



US Army Corps
of Engineers®

The Corps. Environment

October 2006

Vol. 7, No. 4

Sergeant Woof gets his barking orders

By Amanda Blakley
U.S. Army Environmental Center

The U.S. Army has enhanced its Unexploded Ordnance Safety Education Campaign Program with the introduction of bomb safety expert Sgt. Woof, a friendly German shepherd. Sgt. Woof teaches children to “Recognize, Retreat and Report” any dangerous munitions they might encounter.

The “3Rs” is easy for children to remember and teaches them to recognize suspicious metal or wires they may come across outside as dangerous, retreat from it for their safety and report what they found to a trusted adult.

Sgt. Woof is featured in a series of products that parents and teachers can use to educate children about the dangers of UXO and promote safety awareness to children who may find remnants of bombs while playing or exploring.



The products currently include a coloring book, a series of bookmarks and magnets, and soon posters will be available.

Tad Davis, Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health), reaffirms the Army’s commitment to educating communities on this issue. “Given recent world events, which include increased military training and deployments, we believed it necessary to update and advertise our program,” Davis said. “We recognize that while we reach certain age groups with the old design, we need to make the site more appealing to a broader audience, to include younger children and provide additional information.”

For more information or to download Sgt. Woof products, visit the recently re-designed UXO Safety Education Campaign Web site at www.denix.osd.mil/uxosafety or contact the U.S. Army Environmental Center Hotline at 1-800-872-3845.

Corps graduates first class of UXO technicians

By Honolulu District Public Affairs

Fourteen Island of Hawaii residents recently graduated as level one unexploded ordnance technicians from the first-ever certified ordnance safety program class sponsored by the U.S. Army Corps of Engineers, Honolulu District, held at Hawaii Community College in Hilo.

“The course was presented through a validated Department of Defense facility jointly developed by our Waikoloa contractor, American Technology Inc. and the University of Tennessee,” said Charles F. Streck Jr., project manager for Waikoloa Formerly Used Defense Site.

All participants receive academic credit for the class

through the University of Tennessee.

“We had great cooperative partnering from the Hawaii Community College/University of Hawaii system, Parker Ranch, and Strategic Solutions Inc., a non-profit native Hawaiian advocacy group,” Streck said.

The training is paid for and sponsored through the Formerly Used Defense Sites program. It was presented as part of the institutional control program for the FUDS Former Waikoloa Maneuver Area project as a means to increase public awareness and sensitivity to the potential health and safety risks from unexploded ordnance on the Island of Hawaii and the Waikoloa-Waimea area specifically.

See UXO technicians page 14

Inside this issue:

Sgt. Woof gets his barking orders	1
Honolulu trains UXO technicians	1
Gopher Tortoise receives help	3
New York District restores marsh	4
Rookery Island habitat restored	5
Joint Corps team wins CTT award	6
United States teams up with Canada to study Lake Ontario	7
Sea munitions discussed at annual UXO Forum	8
Corps puts new marine technology to the test	9
Corps' two-dimensional modeling helps engineers	10
Green River Lake and Dam interim plan benefits ecosystem	11
Corps restores wetlands along Dallas Floodway Extension	12
Shore protection projects benefit from regional approach	13
Corps develops national environmental contracting process	14
America's youth learn about brownfields	15
Environmental and Natural Resources Conference	16
EPA announces top partners in green power partnership	16

Seattle District adopts a sustainable policy

By Patricia Graesser
Seattle District

Joyce Rolstad in Engineering Records Section installed a rechargeable battery charging station that anyone in the Seattle District office can use. A credit card holder down the hall now shops for office supplies in the Department of Defense's E-Mall by searching for products by Environmental Attribute Code.

These are just two examples of how Seattle District employees are taking actions that support the district's sustainability policy and objectives.

The district published the "Sustainability in Agency Projects and Business Practices" policy memo at the end of July. It clarifies the district's long term goals, performance objectives and measures for behaving consistently with the Corps' environmental operating principles. The policy also supports the overarching goal of meeting the needs of the present without compromising the needs of future generations — sustainability. It complements the sixth action, "focus on sustainability," in the Corps' recently announced 12 Actions for Change.

"Sustainability is an ethic — a background basis for everything we do," said Jeff Laufle, Environmental Operating Principles/Sustainability team member. And actions that support sustainability support other district goals as well, such as reducing overhead costs and meeting customer needs.

"Our customers — the installations, civil works sponsors — have sustainability goals. We're working to meet our own and to support theirs in the work we do," said Brenda Bachman, team member.

In fact, the team worked with Fort Lewis, which already had in place goals and an environmental management system that served as a good example for the district.

The EMS is the system framework that supports the policy. It makes good business sense because it captures individual components of a system that already exists but that are not yet connected.

The Seattle District policy is the product of a hard working team of individuals who sought a way to make the operating principles tangible and real for each employee in his or her daily work. The EOP/Sustainability team first asked

the commander to focus a column in the district magazine on the topic, but the district commander determined that the need would be better served through a policy

'Sustainability is an ethic — a background basis for everything we do.'
— Jeff Laufle

memo.

The policy lays out nine goals that the team developed, including specific targets such as supporting the sustainability goals of our customers, creating zero waste and providing regenerative design and construction products.

Ultimately, the policy asks each supervisor to incorporate in their employees' performance objectives an item that supports the district's sustainability goals, and asks that contracts be written in support of the goals.

The first step toward implementing the policy is to provide employees an orientation. The team is still working out the details, but their objective is to have each employee in the Seattle District looking at his or her individual job and considering how the environmental operating principles apply to what he or she does.

Can he or she specify a different type of material in a contract? Can he or she carpool to a meeting or hold a teleconference?

Even before the policy was signed, the team established a Web page on the district's Intranet site where they began providing "green tips."

The team also holds regular meetings and has offered informational sessions for the work force.

"We can, each of us, make a difference," Bachman said.



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.

Lt. Gen. Carl A. Strock

Chief of Engineers
Publisher

Suzanne Fournier

Chief of Public Affairs

Stacey Hirata

Executive Editor

Candice Walters

Managing Editor

Andrea Takash

Editor

Submissions

The Corps Environment welcomes submissions. Please send your articles, photos, events, letters or questions via e-mail to: andrea.m.takash2@usace.army.mil

Deadline for submissions:

Feb. 15 (April issue)

May 15 (July issue)

Aug. 15 (October issue)

Nov. 15 (January issue)

All submissions are subject to editing.

