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The Corps Environment

October 2007 Vol. 8, No. 4

Chief beats 'environmental drum'

By Candice Walters
Headquarters, USACE

If you listen closely to Lt. Gen. Robert L. "Van" Van Antwerp talk about the U.S. Army Corps of Engineers and its role in taking care of the environment, you'll hear a beating drum.

"We have to continue to beat the drum that the environment is an area that we're continuing to grow in and getting better in," said the 52nd Chief of Engineers.

"The environment is a major mission for the Corps," Van Antwerp said, a mission that touches everything the Corps does, from restoring environmentally damaged lands, regulating waterways and managing natural resources to cleaning up sites contaminated from past military activities.

"I believe that our Corps team is including the environment as one of our mission elements when it comes to scouting project sites and developing the projects' functions. When a project manager begins to look at a project, either that person or another project team member has the environment on the screen and is taking it into consideration.

The Chief said that when it comes to taking care of the environment, the Corps is responsible to the people of the United States.

"Over the years, if you looked at the Corps, it seemed like our mission was development and reclamation," he said.

"Now it's restoration.

Lt. Gen. Robert L. Van Antwerp, Chief of Engineers *(Photo by FT Eyre)*

See Chief page 2

Two centers of expertise come together

By Monique Farmer
Omaha District

In the past, customers with hazardous or radioactive waste cleanup questions contacted one Corps of Engineers organization; customers with military munitions cleanup issues contacted another Corps organization.

To gain efficiencies, Headquarters, U.S. Army Corps of Engineers, decided to combine the two organizations into one mandatory center of expertise — the Environmental and Munitions Center of Expertise (EM CX).

The decision aligns the Hazardous, Toxic and Radioactive Waste Center of Expertise (HTRW CX) out of Omaha, Neb., with the U.S. Army Engineering and Support Center, Huntsville's Military Munitions Center of Expertise (MM CX) in Alabama to address both types of cleanup issues.

The organizational move will not require HTRW CX employees who work in Omaha to relocate to Huntsville Center.

The new center of expertise is expected to achieve full operating capability no later than Nov. 11.

"Overall, I think this is a very good move," said Carol Youkey, chief of the MM CX, who helped develop the proposed realignment study. "The timing is right, and it fits into the perspective of being as efficient and lean as we can be and still get the mission accomplished."

Youkey said the realignment proposal team explored a number of factors before green-lighting the organizational move. Factors considered included similarity of mission, the possibility for increasing efficiency due to overlapping roles, Huntsville's history of housing several CXs, the potential for streamlining personnel processes and realignment costs.

This is not the first time headquarters has considered approving the organizational move.

"Throughout the years, Department of Army environmental staff

See New CX page 5

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Chief

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"We're trying to get the environment back to doing the purpose it was designed to do, such as filtering out contaminants, cleaning and purifying. That's part of our philosophy. We have to look at it as a systemic ecosystem."

Restoration also is a keystone to sustainability, achieving balance in harmony with nature, he said. The Corps needs to focus its efforts on "sustainable development, marrying up environment with economics, incorporating risks."

While the Army uses "sustainability" in a broad sense that incorporates mission, environment and community, the Chief likes to start with the notion of sustainable resources. "We have been consuming our natural resources to the point that we now have to sustain them where they are right now. I would like to think that our mission is not to just sustain them at the current levels, but to restore our natural resources to a point where they're better than they are now. If we can move forward in that restoration process, then later we can sustain them at a higher level. That's what we need to do."

Two tools that can help are the Environmental Operating Principles (EOPs) and one that's being developed, a proposed National Center for Ecosystem Restoration that Dr. Ed Theriot, chief of the Environmental Community of Practice and lead for the Ecosystem Restoration mission area, has been tapped to stand up. "This is something that has been the focus of the Environmental Advisory Board for some time," Van Antwerp said.

As for the EOPs, the Chief said he believes "more and more people are using them. They are part of our culture and ethic that have to become part of our psyche. We're continuing to beat the drum on them. I've read them and subscribe to them, but that said, the proof is in the execution. We're seeing it more and more, but we're not where we want to be in incorporating the EOPs. We are definitely moving in the right direction, though."

One of the first policy memorandums that Van Antwerp signed dealt with Implementing Sustainability, http://www.usace.army.mil/publications/cpm/cpm04.pdf

"Moving in the right direction" for Van Antwerp means that the Corps is shedding the negative impressions many people had of USACE when it came to taking care of the environment. "Ultimately I think we're going to be called the good stewards of the environment," he said.

"As you look at our history, a lot of our projects were mandated. But now, you look at our recreation facilities, you'll see they are good habitats for a number of species.

"We've looked at finding beneficial uses for dredged materials. We've used them to rebuild islands for different habitats. Our mitigation projects have proven to be a definite move in the right direction. We're always on the lookout for alternatives, new approaches that can benefit the environment while also meeting our water resources needs," he said.

A good example of the Corps balancing water resources needs with the environment can be found in this summer's droughts.

"We have had to be very astute as to how we manage our projects under a drought condition because in addition to ensuring that people have the water they need, we have to look at the aquatic habitats as well," he said. "Some of these habitats are dependent upon certain water levels so we have to make sure we're not impacting them."

With the focus on sustainability and being a good environmental steward, is the Corps going "green"?

"I like to think that the Corps is green and balanced, that one eye is always on the environment," Van Antwerp said. And to help ensure that eye is correctly focused, the Chief is challenging the Corps team to move USACE from being good stewards of the environment to great ones.

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The Corps Environment is available on the World Wide Web at: https://ekopowered.usace.army.mil/ecop/corps_environment/.

FUDS program transforms from 22 to 13 districts

By Candice Walters
Headquarters, USACE

The folks working with the Formerly Used Defense Sites (FUDS) program at Headquarters, U.S. Army Corps of Engineers had heard it all before.

"Management and execution of the FUDS program is too costly." "We need more money for project execution." "Having 22 districts manage and run a $250 million-a-year program causes redundancy." "It's time for a change."

Guess what? The "powers that be" agreed. The result — a new leaner and "transformed" FUDS program, fully taking root Oct. 1.

"FUDS transformation was a long time in the making," said Bob Lubbert, chief of the Corps Environmental Support Team and head of the FUDS program.

