



US Army Corps
of Engineers ®

The Corps Environment

January 2012

Vol. 13, No. 1

Afghanistan's culture, environment Corps team works to reduce impact

By Brenda Beasley

Afghanistan Engineer District-South

Museums once brimming with finds from Buddhist, Hellenistic, Islamic and prehistoric sites lay crumbled and empty, their valuable antiquities turning up in high-end art markets across Asia, Europe and the U. S.

An environment once pristine and rich in biological diversity now suffers from devastating impacts after decades of conflict, violence and drought.

Exploitation of Afghanistan's natural and cultural resources began getting some relief and improvement when the U.S. Army Corps of Engineers Afghanistan Engineer District-South, prompted by growing relevance of environmental considerations in military operations and the importance of our soldier's health, started conducting environmental site surveys in Afghanistan in December 2009.

"Our role is to decrease the impact our projects may have on the natural and cultural resources of this country," said Heather Moncrief, an environmental specialist in the South District. "We find out what the property was like before we received it and make sure it's returned in the same shape."

From a 10-person patrol base to a 5,000-soldier Afghan National Army base, most land with U.S. real estate instruments is surveyed to determine if hazardous materials and natural or cultural resources are present – like mosques, graveyards, grazing land or *karbez*, old underground irrigation systems used to get water to the valley.

One big environmental concern is disposal of waste from project sites to a *wadi*, a dry river bed. It may seem like a good idea until rain washes it away, and the untreated wastewater, sometimes containing fecal matter, contaminates water sources. "You don't know where it's being disposed and that's



Built more than 2,000 years ago, during his push to India, legendary conqueror and Greek military leader Alexander the Great considered this fortress a favorite. His army spent three years here while his troops fattened themselves from the "breadbasket" of the Middle East. (Photo by Michael Bell)

a huge risk to natural resources," said Moncrief.

With very little information available, a lot of research is involved. Most determinations are made through interpretation of photos taken by site assessment contractors, aerial photos and Internet searches on nearby villages.

"We depend on a lot of information from the 1970s, when monuments and old fort locations were documented," said Moncrief. A list of endangered species was issued by the government of Afghanistan in 2009.

Although environmental considerations are secondary to wartime operational requirements, they're important when safeguarding the health of U.S. Forces-Afghanistan personnel and facilitating timely base transfers to the Afghans.

"In short wars, we dig pits. We advance and retreat. Here, we've come and stayed 10 years. Waste has built up," said Michael Bell, an environmental specialist for the South District. "What are we going to do with the sewage? How are we going to compensate Afghans for the land we modified? We knock out an orchard; we have to put it back. One of my jobs is to determine what's there and try to protect it."

When conducting site surveys, Bell is sensitive to Afghans. On one site visit, a bulldozer was destroying an an-

See Impact page 7

Inside this issue:

Sustainability Awards coming soon	2
EnviroPoints: Accepting the Green Challenge	3
Corps team earns international recognition	4
Regulators discuss mitigation, funding	6
New technical bulletins now online	7
Officials reveal Everglades planning efforts	8
FUDS team takes technical approach at site	9
Fort Irwin project achieves 'Gold'	10
District works to restore salt marsh	12
Data quality workshop set, call for abstracts	13
District Superfund team earns EPA honors	14
Ecologist nets Fullbright Specialists award	15
Green Notes: Corps boosts alternative energy options	16



Harbor Program reaches out to students

Stephen Knowles, New York District, uses an acrylic model of an estuary and demonstrates to a student how an estuary functions. More than 200 students attended the ninth annual Estuary Day celebration Oct. 14. The Corps works with several local and federal organizations to host the event that aims to help students understand the history of the harbor estuary and its environmental state. (Photo Keegan O'Connell-Lilly)

Sustainability Awards coming soon

It's almost time to submit your nominations for the 2012 U.S. Army Corps of Engineers Sustainability Awards.

Nominations will open sometime after mid-January.

The categories are expected to be very similar to the six categories unveiled in the 2011 awards but with some improvements.

Updates will be posted on the Engineering Knowledge Online Portal at <https://eko.usace.army.mil/usacecop/environmental/awards/>

In addition to e-mail notifications from U.S. Army Corps of Engineers headquarters, each Major Subordinate Command point of contact will have information about

submitting nominations, and information.

People can use their common access cards to access the site and they also can subscribe for automatic notifications to their e-mail as new information is posted.

"Pull out the data on the great things you have accomplished during the past year that will help USACE meet our Sustainability goals as well as our customers meet their goals," said Christine Godfrey, acting chief of the Environmental Community Practice, "and get a jump start on your nomination packet."

The awards are based on the goals laid out in the USACE Sustainability Plan FY 2011 – FY 2020, which is found at www.usace.army.mil/sustainability.

More articles available online

Internet exclusive articles for this issue can be found at https://environment.usace.army.mil/corps_environment/ and include:

- Corps, partners mark start of restoration project

- Newark Superfund project gets underway
- Pentagon official lauds services for energy strategies
- Corps among winners at 'GOVgreen'



US Army Corps
of Engineers ®

The Corps
Environment

is printed quarterly by the U.S. Army Corps of Engineers as an unofficial newsletter published under the provisions of AR 360-1. The purpose of this newsletter is to provide information about Corps environmental actions, issues, policies and technologies. Opinions expressed are not necessarily those of the U.S. Army. Inquiries can be addressed to U.S. Army Corps of Engineers, Attn: CEHNC-PA, P.O. Box 1600, Huntsville, AL 35807-4301. Phone: 256-895-1809 or fax 256-895-1689.