The Corps Environment is

available on the World Wide

Web at: <http://>

[hq.environmental.usace.army.mil/](http://hq.environmental.usace.army.mil/Corps_Environment/current.htm)

Corps_Environment/

current.htm

Gopher tortoise receives needed help

By Dana Finney
*U.S. Army Engineer Research
and Development Center —
Construction Engineering
Research Laboratory*

The Department of Defense is leading an effort to unite other stakeholder agencies in helping the gopher tortoise achieve and maintain healthy populations in the southeastern United States. Designated a “species at risk,” this reptile has already been listed as “threatened” in the western part of its range and would pose a serious threat to maneuver training if it declines further to the point of listing in others.

“The concept is that, instead of waiting until a species goes so far downhill to be listed as threatened or endangered, why not try to intervene at an earlier stage to prevent them from reaching that point,” said Dr. Harold Balbach, researcher at the Engineer Research and Development Center’s Construction Engineering Research Laboratory (ERDC-CERL).

The gopher tortoise’s preferred habitat is mainly on sandy soils in relatively open pine and mixed pine-hardwood stands. Through-

out the years, land uses such as urbanization, row crop agriculture and plantation forestry have transformed the remaining upland habitat into dense mixed hardwood forests that no longer support the species. It now often locates its burrows in

all involved state Departments of Natural Resources or equivalent, The Nature Conservancy, Partners in Amphibian and Reptile Conservation, the Gopher Tortoise Council and the Conservation Fund. The MOA allows any public or

private party within the gopher tortoise’s range to join.

ERDC-CERL has validated research to fill knowledge gaps with regard to gopher tortoise biology and behavior. Each party will support the MOA’s goals with those activities that best fit with their interests and resources.

“It’s clear in both policy and actions that it is no longer adequate to simply do a good, or even exemplary, job of managing a species totally within one property’s boundary,” Balbach said. “Federal and other land managers must strive to partner with adjacent landowners to ‘get ahead’ of the species-at-risk problem. Only joint efforts to manage these species widely across their range will be able to reverse downward population trends.”

The “strategy for better management of at-risk species: a proposed inter-agency initiative,” will soon be available at www.cecer.army.mil.



The gopher tortoise builds burrows in areas that have been cleared, such as agricultural and training areas. (Courtesy photo)

cleared areas. In the case of military installations, these areas may include roadsides, firing points, ranges and margins of airstrips.

The Interagency Memorandum of Agreement (MOA) is an initiative that grew from the March 2005 Partners Along the Fall-line conference. Its goal is to “create an environment throughout the natural range of the gopher tortoise for its population to thrive. Use this success as a model for the management of other species at risk.”

In addition to DoD, participants who developed the MOA are the Southern Regional Environmental Office, U.S. Fish and Wildlife Service, U.S. Forest Service,

New York District embarks on marsh restoration project

By Carolyn Vadino
New York District

In the skyline of one of the most populated urban areas of the world, adjacent to one of the nation's busiest airports, Elders Point Island in Jamaica Bay Gateway National Park, King's County, N.Y., is the focus of an impressive marsh island restoration project.

The U.S. Army Corps of Engineers New York District started the first phase of construction on a \$13 million wetland restoration project in July.

This project is the first full-scale project to address the marsh island recession issue in Jamaica Bay. All material used during the construction phase will be biodegradable to enhance the environmental conditions of the national park.

Overall, it is part of an ongoing \$27 million environmental mitigation program in the Hudson Raritan Estuary that is being implemented in conjunction with the \$1.6 billion New York and New Jersey Harbor Deepening Project. More than 1.5 million plants will be planted throughout the region and more than 143 acres of wetlands will be restored.

"Working with our partners, this project is the first step toward the long and complex journey of addressing the salt marsh loss within Jamaica Bay that was brought to the attention of the federal government by local stakeholders," said Col. Richard J. Polo Jr., former New York District commander. "It also shows our commitment to balancing the needs of the environment with that of deepening the Port of New York and New Jersey. During the first phase, more than \$13 million of construction activity to restore the environment at this site will provide 70 acres of wetlands for our harbor estuary."

Jamaica Bay is one of the largest areas of open space in New York City and contributes significantly to the overall health of the New York and New Jersey Harbor Estuary. The marsh islands ecosystem is an integral part of Jamaica Bay, providing valuable habitat for fish species as well as a nursery for juvenile, migratory birds.

"This project in Jamaica Bay is another example of our aggressive efforts to be good stewards of the estuary's marsh islands, natural shorelines and bays that are integral to the Port of New York and New Jersey," said Rick Larrabee, director of the Port Department, Port Authority of New York and New Jersey.

"The recognition that these valuable salt marsh habitats are disappearing was a rallying cry for all stakeholders concerned about the environmental quality of Jamaica Bay," said Lou Oliva, acting regional director. "We are encouraged by the progress made in this initial rebuilding effort."

"The National Park Service is very excited and encour-



An employee of Native Terrain, Inc. hand plants *Spartina alterniflora* (saltmarsh cordgrass) on Elders Island in Jamaica Bay. (Photo by Carolyn Vadino)

aged to be part of this interagency partnership to restore salt marsh islands in Jamaica Bay," said Barry Sullivan, general superintendent of Gateway National Recreation Area, National Park Service.

Approximately 70 acres of marsh will be restored on Elders Point with a net increase of 61 acres. Originally one island comprised of approximately 132 acres, the loss of marsh in the center portion severed the two ends, resulting in two separate islands connected by mudflat. The restoration plan for Elders East and Elders West includes restoring the existing vegetated areas and the sheltered and exposed mudflats by placing fill material up to an elevation that is suitable for low marsh growth. To do so, the Corps is pumping more than 270,000 cubic yards of sand that was dredged from various channels in the harbor.

Additionally, 700,000 plants will be hand planted on Elders East and some 200,000 replanted on Elders West. Plants include *Spartina alterniflora* (saltmarsh cordgrass), *Spartina patens* (salt hay) and *Distichis spicata* (spike grass).

Through its Plant Materials Program (PMP), the U.S. Department of Agriculture Natural Resources Conservation Service has overseen the collection and germination of the seeds, which began with seed collection in the fall of 2005. The PMP is conserving the genetic plant resources of the location by using seed collected near the restoration site. The plants were grown and transported from the Plant Materials Centers in Cape May, N.J.; Beltsville, Md.; Alderson, W.Va.; and East Lansing, Mich.

The Corps awarded the contract for the Elders (East) to Galvin Brothers of Great Neck, N.Y., with other restoration being performed by the state of New York and New York/New Jersey Harbor Estuary Program.