"We've been moving in that direction for a long time, implementing a number of initiatives that have improved our processes and performance," he said, citing the FUDS Program Policy Engineer Regulation 200-3-1, the FUDS Program Management Plan, and initiation of Statewide Management Action Plans and the FUDS Information Improvement Plan.

The ground work had been laid, and the time was right for FUDS transformation, a concept that Lubbert said he's very happy to see implemented because it will focus USACE expertise and has a potential cost avoidance of $4.5 million the first year.

Beginning Oct. 1, the first day of fiscal year 2008, the FUDS offices will look different. Although there still will be seven regional business centers (RBCs) responsible for FUDS work, there will only be 13 FUDS districts, instead of 22 geographic districts, with project management responsibilities.

Some of these districts also will have program management responsibilities, while in some cases, that responsibility will reside within the RBC, depending on how each RBC decides to conduct business.

FUDS geographic districts may be members of project delivery teams, as requested by the Project Managers.

"The FUDS geographic districts play very important

See FUDS page 11

Kerry Singler, the UXO team leader for Parsons, gives a demonstration using survey equipment that locates conventional weapons or chemical warfare materiel at Camp Sibert, a formerly used defense site near Gadsden, Ala. *(Photo by Andrea Takash)*

More stories available online

The Internet exclusive stories for the October issue are: *District responds to Katrina relief effort with unique arborist skills; Corps manages unprecedented asbestos demolition after Katrina; Two thousand trees benefit fish habitat at Corps lake; Corps and county partner on Rillito River Project; and Sustainable rating tool supports reuse decisions for historic buildings.*

These articles are located at https://ekopowered.usace.army.mil/ecop/corps_environment/.

Keep those great environmental stories coming!

Corps, Army, tribes tackle Herculean cleanup

Native history, military munitions share former depot

By Mike W. Petersen
South Pacific Division

The landscape of New Mexico's high desert can be breathtaking. In any direction, the potential for an Ansel Adams masterpiece exists. But despite the beauty of Fort Wingate, N.M., there are no visitors aside from a select few.

Fort Wingate, a former Army Ammunition Depot, closed in 1995 under the first round of Base Realignment and Closure. From World War I until its closing, it served as both a storage and disposal site for military munitions. A large amount of munitions were disposed of at the depot, mainly through methods that, though easy at the time, create challenges today.

The standard method of disposal at Fort Wingate was to burn or detonate piles of munitions. The resulting discharges threw shrapnel and munitions over a wide area. With years of rains and snow melt, some remnants have been scattered beyond the original disposal area, said David "Doc" Holladay, an ordnance and explosives safety expert from the U.S. Army Corps of Engineers Albuquerque District.

While the inert shrapnel doesn't create a direct hazard to human life, it hints at the presence of unexploded ordnance. After World War II, the depot started disposing of cluster bombs. Each bomb is packed with smaller bombs meant to disperse over a target area. Often some of these "bomblets" do not detonate. Some sources estimate that 5-15 percent of "dud" bomblets remain unexploded.

Fort Wingate also contains archaeological sites from three Native American tribes. The site is historically tribal land belonging to the Navajo and Zuni tribes. Ancient Anasazi sites also have been found on the installation.

"The archaeological sites are part of a continuing process. It's likely we'll never even find them all," said Mark Patterson, environmental coordinator for the Department of the Army's Fort Wingate Depot Activity.

Doc Holladay, an ordnance and explosives safety expert from the U.S. Army Corps of Engineers Albuquerque District, looks at broken pieces of World War II-era munitions at Fort Wingate. *(Photo by Mike W. Petersen)*

The tribes have been integral to the process of cleaning up Fort Wingate, Patterson said. Navajo and Zuni archaeologists work alongside the Army and USACE to ensure that no damage is done to cultural artifacts.

Tribal involvement has also been pivotal assuring the safety in the cleanup area. The tribes and the Bureau of Indian Affairs requested fencing along the Navajo border of the depot, Patterson said. As a result, three miles of six-foot chain link fence with barbed wire was erected in less than two months along the border of the depot to reduce the risk of accidental interaction with unexploded ordnance UXO.

"There have been no known incidents with UXO, and considering what was done here, that's a remarkable safety record," Patterson said.

Even with a projected finish date of 2020, Patterson said only so much can be achieved in the cleanup effort. The undeterminable amount of munitions across the 22,000-acre installation may prevent a 100 percent cleanup, but with collaborative efforts, a large portion of Fort Wingate can be returned to the tribes.

"The large majority of the land will be cleaned up to residential standards," Patterson said. "We'll be returning 7,000 acres to the tribes, but some land will have to remain for passive use only for cultural sites."

Another 6,000 acres of Fort Wingate will remain with the military for test launches to White Sands Missile Range, N.M.

For Patterson, the team has made the Herculean effort seem a little easier.

"I've worked with quite a few people at the Corps, and they are really focused on the team effort," he said. "Sometimes, under difficult circumstances, they've worked hard to move the project forward."

With a diverse team working the diverse issues on the depot, progress continues toward a time when people can walk on Fort Wingate without the aid of Holladay's explosives expertise.

Lean Six Sigma helps revamp SI program

By Chris Gardner
U.S. Army Engineering and Support Center, Huntsville

Leaders throughout the U.S. Army Corps of Engineers are optimistic about changes to the Site Inspection program meant to streamline the process.

The Office of the Secretary of Defense tasked the Corps with completing about 765 Site Inspections (SI) at formerly used defense sites (FUDS) by fiscal year 2010. With the old methods in place, the Corps was not on track to meet that deadline.

An SI is one of the Corps' earliest contacts with a FUDS property and is an important step in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process to determine if remedial actions are needed.

"The team conducting the VSA went into the event with little knowledge of Lean Six Sigma but with a sincere desire to make the process better."

— Lee Campbell

With 2010 approaching, SI program team knew something had to change. Betty Neff, a quality manager at the U.S. Army Engineering and Support Center, Huntsville, asked Headquarters USACE to help with a Value Stream Analysis (VSA) of the SI approval process. The VSA involves two to four days of taking Lean Six Sigma principles for improving efficiency and applying them to a single process or program.

"The team conducting the VSA went into the event with little knowledge of Lean Six Sigma but with a sincere desire to make the process better," said Lee Campbell, a Lean Six Sigma black belt from Headquarters USACE. "The results demonstrate the power of Lean Six Sigma concepts when combined with dedicated people."

The most time consuming part of the SI program was the review and approval of draft SI reports, which explain further actions, if any, are necessary at a FUDS property.