Maj. Gen. Merdith W.B. (Bo) Temple

Acting Chief of Engineers
Publisher

W. Curry Graham

Director of Public Affairs

Christine Godfrey

Acting Executive Editor

Candice Walters

Managing Editor

James Campbell

Editor

Submissions

The Corps Environment welcomes submissions. Please send your articles, photos, events, letters or questions via e-mail to: james.w.campbell@usace.army.mil

Deadline for submissions:
Nov. 15 (January issue)
Feb. 15 (April issue)
May 15 (July issue)
Aug. 15 (October issue)

All submissions are subject to editing. *The Corps Environment* is available on the World Wide Web at: <https://environment.usace.army.mil>

Printed on recycled paper
30 percent post-consumer



EnviroPoints: Accepting the Green Challenge

By Christine Godfrey
Acting Chief, Environmental Community of Practice

Have you ever heard of the U.S. Environmental Protection Agency's Federal Green Challenge? Did you know that the U.S. Army Corps of Engineers' Seattle and Portland Districts participate in it?

Will it make a difference? It may be too early to tell, but Seattle District's 11-person all volunteer Green Team is working hard to see that it does.

In early December, Maleena Scarsella and Lori Danielson of Seattle District led an Environmental Community of Practice webinar on the district's participation in the Federal Green Challenge. EPA's Region 10 began the program in 2008 as a partnership between federal agencies looking to reduce their greenhouse gas emissions. Seattle District's leadership embraced the challenge and encouraged the Green Team to see what it could accomplish. Based on the positive response, EPA has now expanded the program on a national basis.

Seattle's Green Team selected two ambitious goals – reduce by 5 percent both the district headquarters office waste stream and energy use. Now, almost four years later, although it has not yet achieved its ambitious goals, the team has clearly been instrumental in helping improve personnel sustainability behavior and attitude changes – positives that can be built upon. A key to the team's success in those areas has been making sustainability convenient for employees.

Green Team initiatives include: sponsoring a waste reduction team competition with prizes; finding a new recycler to recycle more materials; creating an office supply reuse area for employees; placing stickers on light switches to encourage turning off unneeded lights; adding new recycle bins in conference rooms and improving bin signage; setting up paper reuse stations for "Good On One

Side" paper; encouraging paper buyers to buy high recycled content paper; setting up rechargeable battery charging stations; collecting reusable dishware and silverware for office events; and, planning Corps Day picnics that generate very little waste.

"It's been a very low cost effort," Danielson said, noting that the team meets an hour each month during brown-bag lunches. "But we are increasing awareness, we've affected some systems in our building, and we've found that our younger employees expect it. When they get hired on, they expect us to be recycling, reducing waste and being energy efficient."

Complicating the team's efforts has been the district's physical location – an early 1900s building that once housed a Model A assembly line. It is part of a four-building complex, controlled by the General Services Administration, with one energy meter for the entire complex. Although GSA has supported the team and taken steps to reduce energy usage, such as installing solar panels on the roof of the district's office, there is only so much the team can do.

Change comes in October when Seattle District moves into a new building on the complex, which is being designed to meet Leadership in Energy and Environmental Design Gold certification. The team expects many of its initiatives to continue. The new building also will have its own energy meter so the team will be able to know exactly how much energy is being used and then be able to reset its goals.

It's great that two districts are part of the challenge, and I would encourage others to join them. The challenge is now national, and we all should be actively participating. It will help us meet our Executive Order 13514: *Federal Leadership in Environmental, Energy and Economic Performance* goals. Since January is the time for resolutions, let's resolve to be among the leaders in the Federal Green Challenge!



Christine Godfrey,
acting chief of
the Environmental
Community of Practice



This rendering highlights the hyper-efficient redesign for the Basic Training Company Operations Facility at Fort Leonard Wood, Mo., as one of two buildings developed for the Holcim Award-winning USACE 2030 Project. (USACE Illustration)

Corps team earns international recognition

By Eugene Pawlik
Headquarters USACE

A 26-person multidisciplinary U.S. Army Corps of Engineers team was recognized by the Holcim Foundation for its work on a net zero implementation plan for Fort Leonard Wood, Mo., during an Oct. 20 ceremony at the National Building Museum in Washington, D.C.

The team received an Acknowledgement Award in the North American category of the 3rd International Holcim Awards for Sustainable Construction, an international competition. The team's entry, "Energy water and waste efficient military installation, Fort Leonard Wood, Mo.," was one of 6,065 original international entries submitted for awards consideration for sustainable construction projects to be potentially built in 146 countries.

From the original entries, 2,251 were determined to meet the formal criteria for the competition and were then assessed by independent regional juries comprising esteemed representatives from science, business and society.

Entries in the competition were judged based on five target issues: innovation and transferability; ethical standards and social equity; environmental quality and resource

efficiency; economic performance and compatibility; and contextual and aesthetic impact. Together, the target issues "address the triple bottom line of economic, environmental, and social factors together with architectural quality and the potential to apply the innovation in other locations" per the Holcim Foundation.

The Corps entry is described as a replicable pilot project for an Army base in Missouri to change the planning of all 280 American military installations to a state of net positive energy, net zero water and net zero waste. The project reflects the specific requirements of the military in relation to sustainability, with an additional motivation for independent systems to withstand disasters. The research led to a holistic strategy from road planning and master plan level to building design and incorporating a diversification in energy supply, water supply and waste disposal, focusing on reduction and renewable sources.

The North American awards jury recognized the project for its "adaptation of sustainable planning and construction to the military field in general and moreover in this instance for the serious and profound strategy, based on an impressive

See Design page 5

multidisciplinary research.”

“This is really quite an amazing accomplishment,” said James Dalton, U.S. Army Corps of Engineers chief of Engineering and Construction. “The Holcim Foundation awards are prestigious in the international architecture, planning, and engineering community. For our team’s work to be one of only a few around the world to receive this recognition speaks to the type of outstanding people and talent we have in the USACE.”

The award was one of 10 North American awards presented on the night. Awards included gold, silver and bronze awards; four Acknowledgement Awards; and first, second and third prizes in the “Next Generation” category which recognizes the sustainable design work of postgraduate university students.

The North American Gold Award winner is a project for regional food-gathering nodes and logistics network in Iquluit, Nunavut, Canada. The award winner also claimed the accompanying \$100,000 prize as a result of their winning entry.