Rookery Island habitat restored in Nueces Bay

By Felicity Dodson
Galveston District

The Galveston District was instrumental in permitting and ensuring the success of the Nueces Bay Island Habitat Restoration Project, a project designed by the Coastal Bend Bays and Estuaries Program.

The group proposed to construct a 4-acre artificial island in Nueces Bay to re-establish and protect rookery habitat for nesting colonial water birds, provide additional hard substrate to benefit aquatic life and provide erosion protection to other islands in the bay.

For approximately 100 years, Nueces Bay was the site of extensive shell dredging. It has been estimated that approximately 24 million cubic yards of shell were removed from the

bay. The loss of reef habitat and associated islands reduced available habitat and important rookery islands, which support nesting birds such as great blue heron, great egrets, snowy egrets, roseate spoonbills, reddish egrets and black skimmers.

In 1980, there were approximately 24 islands available for breeding shorebirds. In 2000, approximately eight islands remained. Bird populations in Nueces Bay experienced a corresponding decline in numbers since the early 1980s.

The restoration project proposed to place approximately 50,000 cubic yards of material from an onshore borrow source. The shoreline of the island is a rock revetment and berm system designed to prevent erosion and provide habitat for wading birds.



Various coastal birds use newly created nesting habitat. (Photo courtesy of Coastal Bend Bays and Estuaries Program)

Early surveys of the new island have recorded more than 350 black skimmers, 60 gull-billed terns and two least terns nesting on the restored island.

This year biologists are planning to manage and enhance the island by planting native species of plants that should attract wading birds.

Wilmington District helps preserve cultural resource

By Hank Heusinkveld
Wilmington District

Owned since June 2003 by the National Park Service, the



Dune-like embankments will help reduce erosion that came close to harming the keeper's quarters and that destroyed another building. (Photo by Hank Heusinkveld)

Cape Lookout Lighthouse, keeper's quarters and summer kitchen have been threatened by erosion from storms and high tides.

A wood shed near the lighthouse was destroyed in 2003 by Hurricane Isabel, which prompted the National Park Service (NPS) to seek protection of the lighthouse and remaining structures. The NPS asked for and is receiving assistance from the U.S. Army Corps of Engineers, Wilmington District.

"It's a state icon, maybe to a lesser degree than the Cape Hatteras Lighthouse, but still it's a major draw," said Mitch Hall, project manager. "The draw is that it's a beacon of the night for mariners. And in older days, it was one of the main structures people saw out there living out in Shackelford Banks and Harkers Island. Everybody in that area associates their homes with

that lighthouse. It's a major cultural resource and icon."

The Corps placed approximately 60,000 cubic yards of beach quality material along 2,600 linear feet of the estuarine shoreline of South Core Banks, Cape Lookout National Seashore to act as a buffer to slow erosion. The project was completed at the end of March before the arrival of nesting seabirds. The National Park Service funded the project, Hall said.

The Cape Lookout Lighthouse and existing structures are listed in the National Register of Historic Places under the name "Cape Lookout Light Station."

Built by the Corps in 1859 with help from cadets of the U.S. Military Academy at West Point, it replaced an earlier lighthouse built in 1812. The lighthouse ascends to a height of 169 feet above sea level.

United States teams up with Canada to study Lake Ontario

By Deborah Lee
Great Lakes and Ohio River Division

Have you ever wondered what it takes to manage the water levels and flows in the Lake Ontario-St. Lawrence River System while benefiting both the environment and the economy?

If you have, wonder no more.

On May 31, a study board released to the International Joint Commission (IJC) the results of a highly complex five-year, \$20 million study to answer that question. The commission, created by the 1909 Boundary Waters Treaty between the United States and Canada, is the binational body with the mandate to manage the Great Lakes system. The study, aptly named the Lake Ontario-St. Lawrence River Study, was undertaken to review the regulation of Lake Ontario levels and outflows in part to consider environmental interests and potential impacts of climate change.

The study aimed for a comprehensive approach to balancing environmental interests and five other major interests: coastal, commercial navigation, hydropower, municipal and industrial water supply, and recreational boating. Teams of Canadian and U.S. engineers, scientists and economists worked together to perform exhaustive studies, modeling and economic analyses for these interests. For example, more than 400 ecological performance indicators were developed and programmed in the integrated ecological response model.

The study produced and evaluated many new regulation plans that maximized various study guidelines, but three distinctive plans emerged for consideration by the IJC. The results of the plans, generically named A+, B+ and D+, are available to the public online at www.losl.org. The commission will decide if any option should

replace the present management plan for Lake Ontario levels and flows late this year.

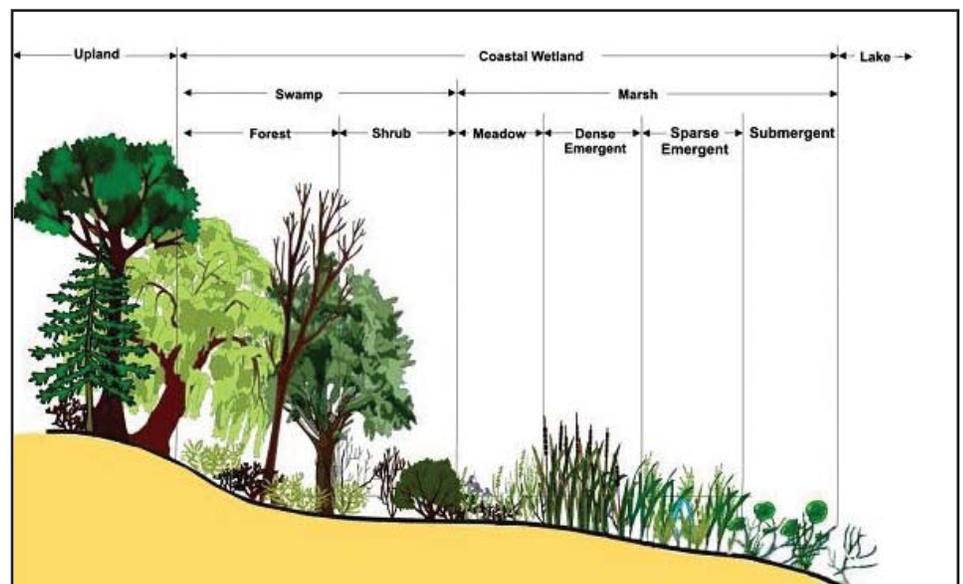
Of the recommended plans, Plan B+ improved environmental benefits relative to the other plans by design. Plan B+ returns the levels and flows in the lake and river to more natural seasonal and year-to-year cycles of highs and lows. The more natural cycle produces healthier shoreline vegetation and less rapid changes in levels and flows that benefit many shore and aquatic species. The plan consistently produced environmental benefits.