The goal of the VSA was to speed up the review process, without diminishing the quality of the end-product.

The biggest change is the role that the Environmental and Munitions Center of Expertise (EM CX) plays in the draft SI report review process. The EM CX will now provide more oversight to the overall SI review process, rather than dealing in depth with every draft SI report.

In the old process, the EM CX was required to review every draft SI report at the same time as concurrent reviews by local district offices and regional design centers.

"This change in process gives the districts and the design centers more review responsibility," said Betina Johnson, the SI program manager for the Corps. "That has always been the intent, and I think they're ready now."

The change will also put pressure on the contractors producing the original reports to do a better job from the start, said John Sikes, a Quality Assurance specialist from the EM CX Military Munitions Division.

The EM CX will still review a sampling of SIs, as well as all SIs that recommend no further Department of Defense action be taken at a site or that removal action is necessary.

Tim Bohannon, the independent technical review lead for the SI program, said he is confident about meeting the 2010 goal with the new process in place.

"The changes will decrease the number of steps involved in the SI report review process by 35 percent, the number of persons involved by 48 percent and the number of approvals required by 61 percent," Bohannon said.

New CX

Continued from page 1

members have expressed some confusion regarding the MM CX and HTRW CX and have not totally understood why there are separate centers of expertise performing very similar functions," said David Jaros, former acting chief of the HTRW CX.

"This move makes sense from a mission perspective," Jaros said. "It allows us to build on the strengths of both organizations. We have similar capabilities, similar strengths. As a combined organization, we're enhancing those, and there will likely be more opportunities for us to expand our collective workloads."

Implementation of the realignment plan will occur in phases.

"This really embraces the 'one door to the Corps' approach," Jaros said. "The biggest benefit our customers will see is that they will be able to get support on any environmental cleanup issue from one USACE organization. If they have a munitions question, we can handle that. If they have HTRW questions, we can handle those too."

With this reorganization, districts are reminded that the P2 resource codes for the HTRW and MM CX will change November 11. Contact your CX point of contact for the new resource codes or go to http://www.environmental.usace.army.mil/whats_new.htm.

New technology improves river management

By John Hickey
***Hydrologic Engineering Center*,**
Mary Karen Scullion
***Portland District*, and**
Andy Warner
T*he Nature Conservancy*

The U.S. Army Corps of Engineers and The Nature Conservancy have joined forces to develop the Hydrologic Engineering Center's Regime Prescription Tool (HEC RPT), a software program to help teams reach agreements on managing the flow regime of a river.

The idea for this software was conceived during a Sustainable Rivers Project workshop, where scientists worked together to formulate a set of ecosystem flow recommendations — the flows needed to sustain or restore ecosystems connected to the river.

Throughout the workshop, hydrographs were created, discarded and morphed. Facilitators lacked an easy way to present the recommendations. It was noted that a tool capable of rapidly displaying, adjusting and documenting hydrographs would make the formulation process easier. If the tool was also capable of accessing and plotting historical hydrologic data to guide the scientists, then the product as well as the process would be improved.

HEC RPT is designed to meet these needs by facilitating entry, display and documentation of flow recommendations and justifications in real-time public settings. It is a visualization tool and not intended to perform the quantitative analyses already performed by other software packages. Instead, HEC RPT seeks to complement those packages by making it easier to create flow times series that other software can import and use in analyses.

The Willamette River is the latest Sustainable Rivers site to complete an ecosystem flows workshop and the first to use HEC RPT to help formulate flow recommendations.

"Before the workshop, I was concerned that the RPT might be a distraction for the scientists as they worked to define flows for the ecosystem, but I came away a firm believer in its value as a decision-support tool. Its ability to quickly and simply display a huge amount of hydrologic data is very powerful," said Matt Rea, the Willamette Basin coordinator from the Corps' Portland District.

During the workshop, more than 40 scientists from government agencies, universities and non-government organizations worked to identify critical ecosystem flows for key species and ecological processes on the middle and coast forks of the Willamette River.

Two groups formed to define the river flows needed to keep their aspect of the ecosystem healthy and functioning. The process began by overlaying the life stages of key species with the natural flow patterns of the Willamette. Connections between the species and flows were identified and incorporated into the flow recommendations.

HEC RPT was used to build and display the flow recommendations electronically, in real-time. When a flow component was proposed, its magnitude, duration and timing were entered into text fields. Plots in HEC RPT update automatically with new entries, which allowed the groups to review and revise their recommendations.

A strength of HEC RPT is its ability to display and navigate hydrologic data sets. For the Willamette, scientists imported data to HEC RPT that showed how the river has been managed since construction of the dams, as well as how the river would have flowed if there were no reservoirs.

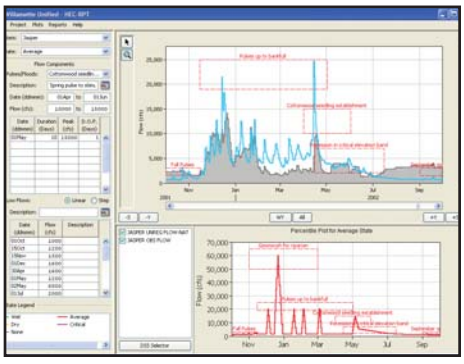
A final step in the workshop was to unify the recommendations of the separate groups.

HEC RPT helped with this process through its merging feature, which allowed the recommendations to be brought into the same project and plotted together.

"RPT helped us to develop, visualize and evaluate complex flow regimes. It also made it easy to document the scientific basis of our flow recommendations, which has had continued benefits as we progress from recommendations to implementation for the middle and coast forks," said Dr. Leslie Bach, the director of Freshwater Programs for the Oregon chapter of The Nature Conservancy.

Development of HEC RPT was sponsored by the Hydrologic Engineering Center, Portland District and The Nature Conservancy in support of the Sustainable Rivers Project.

Sustainable Rivers is an ongoing nationwide partnership between the Corps and The Nature Conservancy to improve the rivers by changing the operations of Corps dams, while maintaining or enhancing project benefits.



This screen shot of a hydrograph shows the main interface of HEC RPT with results from the Willamette River flows workshop.

Biology, engineering merge for N.C. ecosystem restoration

By Hank Heusinkveld
Wilmington District

It's only 10 acres in size, but it's making a huge mark in ecosystem restoration in North Carolina.

