reduce energy and water costs,” said Karen R. Moore, REM program manager at the Huntsville Center. “Savings generated more than offset the cost of the REM. REMs provide a comprehensive energy portfolio for the installation to reduce their energy consumption and plans to meet federal mandates to use renewable energy sources.”

In the 2012 Net Zero Progress Report released in May 2013, the Honorable Katherine Hammack, Secretary of the Army for Installations, Energy and the Environment, recommended REM as one of four best practices to achieve Net Zero.



# ARMY EARTH DAY 2014

**Acknowledge the past**  
by restoring Army lands to usable condition and by preserving cultural and historical resources.

**Engage the present**  
by meeting environmental standards, enabling Army operations, and protecting Soldiers, Families and communities.

**Chart the future**  
by institutionalizing best practices and use of technology to ensure future environmental resiliency.



**SUSTAIN THE MISSION**



**SECURE THE FUTURE**

Assistant Secretary of the Army, Installations, Energy & Environment: [www.army.mil/asaiee](http://www.army.mil/asaiee)  
Army Earth Day: [www.aec.army.mil/Outreach/PublicInitiatives/EarthDay.aspx](http://www.aec.army.mil/Outreach/PublicInitiatives/EarthDay.aspx)

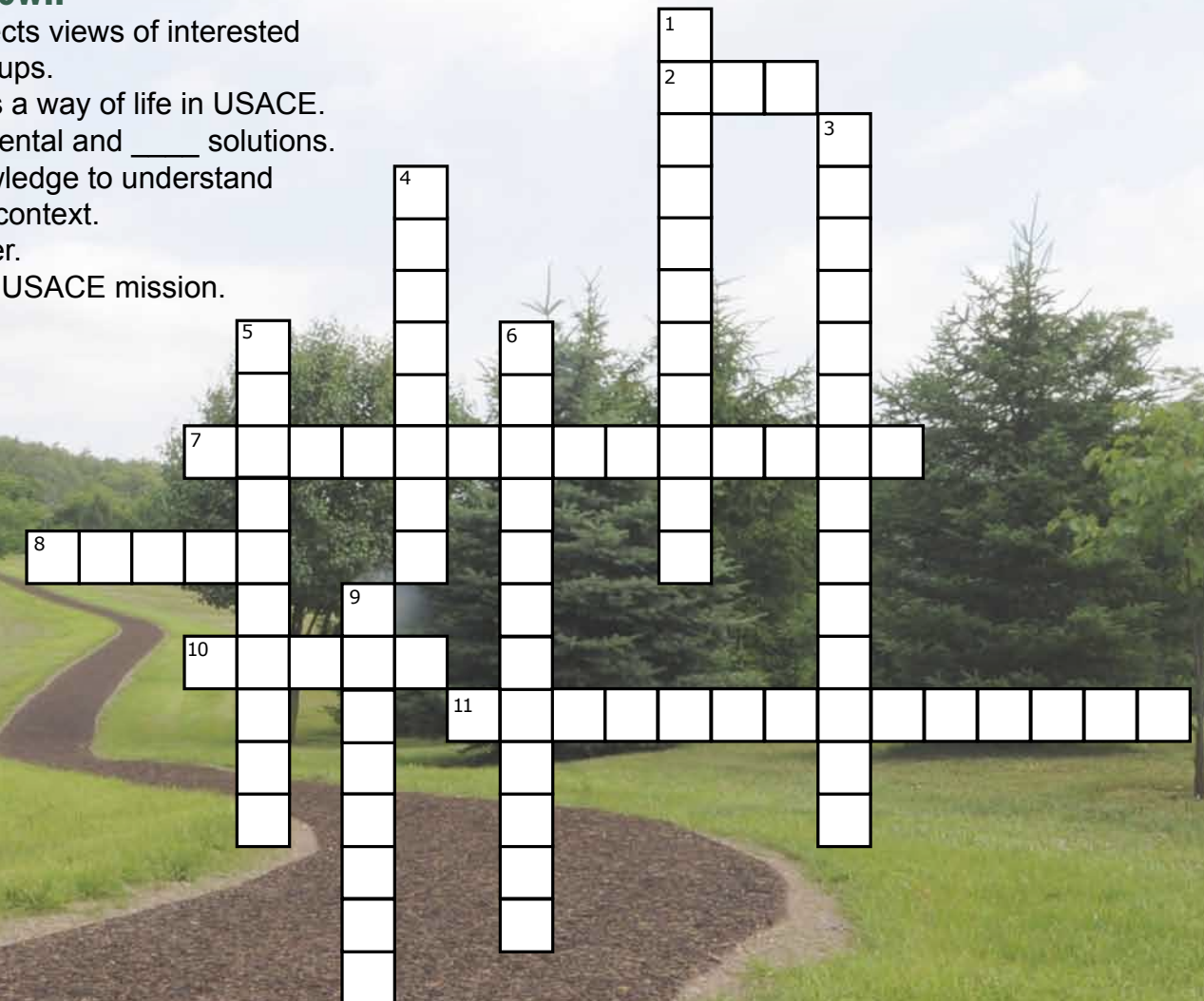
# Environmental Operating Principles

## Across

- 2. Environmental Operating Principles (EOPs) apply to this mission.
- 7. The approach to consider.
- 8. The number of EOPs.
- 10. EOPs apply to this mission.
- 11. Take \_\_\_\_\_ for our actions.