This is the first time a Great Lakes regulation plan has been specifically designed to yield environmental benefits. U.S. Army Corps of Engineer employees Deborah Lee of the Great Lakes and Ohio River Division, Paul Yu of the Buffalo District and Bill Werrick (retired) and Mark Lorie of the Institute of Water Resources were instrumental in its development along with Canadian colleagues Wendy Leger, David Fay, Yin Fan and Mike Shantz of Environment Canada. Dr. Eugene Stakhiv, also of the Corps' Institute of Water Resources, served as the U.S. study

director.

While Plan B+ produces some economic losses to certain interests, it would return net economic benefits when viewed across all economic interests. For example, while lake recreational boaters would experience some economic losses during low level years, upper river boaters prefer the plan's slower autumn drawdown that would extend the boating season in the majority of years, and lower river boaters would experience additional benefits over the current system.

Development of the recommended plans used a new planning method called "Shared Vision Modeling," developed at the Institute for Water Resources at Fort Belvoir, Va. This method integrates the environmental, scientific and economic research into performance indicators that determined the plans' impacts. The regulation plans were modified to achieve desirable performance and balance impacts geographically and across interests. The development of the plans are in line with all seven elements of the USACE Environmental Operating Principles and Civil Works Strategic Plan.



This graphic features wetland plant community zones affected by lake regulation. (Courtesy of the Lake Ontario-St. Lawrence River System study final report)

Joint Corps team brings home the gold

By Kim Gillespie
Huntsville Engineering and Support Center

Working as a team pays off, and the winner of this year's U.S. Army Corps of Engineers Environmental Design Team of the Year award is proof.

The Army Closed, Transferred and Transferring (CTT) range inventory team, a multi-district/center team, facilitated the development of a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)-focused inventory process that resulted in Army CTT range inventory reports for more than 400 military installations.

The Corps team met the military munitions response program's goal of completing the Preliminary Assessment (PA) four months early. The Corps' CTT range inventory team completed the PA at an average cost of approximately \$22,000 per installation, compared to the other inventory approaches that cost \$100,000-\$500,000.

"We did what we had to do — met timelines and suspenses, resolved complicated issues and still managed to do it all for an acceptable cost," said Ann Wood, Baltimore District's project manager for CTT.

The Corps' CTT range inventory team included, in addition to Baltimore District, Omaha and Sacramento Districts as the regional executors of the inventory effort. Malcolm Pirnie, Inc. supported Baltimore District's east region work at active, Reserve and National Guard Bureau sites, while E2M, Inc. and Tech Law Inc. (now TLI Solutions) supported Omaha and Sacramento districts for work on sites in the central and west regions, respectively.

Huntsville Center provided the quality assurance support, while Rock Island and St. Louis districts provided document support.

Wood was also quick to note that Corps headquarters was the key to the "total team" approach and performed the Formerly Used Defense Site inventory portion.

"Headquarters' involvement encouraged creation of a seamless, national team and allowed Baltimore to take the primary lead for customer communication," Wood noted. She also credited the local districts that provided installation-specific information on past projects and real estate, and the contractors (URS, Inc. and Tetra Tech), which preformed the base realignment and closure inventory portion, for making the team and project successful.

The project was also a partnership with the Army Environmental Center (AEC), which was tasked to conduct the Army CTT range inventory within the United States and its territories. The amended Defense Environmental Restoration Program (DERP) requires the armed services to inventory all ranges and sites containing unexploded ordnance,



Representatives from TLI Solutions, URS, Malcolm Pirnie, Inc., Tetra Tech and E2M, Inc., accept their award at the UXO Forum. (Photo by Andrea Takash)

discarded military munitions and/or munitions constituents by the end of 2007.

"The project was complicated just due to dealing with all the different regions of the country, and we needed the support of the districts in order to successfully complete the project on time," Wood said. The team immediately identified a number of challenges, most importantly, the large number of installations involved and the absence of standards. A unified and consistent approach to meet CERCLA requirements was developed.

The team's CERCLA approach included historical research and data collection; installation visits; installation and site maps; risk assessment code analysis for response prioritization; DERP eligibility determiners; and inventory reports and uploads of results in the Army range inventory database.

Dave Morrow, Baltimore District's Hazardous, Toxic and Radioactive Waste Branch chief, encouraged Wood to submit the Army CTT range inventory team for the Corps' Environmental Design Team of the Year award.

"Developing a strong partnership between AEC and the Corps' Military Munitions Design Centers has postured the Army for future success in implementing this program," Morrow said.

Brad McCowan, Huntsville Center's project manager for the Military Munitions Center of Expertise, also emphasized how well the team represented the Corps to the Army.

"The CTT team's performance was not based on the individuals involved, but was more about the expertise each organization (districts and center) provided and how well the organizations collaborated as one Corps team," McCowan said.

New technologies highlighted

Sea munitions was the newest topic

Articles by **Andrea Takash**
Huntsville Engineering and Support Center

More than 950 people traveled from 16 different countries to Las Vegas to learn about the new technologies and projects related to unexploded ordnance, countermines and ranges.

The annual UXO/Countermine/Range Forum included sessions on a variety of topics such as munitions response and wide area assessments.

The removal of munitions disposed of at sea was the newest topic addressed this year. Tad Davis, Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health), highlighted the challenges around this new mission, indicating that sea disposed munitions is an important area for the Department of Defense.

Davis said that the Army and its sister services currently are researching locations in U.S. waters used by DoD for sea disposal of munitions.

Several speakers also addressed the various issues involved in locating sea disposed munitions.

Robert Williams, project manager for the U.S. Army Corps of Engineers Baltimore District, spoke about the Army's investigation and response to

munitions that were found in clamshells along the Mid-Atlantic coast. Munitions were recovered from private property in Delaware, Maryland and New Jersey.

"In July 2004, an Explosive Ordnance Disposal team responded to a report of a 75-millimeter artillery projectile discovered at a private residence in Delaware. An investigation determined the projectile had been delivered to the property in a load of recently purchased clamshells," Williams said. "Delaware residents routinely purchase clamshells for use as compacted surfaces such as driveways, parking areas and landscaping.