Coastal wetlands that used to exist helped protect the entrance at Wanchese Harbor in Wanchese, N.C., from erosion, but had whittled down over the years to a thin strip of vegetation that was incapable of stopping further erosion.

It also ceased being a sanctuary for small creatures. It threatened not only the harbor entrance that leads fishermen to open ocean, but the North Carolina Seafood Industrial Park as well. Then the Beneficial Use of Dredged Material Interagency Work Group stepped in to offer a solution — create a project that would give the U.S. Army Corps of Engineers Wilmington District biologists and engineers an opportunity to use dredged material from a nearby navigation channel to restore the estuarine habitat and protect the remaining marsh.

"The Wanchese Harbor is an important harbor area," said Chuck Wilson, a Wilmington District marine biologist. "We used dredged material from the navigation channel to try and stop erosion and bring back the ecological balance that was once there."

Wilson said the project is working. Plants are thriving, and a variety of waterfowl are beginning to investigate the man-made area. However, the initial stages of the project were a guessing game of trying to build an ecosystem from scratch.

"The most difficult thing we had to work with was the different sediments that eventually got into the basin," said Bill Dennis, a coastal engineer from Wilmington District. "There was a whole range of course sands, silt and clay. To come up with an elevation with all of that mix was difficult. It took some effort on the construction side because we needed something stable that we could smooth into the contours."

From an engineering standpoint, Dennis said the key was to find the right elevation so plants would take root and be able to exist in the fluctuating tide. From the biological side, Wilson said a combination of hard science and intuition gave them insight into how the plants would grow with the unpredictable fluctuation of the tide. The growth of recently planted marsh grasses was a good indicator of the health of the ecosystem and a good sign that the elevations grade and planting operations were correct.

Bill Skaradek, from the Cape May facility, shows Chuck Wilson (left) and Maj. Rob Hilliard, project manager, samples of recently planted marsh grasses that are thriving at the site. *(Photo by Bill Dennis)*

"The marsh grasses are growing well, and we have a 90 percent survival of plants," Wilson said. "Ducks and geese are already using the new marsh, which is a good sign of it being potential wildlife habitat."

Wilson said the majority of those plants were provided by a planting contractor. A portion came from the Cape May Plant Material Center in New Jersey, a U.S. Department of Agriculture-run facility. The plants grown in New Jersey were used with the contractor's plants to establish test plots for quality control.

"If there was any catastrophic plant mortality, the test plots could help us determine if it was a problem with plants or site conditions. If the contractor's plants died but the government's plants lived, it would indicate that it was a problem with plants and not a problem with the design."

This project is one small part of an overall plan by state agencies and private organizations to help protect and preserve North Carolina's coastal ecosystems. The overall goal, Wilson said, is to help restore the Albemarle/Pamlico Sound National Estuary.

"The State of North Carolina Division of Marine Resources, the Coastal Federation and The Nature Conservancy are building oyster reefs and similar projects in the estuary. All of our joint work is a step in the right direction for the state," Wilson said.

Corps' Center Hill Lake

Story and photos by Dave Treadway
Nashville District

In the backdrop of a U.S. Army Corps of Engineers lake, a study is taking place on a wildlife species most people do their best to avoid.

Danny Bryan, a professor who teaches biology at Cumberland University, in Lebanon, Tenn., is conducting a study on rattlesnakes at Nashville District's Center Hill Lake.

"Such a study on the timber rattlesnake (*Crotalus horridus horridus*) has not been done before in Tennessee, although studies have been done in other northern states," Bryan said. "In 1999 and 2000, there was a coalition among several states, directed by Earl Possardt of the U.S. Fish and Wildlife Service, working on a Conservation Action Plan for timber rattlesnakes. It looks like the intent of this plan is to see if and when the rattlesnake needs to be put on the threatened and endangered species list here."

The professor's study may contribute to such a decision by the state of Tennessee. The timber rattlesnake was originally found in 30 states. Now it is extinct, endangered or threatened in half of those, Bryan said. Tennessee protects the snake from harvest and lists it as "in need of management."

"It is illegal to kill anything for which there is not an open season," said Mike Beaty, a wildlife officer for the Tennessee Wildlife Resources Association (TWRA).

With the dwindling population of the timber rattlesnake, Bryan needed to find an ideal study habitat, and Center Hill Lake provided just the place.

"It would have been much more difficult to conduct the study without this ideal environment," said Stephen Beason, a park ranger at Center Hill. "This unsegmented land area is there because of the environmental policies put in place by the Corps of Engineers."

The foot of Professor Dan Bryan rests only inches from *Peaches* as the exact location of the snake is marked by a Global Positioning System. The snake relies on camouflage to shield it from the prying eyes of predators.

***Yellow Mom*, a pregnant female rattlesnake, lies 150 Hill Lake. The environmental policies put in place**

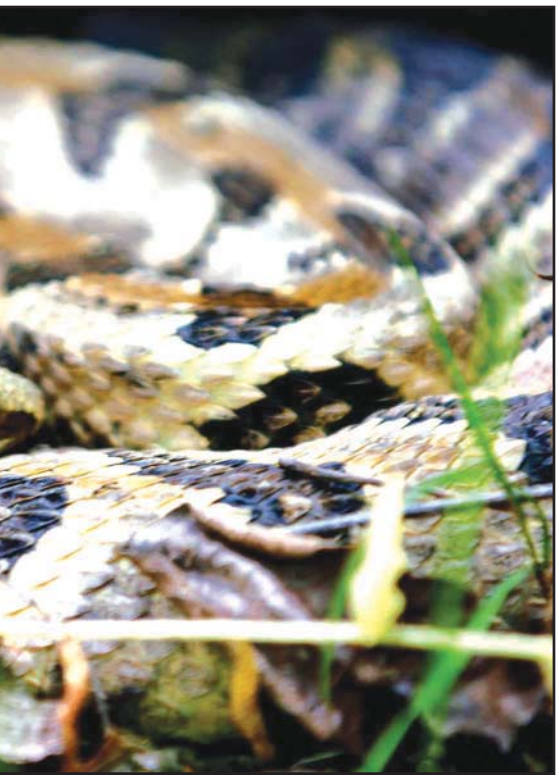
One of the Corps' environmental operating principles calls for maintaining an environment in a healthy, diverse and sustainable condition necessary to support life.