Each of the four Acknowledgement prizes also included a cash award of \$18,750. The Corps is unable to accept the cash award and is unable to designate a charity to donate the award to. The Holcim Foundation announced at the ceremony that it will use the prize to fund an additional student research grant in North America.

Per the Switzerland-based Holcim Foundation, the competition seeks innovative, future-oriented and tangible sustainable construction projects and offers total prize money of \$2 million per three-year competition cycle. Winning projects show how greater levels of sustainability can be reached in building and construction through people-focused designs that include simple adaptation, innovative materials and clever architecture. The awards aim to promote sustainable responses to contemporary technological, environmental, socioeconomic and cultural issues from the building and construction industry.

It was noted at the awards ceremony that the winning projects provide a glimpse into the built environment of the future.

“It was an honor to be present at the black-tie Holcim Awards ceremony and witness the USACE team being recognized for its forward-thinking work,” said W. Chris Hinton-Lee, U.S. Army Corps of Engineers chief architect. “It is also very awe-inspiring and encouraging that the team is comprised of young multi-disciplined professionals from around USACE. Such an approach holds a lot of promise for the future of our great organization.”

The North American region is one of five competing

regions. Other regions are Europe, Latin America, Africa Middle East and Asia Pacific. The gold, silver and bronze awardees in each region automatically qualify for the 2012 Global Holcim Awards. All awardees, to include the Acknowledgement and Next Generation winners, qualify to further compete for the Global Holcim Innovation prizes to be awarded in 2012.

“This award acknowledges USACE as the technical experts in sustainable design for military construction,” said Lyndsey Pruitt, architect, and a Sustainability and Energy Program Manager for Engineering and Construction at Corps headquarters and the leader for the USACE 2030 project. “This study shows how the integration of systems from planning to buildings to people becomes a force multiplier and delivers far more net gains than designing each project independently.

“We are excited about the chance to compete for an international Holcim innovation award, but the real excitement for our team is the opportunity to bring this project to reality at Fort Leonard Wood,” said Pruitt. “And, when we demonstrate success there, to further expand the concepts and benefits to all the Army’s installations.”

In addition to Pruitt, other contributing team members and their specialties include Sean Beville, civil engineer, Fort Worth District; Daniel Brauch, civil engineer, Kansas City District; Leslie Campbell, structural engineer, New Orleans District; Tracy Dorgan, geologist/ hydrologist, New England District; Angela Curtis, cost engineer, Little Rock District; Greg Gilkison, electrical engineer, Huntington District; Eric Li, civil engineer, Honolulu District; Lindsey Matetich, architect, Seattle District; Keith Molina, mechanical engineer, Honolulu District; Sara Murphy, architect, Savannah District; Ryan Murphy, architect, Savannah District; Keane Nishimoto, mechanical engineer, Honolulu District; Kelli Polzin, project manager/architect, Seattle District; Jennifer Ramirez, architect, Seattle District; Martin Regner, cost engineer, Galveston District; Laura Ruf, civil engineer, St. Louis District; Parker Sherard, electrical engineer, Savannah District; Kenney Simmons, architect, Kansas City District; Elizabeth Smith, project engineer, Japan District; Paul Szempruch, civil engineer, Galveston District; Cristin Szydlak, project engineer, Sacramento District; Andy Temeyer, architect, Omaha District; Cambrey Torres, project engineer, Omaha District; Matthew Valentine, architect, Sacramento District; and Nathalie Westervelt, architect, New York District.

The team has written a book to detail the installation recommendations and the evolution in business process that is required by the Corps. The USACE 2030 Project Book is expected to be available as an E-book and in print this spring.

Regulators discuss mitigation, funding

By Greg Fuderer
Los Angeles District

Government and non-profit representatives met at the Southern California Coastal Water Research Project office in Costa Mesa, Calif., in 2011 to discuss the process for developing In-Lieu Fee programs for mitigation. ILF programs provide permit applicants a third alternative to comply with mitigation typically required to compensate for unavoidable impacts caused by their projects to waters of the United States.

Therese Bradford, chief of the U.S. Army Corps of Engineers Los Angeles District South Coast Regulatory Branch, welcomed the nearly 50 participants, saying one of the main objectives of the mitigation training was to answer the questions: “What can we do better? Where are the bottlenecks? What can we do to support you?”

Attending the training were local non-profits and agencies such as the Superstition Area Land Trust, Riverside-Corona Resource Conservation District and The Nature Conservancy that will collect the funds and provide and maintain the required mitigation.

“The In-Lieu Fee programs are essential for future permitting,” Bradford said. “The mitigation rule has changed the way we do business, and it is critical for future conservation and economic recovery to get these in place as soon as possible.”

In implementing the In-Lieu Fee program, the Corps’ primary objective, as with all mitigation, is to implement the national policy of no overall net loss of wetlands.

When an applicant proposes a project, the first alternative is for the Corps to encourage avoidance of impacts to wetlands entirely, if possible. Regulators work with applicants to investigate ways to modify projects by locating facilities, infrastructure and other project elements in areas where they will not impact wetlands. If the applicants cannot totally avoid wetlands, they are encouraged to minimize the affected areas as much as possible. When those efforts have been exhausted, the Corps determines what type and how much mitigation the permittee will be required to provide in order to compensate for the unavoidable impacts.

To meet this requirement, permit applicants have three options: they can opt to perform permittee-responsible mitigation, they can buy credits in a mitigation bank or they can



All Corps-approved projects that impact wetlands, even environmental projects such as the Upper Newport Bay Ecosystem Restoration Project pictured here, must provide mitigation to offset those impacts. In-lieu fee mitigation offers permit applicants a mitigation alternative in addition to permittee-responsible mitigation and mitigation banking. (Photo by Greg Fuderer)

participate in an in-lieu fee program. The same standards to ensure permanent protection of all compensatory mitigation sites apply to all three methods.

Under permittee-responsible mitigation, the permittee retains all liability for the project in perpetuity. It can be a costly and time-consuming responsibility, especially for applicants who don’t possess the in-house technical expertise to develop and implement such a program.