"Further investigation revealed that over several years EOD units had recovered numerous munitions and explosives of concern from clamshell driveways. Baltimore District was



Baltimore District investigated munitions found in driveways. (Courtesy photo)

tasked to investigate the source of the munitions, determine the extent of the problem, recommend a course of action and work closely with the

Corps puts new marine

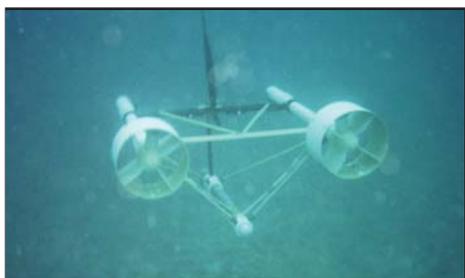
Using state-of-the-art marine geophysics, the U.S. Army Corps of Engineers, Huntsville Center, found the Tube-launched, Optically-tracked, Wireless command-link guided missile (TOW) that landed in Indian Creek on Redstone Arsenal's Test Area 1.

Since the creek has low transparency and a depth of 3 to 12 feet, the Redstone Technical Test Center and Close Combat Weapons Project Office couldn't find the missile just using divers. Staff called upon Huntsville Center for its expertise in finding military munitions.

"After we launched the Radio Frequency link TOW, we watched the video and saw a little blip that looked like water," said Jon Clark, senior test engineer with SAIC, contract company for the Close Combat Weapons Project Office. "We searched the path and this creek is the only water on the line. The missile was inert; therefore, we knew that there was no energetics involved in the search."

After a few phone calls and an on-site meeting, Huntsville Center started the search.

"We have been working with new technology to locate munitions in water. This was a great opportunity to use this equipment to help Redstone find the TOW," said Andy



This underwater magnetometer was used at the Culebra Formerly Used Defense Site in Puerto Rico. (Courtesy photo)



Dr. John Potter and Roger Y. Engineering and Support Center investigated the missile. (Photos by Andrea Takash)

d at UXO Forum put to test



clamshell drive-

regulators and officials,” he said.

Baltimore District determined that the discarded military munitions were removed from the ocean floor during harvesting for surf clams. So far, the district has investigated 135 properties and recovered 352 munitions and explosives of concern (MEC).

With a focus on sea disposed munitions growing in interest, several presenters spoke about underwater technologies applicable to munitions

response.

The U.S. Army Aberdeen Test Center at Aberdeen Proving Ground, Md., developed the only shallow water test site of its kind to determine the current capabilities of UXO detection systems designed to operate in shallow water, said Gary Rowe, a senior test director with the U.S. Army Aberdeen Test Center.

This fresh water site is 7 acres at 8 feet of water depth and contains five different test areas. The center has hosted six different companies with six different systems. They tested different magnetometer arrays using both surface and subsurface mounting platforms. Two electromagnetic technologies were evaluated on bottom riding platforms.

“We determined that the bottom riding electromagnetometers have the

highest probability of detection. The probability of detection using magnetometers increases as the sensor gets closer to the bottom,” Rowe said.

Presenters also spoke about other tests of marine geophysics to detect sea disposed munitions. The Huntsville Engineering and Support Center held three sea trials to demonstrate current technologies in underwater geophysics in detecting MEC in shallow water.

“We learned marine magnetometers detect simulated projectiles 4 inches in diameter at heights of 2 meters above the item and detected simulated 8-inch projectiles at heights of 4 meters,” said Andy Schwartz, a senior geophysicist with the Huntsville Engineering and Support Center.

Next year’s forum will take place in August in Orlando, Fla.

technology to the test



Young, Huntsville Center, examine a

Schwartz, a senior geophysicist with Huntsville Center.

The Corps team first used an electromagnetic induction coil, built for the Department of Defense’s Environmental Security Technology Certification Program specifically for underwater work, in the shallow part of the creek. Then, the team used a marine magnetometer, provided by the Corps’ Engineering Research and Development Center at Vicksburg, Miss., to search the deeper parts.

“We switched to the magnetometer because it is better in deeper water and transmits data faster,” said Dr. John Potter, chief of Huntsville Center’s Ordnance and Explosives Directorate. “It is also less likely to get caught up on wood snags like the coil.”

For both the induction coil and magnetometer, the team connected the equipment to a boat and used a Global

Positioning System.

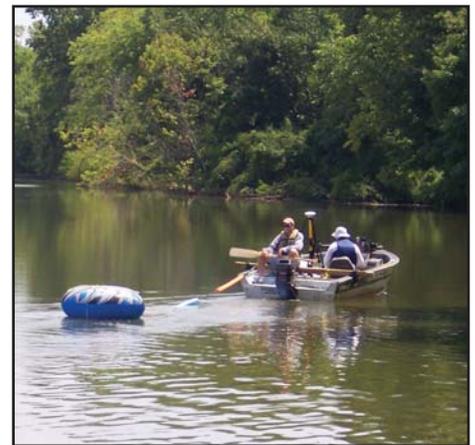
“There is no one piece of technology that fits all circumstances. We try to be flexible and adaptable to different situations,” said Roger Young, innovative technology manager for Huntsville Center’s Military Munitions Response Program.

The Corps team found the missile using the magnetometer and a diver.

“It was on the far side of the creek in about 5 feet of water,” Schwartz said.

“We figure it was about 2 feet off the line Jon Clark had predicted it would be on, which is amazing considering he was working from a firing point about 19,000 feet away.”

This TOW missile is only the fourth of its kind to be fired; so everyone involved said they are happy with the find.



Andy Schwartz and Brian Spear, Huntsville Engineering and Support Center, search for the missile using marine geophysics.

2-D modeling helps engineers find right fix

By Jeff Hawk
Sacramento District

Engineers with the U.S. Army Corps of Engineers Sacramento District are using two-dimensional (2-D) hydraulic modeling to help design the right fix for critical erosion sites along the Sacramento River.

The work is part of the Sacramento River Bank Protection Project (Sac Bank), an ongoing effort to protect the levees and to identify, prioritize and repair the river's eroding banks.

The models are "telling us the mechanics of what's happening to cause the erosion," said Dan Tibbitts, a hydraulic engineer with the Corps. The technology is not new, but it is newly applied to the district's bank protection design efforts.

"Before, we didn't apply this tool to refine the design," Tibbitts said. Now engineers are using 2-D modeling to evaluate what can be done to improve hydraulic performance, convey water flows more efficiently and minimize erosion.

Most erosion occurs due to the water's velocity or how much energy weighs against the bank, said Don Twiss, hydraulic engineer for the Sac Bank Project. River bed scour along the bank protection sites typically affects the toe of the levee and can be measured from 15 to 20 feet deep during large flood events, Twiss said. The forces that cause the erosion are often difficult to detect, but hydraulic models are showing engineers what is happening below the river's surface.

To collect good data for input into hydraulic models, the Corps developed a topographic map for the Sacramento River system from Collinsville to Red Bluff as part of the Sacramento/San Joaquin River Comprehensive Study.