Bryan regularly locates 13 specimens around the lake, which he locates with the aid of surgically implanted radiotelemetry transmitters, some of which were supplied by the Tennessee Technological University (TTU) in Cookeville, Tenn., and TWRA.

He is collecting a lot of data on the habits and habitat of the

Dan Bryan uses a Wildl model TRX-1000 radiot to locate a timber rattle Lake. The snake is equ implanted radiotelemet

takes a look at snakes



yards above the shoreline of Tennessee's Center by the Corps make the habitat ideal for the reptiles.

ife Materials Inc., elemetry receiver snake near Center Hill ipped with a surgically ry transmitter.

timber rattlesnakes he tracks to complete his dissertation for an Environmental Science Doctorate of Philosophy at TTU. Bryan, accompanied by Dr. Daniel Combs, chair of the TTU Biology Department, made one such visit in May. He first visited the den site of *Big Daddy*, a 64-inch-long male.

"Right after he leaves the hibernaculum (location chosen by an animal for hibernation), he will move to the top of a downed beech tree and use that for cover early in the season," Bryan said.

"When blackberries ripen, the snake then uses a power line right of way to move about a mile to the blackberry patch in search of cotton rats."

Big Daddy was absent so the group then located *Peaches*, a 10-year-old 54-inch male, named for the color of his underside. *Peaches* easily blended with the leaves on which he lay coiled.

During each visit, Bryan takes meticulous notes. Those notes cover his observations during a three-year period.

"Snakebook number six is now full," Bryan said. The snake under observation lay motionless.

"He is using camouflage as his first line of defense," Bryan said. "Snakes feed primarily on chipmunks and gray squirrels at this time of year."

Bryan wants to know the length of active season for rattlesnakes in Tennessee.

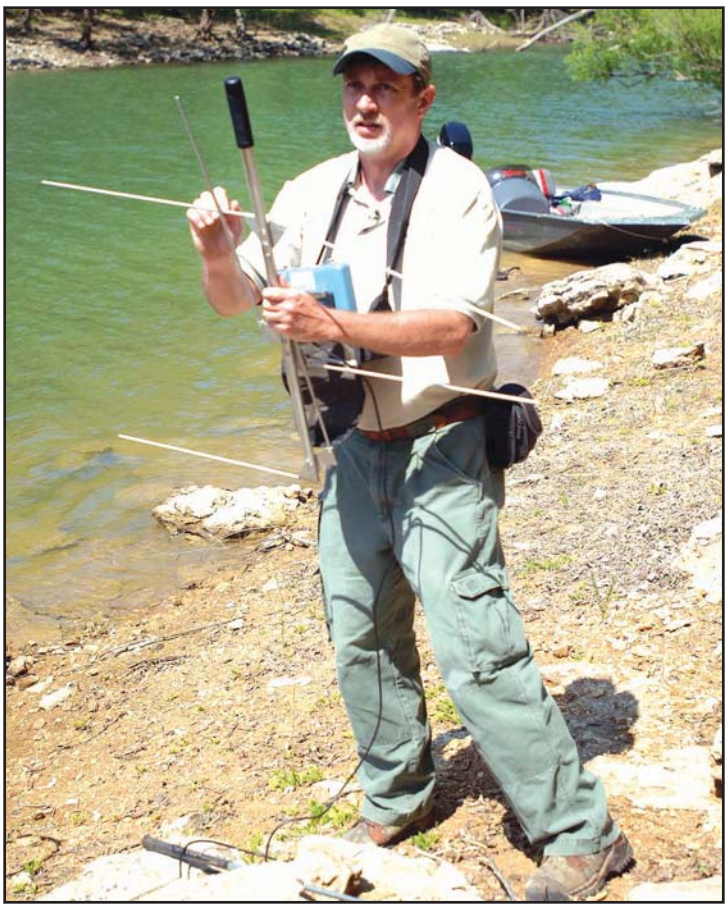
"Does what these snakes are doing parallel with what is going on farther north? I think we have a much longer active season," Bryan said. "*Scar*, a big male I have been tracking, has not gone into hibernation yet before Thanksgiving." Bryan prefers to call the rattlesnakes by names based on observation.

Yellow Mom, a pregnant female, lay partially in the sun 150 yards above the Center Hill shoreline. Yellow Mom gave birth Sept. 13 to two healthy babies. The female weighed 46.78 grams with a length of 38 centimeters. The male weighed 63.10 grams with the same length as the female. Bryan has observed *Yellow Mom* for more than three years.

Bryan has lost three specimens to hawks, one to a deer and one to cold temperatures.

"Development is the biggest threat to rattlesnakes," he said.

Bryan may not be finished with his observation of the timber rattlesnake when his doctoral study is complete this fall. Officials at the Catoosa Wildlife Management Area want him to conduct a similar study there.



Dan Bryan deploys a receiver on the shore of Center Hill Lake as he prepares to locate rattlesnakes that have been equipped with surgically implanted radiotelemetry transmitters.

District transforms office space into a 'greener' pasture

By Kayla Overton
Seattle District

The remodeled, environmentally friendly entrance to the U.S. Army Corps of Engineers Seattle District's chief of Engineering and Construction Division is an area built with sustainability in mind while providing a user friendly entrance to the offices.

"The new open area welcomes people to the Engineering and Construction Branch," said Mark Ohlstrom, Seattle District's chief of Engineering and Construction. "The area showcases sustainability — offices are sustainable and professional."

According to Tom Tolman, former Seattle District architect, Seattle District's sustainable initiative is to provide a sustainable workplace for all employees by 2015.

Sustainability is a focus of the Army as it has implemented such programs as Leadership in Energy and Environmental Design (LEED). LEED focuses on low-impact site development, recycling, reusing materials, saving water, saving energy and creating healthy indoor environments.

The district team put their minds together and researched green office design. The research focused on sustainable office furniture that maintained a high quality standard.

"Not only are these design features good for the environment they are also saving money," Tolman said. "There are so many simple things that we can do that are cost effective."

Different sustainable features can be found throughout the newly designed office space.

Left to right: Tom Tolman, former district architect, Joyce Rolstad, chief of engineering records and information section, and John Kearns, contractor with Legacy Group, were all instrumental in developing the "greener" office. *(Photo by Kayla Overton)*

The carpet fiber contains 25 percent recycled content and is Greenguard certified — a certification of indoor air quality. Paints, sealants and adhesives with low-volatile organic compounds were also used.