In mitigation banking, the applicant purchases credits in an established bank, and the long term responsibility is transferred to a third party.

In-lieu fee mitigation allows the permittee to provide funds to a government or non-profit for a specific purpose. Fees are collected before implementing projects, and multiple projects may be mitigated under the program.

The In-Lieu Fee program allows mitigation to occur through several methods, including the possibility of purchasing mitigation banking credits. Those alternatives include activities such as removal of invasive plant species, dam removal and sand replenishment.

As with all mitigation, regulators prioritize conservation opportunities using the watershed approach, where the goal is to maintain and improve quality and quantity of an area using an existing watershed plan. If no plan exists, regulators consider watershed needs and analyze the process for compensatory mitigation decisions. In general, the intent is to provide the mitigation in the same watershed as impact site and to locate it where it is most likely to successfully replace lost function and services.

Eric Stein, principal scientist for the Southern California

See Regulatory page 14

New technical bulletins now online

By Dana Finney

Construction Engineering Research Laboratory

During fiscal year 2011, the U.S. Army Corps of Engineers continued to provide directors of public works and Corps Districts with useful, hands-on guidance, assistance and technology tips by releasing Public Works Technical Bulletins. Since last year's summary, 15 new PWTBs have been published. The latest PWTBs tackle environmental issues such as the ecological effects of renewable energy projects, advantages of composting at explosives contaminated sites and help with managing winter annual grasses.

The following PWTBs can be downloaded from the Whole Building Design Guide website. Navigate to this site easily through either the Construction Engineering Research Laboratory website or Engineering Knowledge Online's public pages: <http://www.cecet.army.mil> and <https://eko.usace.army.mil>.

PWTB 200-1-87, *Operation and Maintenance for Central Vehicle Wash Facilities*, provides a general reference for O&M of CVWFs designed according to guidance in Unified Facilities Criteria 4-214-03. It also has information useful for preparing the statement of work for a CVWF operation contract.

PWTB 200-1-88, *Guidelines for Management of Winter Annual Grasses*, provides a comprehensive list of winter annual grass species occurring in the United States, both



In the bulletin "Twenty Non-Native Invasive Plants Army Installation Land Managers Should Know About," plants like Scotch broom, *Cytisus scoparius*, shown here invading a roadside are discussed. (Photo by Eric Coombs, Oregon Department of Agriculture)

native and introduced, along with their common distribution. The PWTB also describes management practices to control these species and includes a key for identifying which grasses are present.

PWTB 200-1-89, *Integrating NEPA Analysis into Army Non-Native Invasive Plant Management*, demonstrates ways for Army personnel to incorporate National Environmental Policy Act analysis into both Integrated Pest Management Plans and non-native invasive plant species management plans. The information will help installations comply with NEPA requirements for managing NIS.

See Bulletins page 11

Impact

Continued from page 1

cient burial site to build a helicopter landing pad, and Afghan villagers were watching. "We, USACE, intervened and asked them to get borrow material from somewhere else, and they did," Bell said. "It wasn't done on purpose, they just didn't know."

Forts, castles and burial sites dot Afghanistan's landscape, added Bell. In Qalat, at Camp Eagle or Forward Operating Base Apache, an impressive hilltop fortress can be seen from all three locations. Armies under Alexander the Great, the legendary Greek conqueror, constructed it more than 2,000 years ago. Known to locals as "Ball Haizer," the area has since been occupied by British, Russian, Taliban and now NATO and Afghan National armies. "As the occupiers, we're protect-

ing this important cultural resource," Bell said.

Looting of cultural treasures is a concern. The National Museum of Afghanistan was destroyed by the Taliban and the antiquities were sold on the black market. "NATO is trying to help rebuild the museum and is buying back some of these items," Bell said.

By identifying what's there, the South District can possibly repair or replace it; however, some resources may be gone forever. "The Russians completely deforested an area in Herat, and that forest will not be coming back," Bell said.

Once site assessments are complete, the South District makes recommendations; however, only the environmental officer or the officer in charge at the site or forward operating base can make changes. "We're not the decision makers," said Moncrief. "We're the problem fixers."

Officials reveal Everglades planning efforts

By Public Affairs Office
Jacksonville District

Senior policy officials from the Department of the Army, the U.S. Army Corps of Engineers, the Department of the Interior, the Environmental Protection Agency and the State of Florida, including the South Florida Water Management District and the Florida Department of Environmental Protection, convened at the South Florida Ecosystem Restoration Task Force meeting Oct. 27.

They announced a fast-track planning effort for the next generation that will, when authorized by Congress, improve the Central and Southern Everglades by putting more fresh and clean water into the River of Grass.

The Army Corps of Engineers and the South Florida Water Management District announced the start of the Central Everglades planning process, which will incorporate updated science and maximize use of publicly owned lands to focus the next phase of Everglades Restoration on the Central and Southern Everglades. This planning process will build on three years of unprecedented restoration progress between the federal government and the State of Florida including groundbreaking for six Comprehensive Everglades Restoration Plan projects.

This includes substantial construction progress on the first mile of bridging of Tamiami Trail.

The Central Everglades planning process will analyze alternatives that will reduce the discharge of water currently damaging the Caloosahatchee and St. Lucie estuaries and provide more natural flow and depths of clean new water through the Central Everglades and the Everglades National Park. This initiative will use a fast-tracked planning process, a pilot program that the Army Corps of Engineers is initiating elsewhere in the country, designed to yield restoration benefits at an efficient rate.

The planning effort responds directly to the 2008 and 2010 recommendations from the National Academy of Sciences and restoration scientists who recognize the need to address unnatural water levels in the water conservation areas and Everglades National Park as one of the biggest challenges facing restoration managers.

The task force meeting highlighted the many critical restoration efforts happening throughout the ecosystem and the opportunities for next steps in restoration. In particular,



Officials announced plans to aid the ecosystem in the Central and Southern Everglades by putting more fresh and clean water into the “River of Grass”. (Corps of Engineers photo)

major initiatives along the Tamiami Trail, Northern Everglades and other initiatives have shown that there are opportunities to increase the flow of clean water into the Central Everglades, using a variety of project elements.