## Down

- 1. How USACE respects views of interested individuals and groups.
- 3. EOPs foster this as a way of life in USACE.
- 4. Consider environmental and \_\_\_\_\_ solutions.
- 5. Leverage this knowledge to understand the environmental context.
- 6. Proactively consider.
- 9. EOPs apply to this USACE mission.



Puzzle courtesy USACE Environmental and Munitions Center of Expertise September 2013  
Find the answers and learn more about USACE EOPs online at [www.usace.army.mil/Missions/Environmental/EnvironmentalOperatingPrinciples.aspx](http://www.usace.army.mil/Missions/Environmental/EnvironmentalOperatingPrinciples.aspx)

# Explosive detection canines lend noses to Florida FUDS project

Story and photos by Nancy J. Sticht  
Jacksonville District

Quickly walking across a field dotted with red flags, Don is focused on only one goal: finding explosives that may be buried underground so they can be removed before they cause harm. He performed similar duties during his tour in Afghanistan, and although his work in Florida is being conducted in a very different environment, it is equally important in contributing to public safety.

As the breeze shifts, rustling the trees and ruffling the little red flags, Don's supervisor announces, "He's got it." Within seconds, Don leads his partner to one of the flags, where he sits and awaits confirmation he has indeed found his target.

Don, a 5-year-old German Shepherd, is one of several explosive detection dogs working alongside their handlers at the Mullet Key formerly used defense site (FUDS) at Fort DeSoto Park in Pinellas County near St. Petersburg, Fla. They are members of American K-9 Detection Services (AMK9), a sub-contractor to PIKA-Pirnie, JV, the prime contractor conducting a Remedial Investigation/Feasibility Study (RI/FS) on behalf of the Jacksonville District to determine the nature and extent of anything remaining from the military's use of the site as a bombing and gunnery range during World War II.

During a RI/FS, crews traditionally use digital metal detectors on paths (called transects) and blocks (called grids) to map buried metallic objects. After carefully analyzing the collected data, potential targets are identified and objects that appear to be munitions-related are recovered. If munitions and/or munitions debris are found, soil and water samples may also be collected. This field work forms the basis for a plan to address what, if anything, remains from military activities.

The Mullet Key FUDS project marks the first time the Army Corps of Engineers has employed the services of explosive detection dogs at a FUDS. The innovative technology is being used for demonstration purposes and evaluate potential for further use.

"The purpose of this demonstration technology is to evaluate the dogs' ability to detect surface and sub-surface munitions and explosives of concern (MEC), including unexploded ordnance (UXO)," said Frank Araico, project manager. "We are also determining their ability to differentiate between anomalies associated with energetics, such as MEC and UXO, and those with non-energetics, such as munitions debris and scrap metal."



The dogs investigate flagged locations along transect lanes that have been previously identified with traditional digital metal detection methods, and along transects that have not yet been flagged. Additionally, should a dog alert to an area outside an identified transect, handlers allow the dog to further investigate and then notify UXO personnel, who investigate further.

Pete Owen, director of operations for AMK9, said the explosive detection dogs used at the Mullet Key FUDS

project trained for approximately four months and are effective in their ability to locate explosives in numerous forms and quantities.

"Typically, the dogs train for six to eight weeks, but in this case, we were training them to a higher threshold," Owen said. "They are normally trained to find explosives like nitrates on vehicles and along roadsides or buried to shallow depths. For this job, we needed them to be able to detect explosives buried more deeply, and which may have been buried for 60 or more years."

At a recent demonstration of their capabilities, the detection dogs took turns locating a buried training aid. One by one they stressed the lead held by their handler as they searched the area for the telltale scent that would pinpoint their target. The presence of a strong wind makes the dogs' difficult job a bit easier, as it creates a scent cone they can more easily pick up.

A marked change in a dog's behavior – what might be described as a sense of greater urgency – signals its handler that it is zeroing in. The dog identifies the target by sitting; the handler showers his canine partner with words of praise and a special toy reserved for such a rewarding occasion. The dog channels his inner puppy as he happily jumps and plays with the coveted toy.

To date, with the exception of the training aid, neither the traditional metal detectors nor the explosive detection dogs have located buried explosive material at the site associated with the military's training here during World War II. To provide a level of quality control, AMK9 has two different dogs cover on the site, confirming their results.

Handler Stevie Valencia is on this job with Matos, a 2-year-old Belgian Malinois, and Rex, a 3-year-old Dutch Shepherd. Roger Tappan works with Don and Jack, a 4-year-old Belgian Malinois, both of whom completed a tour in Afghanistan.

"These dogs love to work and they are highly motivated to earn playtime with their toy," Tappan explained.

"Dogs don't need to prove themselves," Owen said. "We know what they can do. Because the traditional technology looks for metal, and the detection dogs look for explosives, it's a great match and totally consistent with other technologies being used by the Corps."

**ABOVE: AMK9 dog handler Stevie Valencia waits for Rex, a 3-year-old Dutch Shepherd, to pick up the scent of a buried training target on the Mullet Key formerly used defense site at Fort DeSoto Park near St. Petersburg, Fla. Explosive detection dogs serve for an average of eight years. LEFT: Digital geophysical metal detectors are used to identify buried metallic objects; crews then dig a select number of targets to further identify whether the objects are munitions-related or scrap metal. The Corps is complementing this effort for the first time on a FUDS project by testing the use of explosive detection dogs that can locate buried explosive materials.**