The custom casework is Forest Stewardship Council (FSC) certified. FSC-certified wood is guaranteed milled from a certified sustainability-managed forest.

Furniture used in the design is also Greenguard certified. Panels and storage areas were made with 100 percent recycled polyester. The seats in the lobby are made of 100 percent recycled polyester and are easy to disassemble for reuse or recycling.

Work surfaces were made with agrifiber board with marmoleum tops. Marmoleum is a type of tile that is made with linseed oil and other natural materials. Sunflower seed hulls were used in board panels.

The reception area counter top is made from recycled aluminum turnings in eco-friendly resin — scrap aluminum left over from the recycling of aluminum.

"During research for this project we found ways to print posters in a sustainable manner," said Brenda Bachman, a biologist from Seattle District. "A company was found that prints directly on recyclable fabric with a water based ink that saves time, money and resources."

Engineering and Construction Division has set a new standard for sustainable office design in the district, as research continues for future design methods.

Make plans to attend the Environmental and Natural Resources Conference

Online registration closes Oct. 19 for the Environmental and Natural Resources Conference. Set for Oct. 29 – Nov. 1 in San Antonio, the conference goals are to foster learning, sharing, networking and reinforcing key concepts and strategies.

A "Meet the Chief" session with Lt. Gen. Robert L. Van Antwerp is set for 6 p.m. Oct. 29, and Assistant Secretary of the Army for Civil Works John P. Woodley Jr., will be the keynote luncheon speaker Oct. 31.

A number of programmatic meetings are scheduled in addition to the plenary and breakout sessions. The Environmental Community of Practice steering committee meets Oct. 29; the Formerly Used Defense Sites program meets Oct. 29 and the morning of Oct. 30; the Natural Resources Management plenary session is the morning of Oct. 30; an Ecosystem Restoration and Regulatory session is the morning of Oct. 30; and the Operations Projects Managers Seminar is Nov. 1 and 2.

To register visit: https://eko.usace.army.mil/usacecop/pub/ecop/conferences/2007enr/.

ERDC launches center for sustainability

By William D. Goran
U.S. Army Engineer Research and Development Center

The Army has committed to an innovative and comprehensive new strategy for the environment — *Sustain the Mission, Secure the Future.* Endorsed by the secretary of the Army and the chief of staff, this strategy provides "a long range vision that enables the U.S. Army to meet its mission today and into the future."

At the heart of this vision is the notion of sustainability and the triple bottom line which links the Army **mission**, stakeholders in Army activities and facilities (**community**) and the **environment**. This Army strategy is consistent with similar strategies, guidance and initiatives at the Department of Defense and federal levels.

For more information on the Center for Advancement of Sustainable Innovations visit: https://casi.erdc.usace.army.mil.

To help achieve this vision, the U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) created a new center, hosted at ERDC's Construction Engineering Research Lab in Champaign, Ill.

The Center for the Advancement of Sustainable Innovations (CASI) will function as a hub of a network, linking expertise in ERDC with numerous center partners, to include the Center for Sustainable Design at the University of Illinois, National Defense Center for Environmental Excellence, National Renewable Energy Laboratory, U.S. Army Engineering and Support Center, Huntsville and many others.

The center will provide a one-stop shop for Army and DoD organizations to gain access to expertise and tools that support sustainability. Three overarching roles lie at the heart of the center's mission.

Provide expertise in sustainable planning and design: A variety of tools will be applied to help the Army and DoD achieve and enhance sustainable approaches to regional and master planning, facility design, and facility operation, maintenance and deconstruction. The center's capabilities include formal and informal demonstrations; expertise to provide planning and design guidance. There will also be Internet assets to link people with a community of experts. CASI will also assist the Army and DoD in measuring progress towards achieving sustainable planning and design goals — such as reduced energy consumption, reduced life-cycle costs, improvements in planning efficiencies and improvements in stakeholder engagement and satisfaction.

Facilitate sustainable strategy implementation: CASI will provide direct assistance to Army and DoD organizations as they plan to implement sustainable strategies. Assistance will include systems and materials analysis across the triple bottom line, lean six sigma analysis, action plans, metrics and monitoring progress.

Provide a sustainable knowledge environment: Individuals, communities of practice and diverse organizations will need knowledge assets to foster a learning sustainability ethic and practice. The center and partners will provide capabilities for collaboration, tools, databases and the transfer of sustainability technologies.

FUDS

Continued from page 3

roles," Lubbert said. "They support the FUDS project managers in a number of ways, including working with landowners, lead regulatory agencies and stakeholders. They also provide support through their real estate and public affairs offices as well as contract oversight support.

"Our number one concern was that we didn't lose the relationships that have been built up through out the years with the landowners, regulators and public," he said. "So, we want to keep key geographic districts engaged, as we improve responsiveness."

This past fiscal year was the transition year as each RBC compiled its new management scheme and began to develop its region-specific implementation plan with the goal of FUDS Transformation being fully implemented by the beginning of fiscal year 2008.

Although the transformed FUDS program may see a $4 million reduction in management and support costs, saving money to be applied to projects wasn't the only motivating factor for the changes.

"We wanted to be able to operate more efficiently to meet our customers' expectations," Lubbert said.

With more than 4,000 projects in the FUDS universe where cleanup is anticipated and a cost to complete of $18.7 billion, the FUDS program is going to be a significant mission for Department of Defense for many years to come.

"With these business improvements, the Corps will be better prepared to fulfill this mission for DoD today and in the future," Lubbert said.

Corps incorporates conservation into new construction at AFB

By Sherrie Stewart
Los Angeles District

Beginning with the design and continuing through the finished product, the U.S. Army Corps of Engineers incorporated "thinking green" into the new 49,000 square-foot structure near completion on Davis-Monthan Air Force Base in Tucson, Ariz.

Constructed by Au Authum Ki, Inc. of Glendale, Ariz., this almost $8.2 million operations building will be the new home of the 48th Combat Search and Rescue Squadron. Design with an emphasis on energy and water savings has been required in all government construction for a decade, but the latest technologies have increased the levels of both comfort and conservation in this new structure.

Energy conservation efforts for this project are apparent from the walls to the roof of the building.

The metal roof included a three-inch underlayment of an environmentally upgraded insulation called "poly-isocyanurate." It is almost 100 percent recyclable, moisture and heat resistant.