There is a need to move the water south and allow more flow in the Central Everglades and Everglades National Park which is extremely critical to the health of the entire Everglades ecosystem. In addition to this major planning effort, state and federal agencies are working on measures to ensure that existing waters flowing into the Everglades meet water quality standards.

Specifically the fast-track Central Everglades planning process will evaluate opportunities to use publicly owned lands to store and treat water in the Everglades Agricultural Area and move the water south to the Water Conservation Areas and Everglades National Park, to achieve a more natural hydrology. This approach will also tie together Decentralization and Seepage Management with the State’s work north of the conservation areas and Interior’s Tamiami Trail improvements.

“The administration is committed to this ecosystem and these restoration efforts. We want to profit from best practices and good science. Together with our partners in the state, we can do it. We have a responsibility to the people of Florida and this country to protect this international treasure,” said Jo-Ellen Darcy, assistant secretary of the Army for Civil Works.

“The Everglades is one of the world’s largest ecosystem

See Everglades, page 13

FUDS team takes technical approach at site

By Charles Coyle

*Environmental and Munitions Center of Expertise,
U.S. Army Engineering and Support Center, Huntsville*

The U.S. Army Corps of Engineers Omaha District project delivery team for the Atlas Site 10 Formerly Used Defense Site is hosting an innovative technology demonstration for treatment of chloroethenes in the vadose zone, the shallow surface layer of soil from the surface to the water table.

The site was proposed for this Environmental Security Technology Certification Program-funded demonstration by the U.S. Army Engineering and Support Center, Huntsville, Environmental and Munitions Center of Expertise.

The technology demonstration was conceived and proposed by GSI Environmental Inc. GSI is developing the technology and overseeing the demonstration project.

Site 10 is the former “Atlas F” missile facility operated by the former Lincoln Air Force Base from 1960 to 1964, near York, Neb. Site 10 was deactivated and conveyed to a private individual in 1965.

The major structure at the site is the underground missile silo, 174 feet deep and 52 feet in diameter. Historic operations at the former missile silo have resulted in trichloroethylene contamination of soil and groundwater. TCE is the primary contaminant at the site, but dichloroethene is also present at some locations.

The new technology is being called “H2T”. The process involves injection of a gas mixture, primarily nitrogen, hydrogen and propane, for anaerobic, in-place bioremediation of chloroethenes in the vadose zone. Gas injection was initiated in June 2011 and will continue into January, at least.

The injected propane and hydrogen serve as a food source, electron donors, for soil microorganisms. The main purpose of the nitrogen is to displace oxygen, in order to try to drive conditions from aerobic to anaerobic in the pore space of the deep soils. If anaerobic conditions can be established and maintained, this should allow for growth of strains of naturally occurring, dechlorinating microorganisms such as *Dehalococcoides ethogenes*, also known as DHC. DHC are capable of using TCE and DCE for respiration, while using hydrogen as their food source.



Ahmad Seyedabbasi, of GSI Environmental Inc., performs soil gas sampling at one of the vadose zone monitoring point locations. (Photo by Charles Coyle)

Prior to the initiation of the H2T demonstration, a soil vapor extraction system had been installed at the site. The SVE system was operated from September 2008 until March 2011. The recovery rate of volatile organic compounds using the SVE system had been in decline, and appeared to have nearly leveled off, before the H2T demonstration was initiated.

The decision was made by GSI that they would attempt to treat a portion of the vadose zone on the east side of the missile silo, that had exhibited some of the highest levels of VOCs in soil. The VOCs appear to be hung up in the vadose zone and are also believed to be serving as a continuing source as they gradually leach downward into groundwater. The zone slated for the demonstration also happens to be very low permeability soil — an extremely challenging situation for in-place treatment.

In contrast to some of the other in-place treatment technologies for VOCs that are hung-up in deep, low-permeability soils; the H2T process appears to be a passive and low-cost approach. Other technologies that could be applied in this type of setting include in-place thermal treatment, and deep soil mixing with a large diameter auger.

However, aggressive technologies such as in-place thermal and deep soil mixing, are generally very expensive. At the conclusion of the study, soil boring samples will be collected and the soil gas monitoring data will be compiled. Then the data will be analyzed to determine whether or not the process was effective for cleaning up the TCE and DCE.

Editor's Note: Charles Coyle is an Environmental Engineer who works at the EM-CX in Omaha, Neb.

Fort Irwin project achieves ‘Gold’

By Brooks O. Hubbard, IV
Los Angeles District

In May, the National Training Center’s newest constructed facility received the U.S. Green Building Council Gold stamp of approval. The U.S. Army Corps of Engineers Los Angeles District held a plaque dedication ceremony for the 11th Armored Cavalry Regiment’s new Company Operations Facility at Fort Irwin Sept. 28.

The COF is the second project to be certified Leadership in Energy and Environmental Design Gold by the U.S. Green Building Council at Fort Irwin. Last January, the Child Development Center was certified as LEED Gold and was also the first CDC in the U.S. Army to achieve the prestigious rating.

Both projects achieved the certification with innovative construction practices. Interior building lighting and mechanical equipment are energy efficient. The windows, walls and roof are well insulated to efficiently cool and heat the building with minimal energy consumption.

“This project was initially required to meet the Corps of Engineers’ sustainability in construction standard of LEED Silver certification,” said Maj. Kenneth Shubert, deputy engineer of the Los Angeles District’s Southern California Engineer Resident Office.

“Because of the teamwork with our project contractor, Joint Venture RQ Construction and Richard Brady and Associates, they were able to design the facility to meet the requirements to achieve the LEED Gold certification.”

“This Gold certification is just one example of taking care of our environment,” said George Rogers, CEO and president of RQ Construction. “We’re gonna’ come and go and we need to leave this place a better place, a cleaner place and a sustainable place.”