"With this information, we can develop 2-D hydraulic models and



Two-dimensional technology is helping engineers determine what's causing erosion along the Sacramento River. (Courtesy of Sacramento District)

look at what's happening along any stretch of the Sacramento River," Tibbitts said. That allows engineers to address individual erosion sites with a custom-fit, more environmentally friendly design.

"We can make better decisions on how high the velocities are at the erosion sites, so we may only need to rock a half or two-thirds of the way up the bank," said Tom Smith, regional manager for Ayres Associates, Sacramento. Ayres is the lead consulting firm for the Sac Bank erosion site designs.

In the past, engineers had a one-size-fits-all, bulletproof design that called for placing rock along the entire slope of the bank, Smith said. "We were progressively armoring the entire river, little by little."

Using 2-D modeling, engineers can be more precise about where they place the rock and where they can use other materials, like brush mattresses and natural grasses. "It allows us to leave more natural banks, where before we would have rocked the entire area,"

Smith said.

While 2-D technology helps engineers design the right fix, it also helps them test the design against the model. Engineers input the finished design into the 2-D model to see how flowing water will impact the project area as well as other areas along the river.

The Corps and the California Department of Water Resources are now working to repair the most critical Sacramento River erosion sites before the next flood season arrives in November. With the topographic data available, engineers are able to model a 2.5-mile stretch of the Sacramento River in about a day, Tibbitts said.

Although the site specific design analysis costs more than a basic analysis, the reduced construction costs and the environmental and performance benefits make the expense worth every penny, Smith said. "We're doing a better job of minimizing armor while still providing the public safety element," he said.

Green River Lake and Dam interim plan benefits ecosystem

By John Hickey
Hydrologic Engineering Center, and
Andy Warner
The Nature Conservancy

In 2002, the Corps implemented an interim plan designed with The Nature Conservancy to create more natural regimes of flow and stream temperature by changing the ways that water is released from Green River Dam in Kentucky. In May, the interim plan was approved and officially integrated into the water management policies of Louisville District.

“The interim plan has shown that operation of Green River Dam can be changed in ways that improve ecosystems while continuing to provide recreation benefits and flood damage reduction to downstream communities. Adopting the plan into our operational policies is a tribute to its success and to the ongoing partnership between the Corps and the Conservancy,” said Col. Ray Midkiff, Louisville District commander.

The Conservancy first became interested in the Green River because of its biodiversity. With more than 60 species of mussels, 152 species of fish, a host of endemic species and multiple cave systems that are connected to the river, Green River has one of the richest aquatic collections in the nation. Many of these species have been negatively affected by human influences in the basin, including 12 globally rare fish species and seven endangered, and 21 imperiled mussel species.

After four years of altered water management, scientists are finding that many mussel species have reproduced during the interim operations and are encouraged by this promise



Dr. Richie Kessler, The Nature Conservancy, shows a bottlebrush crayfish to Lisa Morales, Corps headquarters, and John Paul Woodley, Jr., Assistant Secretary of the Army for Civil Works, during a visit to Green River. (Photo by Jane Rubl of Louisville District)

for added recovery.

Collaboration on the Green River began with a meeting between the Conservancy and Louisville District. In the meeting, the Conservancy proposed that the health of downstream ecosystems might be improved by changing release patterns from Green River Dam.

“Initially, we were impressed with how receptive the Corps was to discussing their operations and considering potential improvements. And now, after working together to develop, implement and incorporate the new operations, it is very gratifying to see the changes in stream flow and temperature starting to make real differences in populations of Green River mussels and fishes,” said Dr. Richie Kessler, Green River Basin coordinator for The Nature Conservancy.

Much of the credit for refining the interim plan is given to the Water Management and Environmental Resource teams in Louisville District.

Today, the teams continue to model and monitor the effects of the Green River Dam reoperation.

“Reoperation of Green River Dam has shown that there are opportunities to make water management more ecologically sustainable without sacrificing other important uses,” said Bill Byron, Louisville District Water Management team leader. “The other three reservoirs in Green River Basin, especially Nolin Reservoir with its connection to a colony of endangered bats, are also good candidates for changes like those approved for Green River Dam.”

“One of the most exciting aspects of this work is that its benefits are not limited to the Green River,” said Mike Turner, chief of the Environmental Resources Section in Louisville District. “This effort was also the spark for the Sustainable Rivers Project, where teams of Corps and The Conservancy staff are now working to achieve more ecologically sustainable flows for eight other river systems.”

The Sustainable Rivers Project (SRP) is an ongoing nationwide partnership between the Corps and The Nature Conservancy to improve the health and life of rivers by changing the operations of Corps dams, while maintaining or enhancing project benefits. The SRP also includes the West, Ashuelot, Roanoke, Savannah, Bill Williams, Big Cypress, Willamette, and the White, Black and Little Red River Systems.

The Allegheny and Purgatoire Rivers are currently under consideration for inclusion.

More information about the Sustainable Rivers Project is available online at www.nature.org/initiatives/freshwater/partnership/.

The SRP is a good example of the first action, “employ integrated, comprehensive and systems-based approach,” and the sixth action, “focus on sustainability,” in the Corps’ 12 Actions for Change.

Corps restores wetlands along Dallas Floodway Extension

By Gary Dick
U.S. Army Engineer Research and
Development Center, and
Billy Colbert and Gene Rice
Fort Worth District

As part of the Dallas Floodway Extension, Fort Worth District and the city of Dallas are using an innovative approach to return floodplain value to the Trinity River, while improving flood damage reduction.

To improve and restore wetland habitat within the boundaries of overbank flood-management swales and within south Dallas, the district will build seven wetland cells.

Native plant establishment in both temporary and permanently flooded zones were built into each wetland cell with the help of the U.S. Army Engineer Research and Development Center, Lewisville Aquatic Ecosystem Research Facility (LAERF) in Lewisville, Texas. The LAERF has

participated in development of numerous strategies for both managing nuisance aquatic plants and establishing desirable native plants in Corps systems, with emphasis on habitat enhancement.

Constructed cells will hold normal pools at a maximum 7 foot depth with native grassland buffers about twice the area of each cell. The district is planting native aquatic plants in zones where the water level can be managed — 1 to 3 feet deep. This provides ideal depths for initial plantings and growth. Once plant colonies begin growing at these depths, implementing moist soil management practices will increase plant community diversity and overall productivity of the system.

Although the floodplain around the wetland cells normally floods multiple times per year, the overbank events are usually of short duration. The area is also prone to prolonged droughts, making it beneficial to have pumps installed to maintain water at levels

desirable for sustaining plants.