A dual cooling system made up of a chiller and evaporative cooler units was installed to provide optimum cooling. Designed to supply energy efficient cooling to enclosed areas, the chiller consists of a tower that cools a contained water flow piped throughout the building over which fans blow recirculated air to cool enclosed areas. An evaporative cooler was installed to cool the equipment bay due to the necessity for open bay doors. Outside air drawn in over water soaked pads and blown into the open bay adapted well to the cooling needs in this area.

"Systems are computer-controlled through the (energy-management and control system)," said Alton Pitre, an HVAC (heating, ventilation and air conditioning) engineer from the Los Angeles District's Phoenix Area Office.

Several companies have created HVAC systems that are more energy efficient. The advancement of computer technology in the systems has created an energy savings, Pitre said.

Another area where designers addressed energy savings was lighting.

"Electronic ballasts were used on all fluorescent lights," said Henry Battaglia, an electrical design engineer from Mobile District. "The older type electromagnetic ballasts use more energy and tend to decrease life on fluorescent tubes."

In some areas, high pressure sodium lamps replaced the original hanging fluorescent fixtures. High pressure sodium lamps are the most efficient white light source available today.

Importance was placed on eliminating carcinogens and other harmful substances from the construction.

"No PCBs were used in this building," said Mary Matsumura, the construction representative from the Los Angeles District's Tucson Office. "The remotely controlled thermostats contain no mercury and no asbestos in either insulation or flooring. The Corps ensured a safer environment for personnel through incorporating more safety-conscious technologies."

The Corps also incorporated new landscaping and plumbing designs to address water conservation. The use of gravel ground cover required no irrigation for landscaping.

Another area where new technology improved water savings is in the bathrooms. Heat sensors were installed to trigger automatic flushing devices on the toilets.

"The automatic flushing toilets are used in the design, but use minimal power," Battaglia said. "The water savings were more substantial than the electrical usage."

The toilets use only 1.1 gallons per flush as compared to a 3-gallon flush for older toilets. The heat sensors installed on the faucets meter the use of water in the lavatories.

The new plumbing technologies are estimated to conserve hundreds of gallons of water annually.

This building met the Leadership in Energy and Environmental Design (LEED) silver standard for governmental construction.

The new operations building at Davis-Monthan Air Force Base in Tucson, Ariz., showcases innovative energy and water conservation techniques. *(Photo by Diane Taylor)*

AED creates innovative water treatment

By Master Sgt. Mark W. Rodgers
Afghanistan Engineer District

No matter which way the wind blows, some situations just stink. Running out of water for cleaning, cooking and drinking is one of those situations.

Many places in Afghanistan are deprived of surface water. This leads to well drilling that averages depths of more than 100 meters (328 feet).

The many projects the U.S. Army Corps of Engineers Afghanistan Engineer District (AED) are involved in require these wells as part of the contract. Whether it is a small compound for the Afghan National Police or a major complex for the Afghan National Army, the requirements of the wells are in the contract.

Long before the occupation of Afghanistan by the Russians, this area was known by some as a garden spot of central Asia. This beautification of the countryside is instilled in the people of Afghanistan. This is highly evident with each road you turn on when traveling through an Afghan National Army (ANA) base.

As Jon Allen, construction representative and Operation and Maintenance (O&M) manager at AED's Camp Thunder, said "the ANA guys have been planting trees and shrubs around here like there's no tomorrow." Allen's initial predictions were at least a couple of thousand.

It takes a lot of water, on a daily basis, to water all of the shrubs and trees. Allen said that at least once a day, "they (ANA) fill up the tankers with fresh water, drive around and give each one a five-gallon drink!"

"John Rutherford (contractor with Contract International Inc.) has been keeping a sharp eye on the pressure levels of our wells, and he's getting concerned," Allen said. "We've been getting wind that other facilities are getting concerned about their fresh water supplies too." Current calculations reveal that between watering plants and the wash rack, more than 12,000 gallons a day and almost 85,000 gallons a week are used.

The water treatment used at Camp Thunder is a process that uses six very large lagoons as holding ponds. The lagoons are placed in a series of three sets, which provide three levels of purification. After the water leaves the last pair of lagoons, it goes through a chlorinator prior to leaving the base. The water meanders for about 400 meters (1,312 feet) and empties into a small 2- to 3-acre lake. "We thought that's a lot of wasted potential energy just begging to be used," Allen said.

Allen requested permission from the ANA garrison commander to create a large holding pond just beyond the fence from the lagoons. Permission was granted and an execution plan was set into motion. The next step was to get a bulldozer on site to create the large holding pond. Allen also requested and received funding, through AED, for a pump and housing unit for the pump.

By design, the pump is placed on the ANA side of the fence for security and water tanker servicing. Water tankers are able to drive up to the pump house, pump water from the large holding pond and fill up the tanker. The ANA troops are then able to drive the tanker around the base — watering all the new trees and plants with recycled water.

The large holding pond serves two purposes. First and foremost as the holding tank for processed water; secondly as another level of purification by catching solids that may

See Water page 16

(Above) Before the team installed the lagoon at Camp Thunder, the land contained a small stream. *(Photos by Jon Allen)*
(Below) The large holding pond sits just beyond the fence from the lagoons on Camp Thunder.

Corps stresses importance of safety

Important updates made to Engineering Regulation 385-1-92

By Mark J. Fisher
Environmental and Munitions Center of Expertise

The Environmental and Munitions Center of Expertise (EM CX) and Headquarters U.S. Army Corps of Engineers reemphasized the importance of safety at hazardous waste site cleanup projects by updating the Engineering Regulation (ER) 385-1-92 — Safety and Occupational Health Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) activities.

The primary purpose of the ER is specifying roles and responsibilities for safety and occupational health (SOH) and project management employees who work in the HTRW program to assure delivery of illness and injury free HTRW projects. The updated ER focuses on maintaining these roles and responsibilities in light of changing USACE HTRW management and business practices. More specifically, the updated ER:

1. Guides SOH staff to provide timely and constructive input in the contracting process regardless of the contracting methods used to hire and request services from HTRW cleanup contractors.

2. Eliminates SOH stovepipes making it easier for project management to access USACE SOH staff across the Corps to work on HTRW projects.

3. Updates language to assure proper SOH professional involvement on Military Munitions Response Program projects affected by HTRW issues.

4. Eliminates Appendix C, Safety and Health Elements for HTRW Documents. Safety and health elements for are specified in Section 28 of EM 385-1-1, the USACE Safety and Health Requirements Manual.