The \$8.3 million, 22,000 square-foot facility broke ground in February 2010, providing needed jobs and an economic boost to the surrounding community. Designed in-house by RQ Construction, the project consists of two separate buildings, each comprised of an administrative module, a readiness module, gear storage lockers, and exterior covered hardstand with gated access. Organizational storage and organizational vehicle parking is included as well. It was completed within nine months and below the initial budget.

The project is expected to see more than a 26 percent



The 11th Armored Cavalry Regiment’s new Company Operations Facility at Fort Irwin, Calif., is designed to use less energy for heating and cooling. (Photo courtesy of RQ Construction)

reduction in energy cost and more than a 49 percent reduction in water use. Additionally, 95 percent of the construction waste was diverted from the landfill. These savings are factored based upon a baseline that the USGBC has recognized or adopted as a standard to measure against. These practices equate to savings to the fort and, ultimately, the taxpayer.

The Corps recently completed a renovation of the Garrison Headquarters at Fort Irwin, a project that is LEED Silver. Additionally, Los Angeles District is renovating building 107, converting barracks into the post In/Out processing center. The combined cost for these projects is \$9.2 million, which should spur job growth and stimulate the local economy.

Bulletins

Continued from page 11

PWTB 200-1-90, *Guidance on Native Plant Species Suitable for Ecological Restoration*, lists native plant species that can be used to restore military lands. The use of native species for restoration and other ecological and land management purposes provides numerous advantages contributing to ecological sustainability.

PWTB 200-1-91, *Management Guidance for Gopher Tortoise Relocation*, addresses concerns developed through the experience of state wildlife agencies, university studies in veterinary medicine, investigations performed by Army research organizations, and recommendations contained in the interagency Candidate Conservation Agreement for the eastern population of the gopher tortoise (*Gopherus polyphemus*) signed by the Army in 2009.

PWTB 200-1-92, *Guidance and Demonstration of Motion*



Emanuel Burgess helps construct a solar thermal roof at the Adelphi Laboratory Center, in Adelphi, Md. The bulletin “Ecological Guidance for Renewable Energy Projects” helps managers with renewable energy and energy conservation projects. (Photo by Dong Lafon)

Detection Systems for Monitoring Species of Concern, describes the use and effectiveness of using motion detection cameras to monitor animal species of concern on military installations and Corps of Engineers facilities in the United States. Natural resource managers can weigh the pros and cons of installing this non-invasive technology to survey these species.

PWTB 200-1-93, *Ecological Guidance for Renewable Energy Projects*, transmits information on factors affecting adoption of renewable technologies to replace or supplement current non-renewable energy sources. Considerations include current and potential future mission use and requirements, fiscal and other costs for energy infrastructures, and available technologies.

PWTB 200-1-94, *Army Water Conservation Collaboration Web Portal*, offers information for accessing and using the Water Management Toolbox. The website is www.water-management-toolbox.com.

PWTB 200-1-95, *Soil Composting for Explosives Remediation: Case Studies and Lessons Learned*, discusses advantages of using composting as a remediation technique at several Army cleanup sites having soils contaminated with explosives and nitroaromatic materials. Composting is a cost-effective alternative to incineration.

PWTB 200-1-96, *Initiating Regional Smart-Growth Strategies*, Facilitates collaboration between Army installation personal and non-military regional stakeholders to promote smart-growth initiatives. It can help in meeting the goals of Executive Order 13514 to satisfy mission requirements while maintaining a safe, healthy, and high-quality environment for current and future generations.

PWTB 200-1-97, *Evaluation of Check Dam Systems for Erosion and Sediment Control at Military Facilities*, transmits information and guidance for selecting and using check dam structures to control erosion on training lands. The PWTB will help land managers avoid product failure due to misapplication.

PWTB 200-1-98, *Guidance to Improve Archaeological Interpretation of Soils*, provides basic guidance for Army cultural resource managers and their consultants on how to recognize and interpret soils in archaeological contexts. Doing so helps in making informed and proper management decisions about land use.

PWTB 200-1-99, *Development and Evaluation of Compost Mulch Best management Practices for Erosion Control*, describes mulching with compost as a cost-effective method of erosion control on military lands. Composted byproducts can help control erosion and establish vegetation while reducing landfill waste and impacts to water quality.

PWTB 200-1-100, *Selection of Reinforced Vegetation and Hard Armoring Techniques*, serves as a primer to help Army personnel identify and understand the technologies and materials available, and the basic engineering concepts behind, steep slope stabilization and erosion control to support military activities.

PWTB 200-1-102, *Twenty Non-Native Invasive Plants Army Installation Land Managers Should Know About*, provides an overview of 20 invasive weed species that occur on Army installations in the continental United States. The PWTB presents information for each species as an illustrated fact sheet that covers plant biology, control/management, and impacts on the Army mission.



District officials gather for a project update at Broad Meadows in Quincy, Mass. The salt marsh was covered with dredge material decades before modern practices were adopted. (Photo by C.J. Allen)

District works to restore salt marsh

By Ann Marie R. Harvie
New England District

Work to transform Broad Meadows in Quincy, Mass., back to a thriving, ecologically rich salt marsh is progressing at an impressive rate.

The project, which will restore tidal flushing to the salt marsh system by lowering the surface elevation to pre-1930s levels, is ahead of schedule due in part to good weather and conditions. “The contractor has excavated 262,000 cubic yards of dredged material, which is 78 percent of the base contract volume,” said Wendy Gendron, U.S. Army Corps of Engineers New England District project manager.

The project will restore 36 acres of salt marsh, 24 acres of coastal grasslands and shrubs and 6 acres of wet meadows to the area. “Back in the 1930s and 1950s the Corps placed dredged material from Town River on top of the marsh,” said Gendron. “We want to return the marsh to its original elevation. To do that, we’re digging out the dredged material and creating placement mounds at the north end of the site, which the contractor will then seed with a native coastal grassland mix.”

Once the tidal flows are restored, it will eradicate an invasive plant called Phragmites, so that more ecologically friendly plants will grow. Waterfowl are already using the site and soon fish will return to the area for the first time in 80 years.