Water levels, other than during floods, are manageable in the wetland cells. Flood events do move sediments, and silt deposits can influence survival of aquatic plants, especially during the early stages. Most plant species selected for this project are able to withstand and outgrow sediment build up.

Grazing by herbivores has been a problem in aquatic plant establishment efforts conducted by LAERF, with common carp, semi-aquatic turtles, beavers and others all proven capable of eating the plants or altering water quality by increasing turbidity. Plant establishment requires installation of cages to protect plants from herbivores.

Rather than using standard formulas or specifications for protection against herbivores, the team is managing herbivores specific to the cell as the need arises. Once well established, both unprotected and protected plants will spread by seed, overwhelming herbivores and resulting in desirable coverage of aquatic vegetation. This adaptive management approach will increase success of the project while at the same time hold costs to original projections.

Despite several flood events and the development of herbivore populations, mainly turtles, most species have been able to outgrow sediment deposition. Many species, especially emergent plants, do not appear to require protection for initial establishment, with efforts now shifting to planting those species at higher densities rather using resources to build cages.

Although submersed species continue to require initial protection from turtles, they have shown high potential for spread once established. To ensure the highest possible diversity for the ecosystem, the team will continue to plant them in cages.

A year has passed since completion of the first cell, Cell D, and the adaptive management strategy is working.



Lynde Williams, from LAERF, prepares to relocate turtles from a trap at Cell D along the Dallas Floodway Extension to allow newly planted aquatic plants to become established. (Photo by Gene Rice)

Regional approach pays off for shore protection

By Amanda Ellison
Jacksonville District

Sunshine, white sand and blue water are all trademarks of the beautiful state of Florida. This very atmosphere is what draws thousands to the state on a daily basis. With this growth comes the need for protection from hurricanes and other forces that threaten to erode the Florida coastline.

The U.S. Army Corps of Engineers plays a pivotal role in ensuring that the pride of the state remains in top condition and is able to withstand the forces of wind, wave and water.

To ensure that Florida's beaches are protected, dredging and placement of sand along the coast is critical. However, when these operations occur, certain threatened or endangered species or their habitats can be disrupted. To minimize these impacts, a biological assessment must be conducted in accordance with the Endangered Species Act. This information is prepared to assess the impact on listed species or designated critical habitat and submitted to the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

There are several protected plant and animal species in Florida that must be considered under the biological assessment, including the Piping Plover, five species of sea turtles, several species of beach mice and the manatee. Every time a major construction project is considered, a biological assessment must be conducted.

In addition to the normal reoccurring placement of sand on Florida's beaches, the four hurricanes that hit the Florida coast in 2004 resulted in 16 emergency beach nourishment projects. Approximately 83.4 miles of shoreline was restored consisting of approximately 18.5 million cubic yards of sand placed on the beaches. Each project required the



The coastline at Fort Pierce Beach eroded during the 2004 hurricane season. (Courtesy photo)

completion of a biological opinion.

In order to streamline the process and improve efficiency, an effort is under way to finalize a regional biological assessment for sand placement for the entire coast of Florida. It is a joint effort between Jacksonville, Mobile and Wilmington districts, three field offices of the U.S. Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. Once the assessment is finalized, it will be sent to the U.S. Fish and Wildlife Service, where the Corps expects a regional biological opinion addressing approximately 17 shore protection projects, 25 navigation projects and numerous regulatory permit actions.

A biological opinion states the findings of the U.S. Fish and Wildlife Service as to whether a federal action will jeopardize the existence of a threatened or endangered species; or result in the destruction or adverse modification of a critical habitat. The opinion will also contain an "Incidental Take Statement" with measures for that action that would minimize its impacts and allow the activity to proceed.

"While this is an ambitious undertaking, the ultimate goal of this effort is to have a regional biological opinion. This would greatly reduce the need for individual activity/project specific biological opinions," said Kenneth Dugger, chief of Jacksonville District's coastal section in the Planning Division, Environmental Branch.

The regional biological opinion will allow dredging and shore protection projects to move forward faster and with lower cost, while complying with the Endangered Species Act.

About 328 miles of sandy beaches are designated as critically eroded, a condition where previous or continuing erosion threatens private or public development and infrastructure, or significant cultural or environmental resources.



The dredge, located offshore, pumps sand onto the Fort Pierce coastline. (Courtesy photo)

Corps develops national environmental contracting process

By Kelly Koontz
Corps Headquarters

The Environmental Community of Practice established a Contract Acquisition Working Group (CAWG) to develop a national environmental acquisition strategy, recommend environmental acquisition policy and procedure changes, and serve as a forum for program managers and contracting officers to discuss environmental contracting issues across districts and divisions.

The members of the CAWG consist of multiple Corps districts and divisions, the Army Environmental Center, the Army Chief of Staff for Installation Management and the Environmental Protection Agency. The team meets quarterly.

By sharing contract capacity across

districts and divisions, CAWG's efforts have facilitated a savings of \$1.5 million in reduced procurement costs.

During one of the CAWG meetings, Shauna Martinez from Sacramento District notified the group that Sacramento District was in the process of preparing the acquisition plan for a new Environmental Remediation Services contract. Tulsa and Omaha districts also were beginning the process to procure the same type of contract. By working together, the three districts increased the capacity on the contract.

Through working together and sharing resources, it is estimated that this effort saved the Corps approximately \$500,000 in contract acquisition costs and saved the industry the cost of preparing contract proposals for the two additional solicitations.

Currently, the CAWG is working on several initiatives. One initiative is to use Northwestern Division's five-year environmental acquisition strategy as a template for other divisions to follow for out-year planning of environmental workload and contracting needs. Once the CAWG has the five-year acquisition strategy for the divisions, it will develop a national environmental acquisition strategy for the Corps.

The intent of the National Acquisition Strategy is to approach environmental contracting from a corporate perspective and eliminate redundancies in contract acquisitions.

The CAWG is promoting communication across district and division boundaries and developing strategies that will lead to cost and time savings for the Corps, our customers and the environmental services industry.

UXO technicians

Continued from page 1

The six-week certified unexploded ordnance safety program results in students becoming level one unexploded ordnance technicians. Participants were encouraged to disseminate all they had learned during the class with their families and friends in order to heighten public awareness and safety.

Before the current course was offered, training was only available at two certified ordnance safety programs located at Texas A&M University and the University of Tennessee. Because of the cost and time investment required, few Hawaii residents who expressed an interest in the UXO course had been able to attend. All graduates, if they choose, receive a certificate qualifying them to function as a UXO technician I for unexploded ordnance projects.