A Corps contractor installs a permeable reactive barrier at an HTRW project. *(Photo by Mark Fisher)*

Occasionally, the ER is revised and updated to reflect changes in USACE business and management practices so SOH professionals remain involved with the planning and execution of HTRW projects to assure effective implementation of SOH requirements at HTRW cleanup projects.

The updated ER is located at http://www.usace.army.mil/publications/eng-regs/er385-1-92/toc.htm or can be obtained by calling Mark Fisher at 402-697-2587.

Davis visits Camp Sibert

Doug Rhodes (right), a chemical warfare materiel safety specialist from the U.S. Army Engineering and Support Center, Huntsville, points out various landmarks to Addison (Tad) D. Davis, IV, the deputy assistant secretary of the Army for environment, safety and occupational health, during a visit Aug. 16 to Camp Sibert, Ala., a formerly used defense site. Representatives from the U.S. Army and U.S. Army Corps of Engineers joined Davis as he toured Camp Sibert. This visit was part of Davis' efforts to visit formerly used defense sites during the next several months. (Photo by Marilyn Phipps, Mobile District)

Awards

Award for excellence goes to ERDC researcher

By Dana Finney
U.S. Army Engineer Research and Development Center

The Federal Laboratory Consortium (FLC) presented Tad Britt with the Award for Excellence in Technology Transfer.

Britt, a senior researcher at the U.S. Army Engineer Research and Development Center (ERDC), was cited for his development of the Automated Resource Management System (ARMS™ – patent pending).

ARMS™ is a handheld instrument that can collect high-resolution digital data in a logical, consistent way and organize it into a database. Users can access the data through pre-programmed queries or automatically generate reports that can include geo-referenced maps and photos embedded within the text.

Britt came up with the idea for ARMS™ a few years ago while he was doing field work as an archaeologist. In juggling the array of digital tools he needed to do his job, including a GPS receiver, PDA and digital camera, it struck him that having everything onboard one portable system would be extremely useful.

"I thought it would be great if all of these tools could be combined in one device," he said.

Tad Britt displays one of his other inventions, the Hand-held Apparatus for Mobile Mapping and Expedited Reporting. *(Courtesy photo)*

Britt formed a partnership with Surveylab Group, Ltd., of New Zealand, under a Cooperative Research and Development Agreement. Surveylab used the ARMS™ to enhance its handheld data collection hardware, resulting in the ike304™. "Over 150 units have been sold and deployed during Operation Iraqi Freedom and in the Corps of Engineers Civil Works program," he said.

FLC is the nationwide network of federal laboratories that provides the forum to develop strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace. The consortium presents awards annually to recognize federal researchers and managers who have demonstrated excellence in meeting technology transfer goals.

Park manager becomes a 'Legend'

By Ann Marie R. Harvie
New England District

Keith Beecher, the park manager at the U.S. Army Corps of Engineers New England District's East Brimfield Lake/Westville Lake/Conant Brook Dam received the American Recreation Coalition's 2007 Legends Award.

"Mr. Beecher's accomplishments and efforts bring positive recognition to himself and the Corps," said Maj. Gen. Don T. Riley, director of Civil Works. "His commitment to excellence has established a distinguished standard for others to emulate."

The national award is presented annually to recognize an outstanding federal employee from each major recreation-related federal agency for his or her significant contributions to the enhancement of outdoor recreation resources, facilities and experiences on the nation's public lands.

Beecher was selected to receive the honor for his exceptional work during his 22 years of service at the Cape Cod Canal, Naugatuck and the Thames River Basins.

Beecher has had numerous successful enterprises that have benefited the Corps of Engineers and the people of New England. He has been instrumental in developing volunteer programs and partnerships at Buffumville Lake that earned the project the honor of Project of the Year in 2000.

"I am very pleased that he was recognized as a leader in the field of recreation with this award," said Bob Hanacek, a basin manager from New England District. "Mr. Beecher leads by example. He supports and empowers his team to provide outstanding recreational facilities and service to the public."

Keith Beecher

"I am quite honored to receive the Legend Award — a superb thank you to me, my fine staff and the great supervisory support that is always given to me," Beecher said.

Continued from page 13

get by the first three ponds. This will allow the solids to settle harmlessly to the bottom.

Every liter of fresh water pumped out of the well costs money. "We already have a strong data base of past and current consumption," Allen said. "We will monitor how many tankers of recycled waste water are used every day to water the trees and shrubs. When we begin to see our daily fresh water usage shrink, we'll have the hard data that proves the waste water recycling program here works."

The entire process took less than a month from idea to reality, cost less then $2,500 to implement, and the vegetation is receiving its normal water rations through recycled water.

Prior to this, the need for formal water conservation was something that had not been addressed. Allen soon learned there were other situations not previously dealt with.

He said Afghans here had a phobia about recycled water.

"It was the smell and color that was the problem," he said. "The skepticism over the water is clearing, and the smell is gone, which is providing the reassurance that was needed."

Chemical analysis of the water coming out of the chlorinator is under way to make adjustments, as needed, so that the water can safely come in physical contact with humans.

"We'll get our chemistry of recycled water to the point that we can use it for irrigation," Allen said.

Once the results are well documented, Allen predicts it will snowball not only in other waste water projects, but hopefully at the other ANA sites that AED oversees.

Looking to the future Allen sees many ways to reduce the consumption of fresh water.

"Our future plans are to relocate the vehicle wash rack very close to the lagoons so that all the water used finds its way into the first stage of purification at the lagoons," he said. Other uses he sees are on the vehicle wash rack and for every toilet to use recycled water.

"Our end-goal is for all non-potable water needs to be filled with non-potable water," he said "Once we can prove we're saving money by conserving fresh water, we may go back to the piggy bank and ask if we can have some more."

Top 10 national forests to visit during the fall

1. Willamette National Forest, Ore.
2. Inyo National Forest, Calif.
3. Coconino National Forest, Ariz.
4. Gunnison National Forest, Colo.
5. Chequamegon-Nicolet National Forest, Wis.
6. Mark Twain National Forest, Mo.
7. Pisgah National Forest, N.C.
8. Allegheny National Forest, Penn.
9. Green Mountain National Forest, Vt.
10. White Mountain National Forest, N.H. and Maine

Information courtesy of the Great Outdoors Recreation Pages Web site: www.GORP.com.

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