“Aside from the ecosystem restoration, we have an educational opportunity here with the adjacent Broad Mead-

ows School,” said Gendron. “The Broad Meadows Middle School Principal and science teacher are engaged in the project and incorporating it in the classroom. There will also be graveled walking paths for recreational enjoyment.”

The \$6 million project is being cost-shared by the federal government, 75 percent and the city of Quincy, 25 percent. Thanks to the help of stakeholders, more funding was found to increase the amount of acres available for restoration, in addition to what was covered in the base contract awarded.

“The Massachusetts Division of Ecological Restoration made us aware of possible funding from the Neponset River Watershed Association which provided \$150,000 for additional restoration,” said Gendron. “That equates to \$600,000 with matching funds.”

Relocating the excavated material from the former marsh to onsite placement mounds helped keep project costs down.

RC&D of Providence, R.I., is the contractor on the project. As of October, remaining work consists of installing drainage culverts, excavating 56,700 cubic yards of material from the added restoration area, and excavating the berm holding back the water. “The contractor will also seed the coastal grasslands and wet meadows next spring or fall and finish the walking paths,” added Gendron.

Massachusetts Congressman William Keating and New England District Commander Col. Charles Samaris visited the Broad Meadows site on Sept. 28 to tour the restoration site and show support for the project. Restoration work at Broad Meadows is scheduled to be completed in April 2013.

Data quality workshop set, call for abstracts

The DoD Environmental Data Quality Workgroup has announced the 9th annual DoD Environmental Monitoring & Data Quality Workshop will take place March 26 - 29 in San Diego. The event includes technical training sessions, technical presentations, a plenary session featuring distinguished speakers, a Q&A forum, component meetings, a poster session, an update on the DoD ELAP, and networking opportunities with members of the environmental community.

This workshop is open to all interested environmental professionals involved with DoD sites or projects including representatives from the DoD services, other federal agencies, state, local, and tribal governments, academia, and the private sector.

Possible training categories for this workshop include:

- DoD QSM v5, Vapor Intrusion
- 3rd Party Data Validation
- Incremental Sampling Methodology (ISM)
- DoD Environmental Laboratory Accreditation Program
- Update and Reports from the Accrediting Bodies
- Environmental Statistics

Abstracts for technical presentations and posters are

being solicited in the following areas:

- DoD Emerging Contaminants
- Indoor Air Vapor Intrusion
- Military Munitions Response Program
- Laboratory Analysis and Performance
- Data Management and Sharing
- Project Planning / Implementing Uniform Federal Policy for
- Quality Assurance Project Plans
- Detection Limit / Limit of Detection / Limit of Quantitation
- Field Sampling and Analysis
- Quality Systems Implementation
- Environmental Monitoring for Remedial Technologies
- Innovative Methods for Chemical Sensing and Monitoring Technology

All abstracts must be 1 page in length, in Microsoft Word format, and submitted to EMDQWorkshop@geologics.com no later than January 13, 2012. More information is available online at www.navylabs.navy.mil/DoDChemistmeeting.htm or www.regonline.com/2012EMDQWorkshop.

Everglades

Continued from page 8



A great egret fishes in Everglades National Park. (Photo by Rodney Cammauf, National Park Service)

restoration projects, and this planning effort will provide a roadmap for the next decade on how we restore the River of Grass in perpetuity," said Ken Salazar, secretary of the Interior.

"We are working to restore and protect not only a vital ecosystem, but also an important part of Florida's history and culture. An important part of our ongoing and future restoration efforts will be protecting water quality," said EPA Administrator Lisa P. Jackson. "The Everglades is an

important environmental treasure, a major tourism attraction and an economic driver, this new process moves us closer to a lasting restoration."

"The Everglades are a treasured part of Florida's landscape and the nation's natural heritage, and a vital economic engine for the state," said Nancy Sutley, chair of the White House Council on Environmental Quality. "This announcement builds on the Obama administration's unprecedented progress toward restoring the Everglades and recognizes that we cannot rest in our commitment to work in partnership with the State of Florida to bring this critical ecosystem back to health."

"The Central Everglades planning initiative provides Florida with an opportunity to build upon the significant investments we've already made toward protecting and preserving America's Everglades," said Rick Scott, governor of Florida. "It also reaffirms the state's commitment to working collaboratively with our federal partners to pursue a solution that sustains both our economy and our natural resources."

The planning process is being presented to the task force for the purpose of increasing public participation and stakeholder involvement. The South Florida Ecosystem Restoration Task Force will appoint advisory boards to provide stakeholder input and public engagement.

District Superfund team earns EPA honors

By Ann Marie R. Harvie
New England District

The New England District team responsible for successfully completing a Superfund cleanup recently received a top award from the U.S. Environmental Protection Agency.

The Hatheway and Patterson Superfund Cleanup Team received the 2011 National Notable Achievement Award for Superfund Reuse/Revitalization for Region 1 (New England).

“Your efforts reflect the highest levels of performance in support of the office of solid wastes and emergency response and the EPA’s most significant priorities,” said Mathy Stanislaus, EPA Region 1 Assistant Administrator. “Your accomplishment is one of the most noteworthy among your peers nationwide.”

The Hatheway and Patterson site was a 40-acre former wood treatment facility located in the towns of Mansfield and Foxborough, Mass. When the company went bankrupt in 1993, it left the soil on the site contaminated with chemicals that included dioxin, pentachlorophenol, arsenic and organic solvents.

EPA asked the district’s assistance in completing a remedial action that, through excavation, off-site disposal and on-site cap construction, would clean up the site. The \$20 million project consisted of excavating 31,000 cubic yards of material, demolishing the buildings on the site to clean up the materials beneath the structures, and disposing of the material by truck and rail.

Work began in August 2009 and was completed in September 2010. According to the EPA, through excellent management, the New England District team was able to save \$7 million from the initial design estimate.