The certification qualifies a person to work on UXO projects but provides no management-decision

making authority. The class instruction program was oriented toward satisfying the personal interest of local community members whether they wanted to use the education for vocational purposes or not. If people choose to continue this work as a vocation, they can build up experience and expertise for advancement to UXO technician job categories II and III, which affords management decision-making functions.

"Local training provided Hawaii residents an alternative from the associated travel costs and family separation and a somewhat expensive \$15,000, six-week training at Texas A&M University or the University of Tennessee," said Clayton Sugimoto from Wil-Chee Associates, the primary contractor for organizing the training. "We were able to work with our local partners, American Technology Inc. and the University of Tennessee in order to hold the training entirely on the Big Island, so lessening effects of absence on those participants with



Fourteen Hawaii residents graduated from Honolulu District's ordnance safety program class. (Courtesy photo)

families and other urgent demands."

The first class of UXO technicians is representative of a diverse community including members of a variety of local ethnic communities including a large number of native Hawaiians. Ages spanned from 19 to over 60. Graduates included a former fire chief from Waikoloa, a representative from the Hawaii County Police Department and Fire Department, homemakers and a small business owner.

America's youth learn about brownfields

By John Romano
Philadelphia District
Daniel Somerville
Purdue University, and
Sol Marie Alfonso Jones
Sustainable Long Island

A few decades ago, programs that promoted youth involvement in recycling through education and public service projects were on the upswing.

Within 10 years, the phrase “reduce, reuse and recycle” was part of the American vernacular. And by the mid 1990s, communities across the country had recycling programs.

The success of these programs can be attributed in large part to the fact that yesterday's youth grew up learning that recycling sustains the environment.

Today, urban school districts are moving away from programs that teach new technology and community-based outreach to focus on traditional curricula and the raising of test scores. At the same time, school leaders in other areas are realizing there is value in getting kids excited about engaging and combating problems in their communities.

New generations are now learning about “brownfields,” parcels of land potentially contaminated by hazardous substances or pollutants. Through educational programs that focus on youth involvement, young people are learning how to assess and redevelop local brownfields.

Our Town, a kindergarten to 12th-grade education program at Purdue University sponsored by a U.S. Environmental Protection Agency grant, engages students in the science and economics of brownfields in their community. Many of the activities are Web-based, enabling students to apply geographic information systems and critical analysis to real problems.

The William Penn Charter School in Philadelphia is one of the 12 schools participating in the program. Penn students benefit through their work and interaction with community professionals working in environmental, business, engineering and planning fields.

“Every year, the U.S. History curriculum looks for ways to bring the year-long course into the present,” said Sarah Sharp, a teacher at William Penn Charter School. “Through this program we have integrated the industrial revolution with Philadelphia's history and the history of the brownfield in our own backyard.”

Penn Charter School focused its version of the brownfield project on the Atwater Kent Manufacturing Company site in northwest Philadelphia. Atwater Kent was the largest manufacturer of radios in the world by 1925. This property was contaminated and abandoned for more than 50 years.



Joining representatives of William Penn Charter School behind a student mural of Philadelphia and the brownfield project are (left to right) Philadelphia District's Sterling Johnson and John Romano; Nancy Porter, the Corps' liaison to EPA; and Dan Wilson, Philadelphia District. (Photo by Sharon Sexton, William Penn Charter School)

“This program allows students to connect with their communities' past. It involves environmental science, history and social studies,” said Dan Summerville of Purdue University and head of the brownfields project.

The program also integrates federal policymaking with community service. It allows students to get a firsthand look at how federal legislation works.

“It is programs like this that truly prepares students for the real world,” said Sterling Johnson, a strategic planner in Philadelphia District's Interagency and International Services Program Branch. “These students are getting opportunities that were never available in the past, and they are learning so much while helping others. It really is a win-win situation.”

“The students had a very short period of time to prepare their research and presentations. I was impressed with how thorough the information was and how enthusiastic the students were in their presentations — and with their idea to create a mural in tribute to their appreciation of the project and the history of their area,” said Nancy Porter, the Corps' liaison to EPA's Brownfields Program who is serving as the project officer for the *Our Town* Cooperative Agreement with Purdue University.

Editors note: *Brownfields 2006, the yearly national Brownfields Convention, is set for Nov. 13 through 15 at the Boston Convention Center. The U.S. Army Corps of Engineers will participate in the conference, highlighting a number of Corps activities in the Brownfields arena. For more information on the conference, check out <http://www.brownfields2006.org/en/index.aspx>.*

Corps plans Environmental and Natural Resources Conference

Mark your calendar for the U.S. Army Corps of Engineers Environmental and Natural Resources Conference Oct. 29-Nov. 2, 2007, at the Crowne Plaza Hotel in San Antonio, Texas!

The conference is open to district, division and project/facility leaders who work in the environmental and natural resources management fields.

“It will allow members of these communities to share and showcase leading initiatives in applied technologies that support areas such as budget, GIS, natural resource inventories and watershed management. Participants will have an excellent opportunity at this conference to influence the direction of

these two USACE communities of practice through their active participation,” said Janice Smith, of the Natural Resources Management Community of Practice.

With a working theme of “Listening and Learning to Sustain Our Mission and Reinforce Our Environmental Operating Principles,” the conference will foster learning, sharing, and reinforcing key concepts.

A draft conference agenda has been developed to include sub-community of practice meetings, plenary and breakout sessions, workshops and hands-on training activities. Six concurrent sessions are planned.

A preliminary list of topics and

workshops has been identified, with a “Call for Topics” posted on the Environmental Community of Practice Web site: <https://eko.usace.army.mil/usacecop/environmental/>, and the Natural Resources Management Gateway Web site: <http://corpslakes.usace.army.mil>. A dedicated Web site with agenda, registration, hotel and exhibiting information is planned.

“We’re going to have a great conference, where you can learn all the latest on environmental and natural resources happenings, as well as how the two communities can share common ground,” said Ken Gregg, team leader for the Environmental Community of Practice.

EPA releases top partners in the green power partnership

1. U.S. Air Force
2. Whole Foods Market
3. Johnson & Johnson
4. Environmental Protection Agency
5. U.S. Department of Energy
6. Starbucks
7. HSBC North America
8. University of Pennsylvania
9. The World Bank Group
10. IBM Corporation



This list represents partners whose annual green power purchase is the largest and whose green power purchase has been completed. Their actions are helping drive the development of new renewable energy sources for electricity generation, according to the EPA’s Web site. The complete list of top 25 partners is available at www.epa.gov.

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

OFFICIAL BUSINESS