A contractor works at the Hatheway & Patterson Superfund Site. (Courtesy photo)

According to the award citation, the team, which included New England District personnel, members of EPA Region 1 and the Commonwealth of Massachusetts, worked closely and tackled the day-to-day issues at the site while ensuring that the project remained on schedule and within budget. EPA also credited the diverse backgrounds of each member for allowing the team to tackle a range of issues from clean up level calculations to legal issues.

“Thank you for your dedication, exemplary performance and continued effort to protect human health and the environment,” said Stanislaus.

Sevenson Environmental of Niagara Falls, N.Y. served as contractor on the project. The New England District team members were Scott Acone, project manager, Chris Turek, project engineer, Dave Lubianez, chemist, John Kedzierski, structural engineer and Mike Penko - biologist/ecologist.

Regulatory

Continued from page 11

Coastal Water Research Project, said several factors have to be taken into account for in-lieu fee mitigation to be successful.

“Permittees must receive equitable credit to compensate for impacts, and the determinations must be consistent,” Stein said. “The process must be transparent and easy to communicate.”

Stein reiterated that watershed-based solutions are the

most effective.

Bradford viewed the training as a positive step in helping non-profits understand how the program works and assisting the Corps in its role.

“The training gave us the opportunity to hear from our existing ILF participants and to educate others who are potential creators of ILFs,” Bradford said. “Those are critical factors that will help us work through issues people have experienced.”



Meeting of the minds at M2S2

Maureen Sullivan, director, Environmental Management Office of the Deputy Under Secretary of Defense (Installations and Environment) speaks at the Military Munitions Support Services Workshop Dec. 6 in Huntsville, Ala. Sullivan and a host of officials and experts led presentations, classes and discussions for the three-day workshop that attracted more than 450 participants and covered topics that ranged from remediation of military munitions sites to geophysics and mitigation of risk to program updates. *(Photo by William S. Farrow)*

Ecologist nets Fulbright Specialists award

Bureau of Educational and Cultural Affairs
U.S. State Department

Dr. Paul DuBowy, U.S. Army Corps of Engineers, Mississippi Valley Division recently returned from a Fulbright Specialists project in Poland at the University of Łódź.

DuBowy taught Ecosystem Planning and Restoration in the United Nations Educational, Scientific and Cultural Organization-sponsored Erasmus Mundus Master of Science Programme in Ecohydrology as an Adjunct Professor in the Department of Applied Ecology. The Ecohydrology EMMSc is a unique international M.Sc. program focusing on a new vision for aquatic ecosystems restoration and long-term sustainability, developed within the International Hydrologic Program of UNESCO.

DuBowy is Environmental Program Manager for Mississippi Valley Division where he provides technical guidance, quality assurance and regional interface on ecosystem sustainability, endangered species and other environmental issues relating to river structures, levees and tributary improvements

which maintain navigation and provide flood control along approximately 1,200 miles of the lower and middle Mississippi River. Previously he taught, conducted research and guided graduate students as a professor at Purdue University, Texas A&M University and The University of Newcastle, Australia.

DuBowy is one of more than 400 U.S. faculty and professionals who traveled abroad this year through the Fulbright Specialists Program. The Fulbright Specialists Program, created in 2000 to complement the traditional Fulbright Scholar Program, provides short-term academic opportunities to prominent U.S. faculty and professionals to support curricular and faculty development and institutional planning at post secondary, academic institutions around the world.

The Ecohydrology EMMSc is supported by a consortium of Higher Education Institutions in this field. The Fulbright Program, America's flagship international educational exchange activity, is sponsored by the U.S. Department of State.

Green Notes:

Corps boosts alternative energy options

By **Dan Lafontaine**

U.S. Army Research, Development and Engineering Command

The U.S. Army is installing hydrogen fuel cells at three Aberdeen Proving Ground, Md., facilities as part of an initiative to boost alternative energy sources at military installations, officials announced Nov. 14.

The U.S. Army Corps of Engineers and U.S. Department of Energy are leading the fuel-cell project at 24 buildings across nine federal sites. Aberdeen Proving Ground will be the first to be completed, with the other installations scheduled for the next six months, said Nicholas Josefik, project manager with the USACE Engineer Research and Development Center.

APG's fuel cells are electro-chemical devices that use hydrogen as a fuel to produce backup electricity without having to combust the fuel, Josefik said.

"This project provides an opportunity to evaluate quiet, non-polluting fuel cells for a specific application -- backup power. These fuel cells can provide energy security and increase mission performance," Josefik said.

Fuel cells have several advantages for backup power compared with combustion generators, Josefik said.

- Fuel cells do not produce greenhouse gas emissions.
- Fuel cells are quieter than combustion generators when operating.
- Fuel cells perform self checks and send notices when service is required.

- Fuel cells can be remotely monitored to determine usage and fuel levels.
- Fuel cells are twice as efficient as combustion generators.
- When a grid outage occurs, fuel cells can continue providing power to the load with no loss of service; typically, combustion generators require time to start up and there will be a loss of power for equipment.
- Fuel cells automatically detect when grid power is restored and will shut down automatically.
- There is no need for human intervention for the fuel cells to provide emergency backup power.

The Corps is also using wind, solar, geothermal, biogas, biofuel and waste-to-energy to support Department of Defense green initiatives, Josefik said.

The DOE Fuel Cell Technologies Program funded most of the \$2.5 million project, which allows cost sharing with federal agencies to spur early markets for fuel cells. The fuel cells will operate for five years with an option for the host sites to fund an extension.

Other installations that will receive fuel cell units are Fort Bragg, N.C.; Fort Hood, Texas; the U.S. Military Academy at West Point, N.Y.; Picatinny Arsenal, N.J.; Cheyenne Mountain Air Force Base, Colo.; U.S. Marine Corps Air Ground Combat Center, Twentynine Palms, Calif.; the Ohio National Guard; and NASA's Ames Research Center at Moffett Field, Calif.

**DEPARTMENT OF THE ARMY
U.S. ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
P.O. BOX 1600
HUNTSVILLE, AL 35807-4301**

OFFICIAL BUSINESS