

# Public Works

## D I G E S T

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Maintenance and  
Engineering**

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*A technician controls application of geopolymer mortar liner to rehabilitate a steel storm drainage culvert at Simmons Army Airfield, North Carolina. (U.S. Army Photo)*



# Public Works DIGEST

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**Gregory S. Kuhr**

*Director*

*Facilities and Logistics*

*Installation Management Command*

U.S. Army Installation Management  
Command

2405 Gun Shed Road

JBSA Fort Sam Houston, TX 78234-1223

Attn: Editor, *Public Works Digest*

**Candy Walters**

*Managing Editor,*

*U.S. Army Corps of Engineers*

Headquarters, USACE

441 G Street, NW

Washington, DC 20314-1000

202-761-0022 DSN 763

editor.pwdigest@usace.army.mil



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## IMCOM tackles difficult infrastructure challenges

by Maj. Gen. Lawarren Patterson

Every day across the Army, garrison commanders execute an array of programs and integrate services from other providers to support senior commanders' missions. As part of U.S. Army Installation Management Command, garrison commanders rely on their Directorates of Public Works as key enablers for the community. These public works directors are integral in delivering basic services to provide units with facilities to conduct quality, realistic training, and to keep Soldiers and Families safe and secure on Army installations. Simply put, the 58,000 Installation Management Command professionals around the globe provide the facilities and services that make the Army run.

Infrastructure provides the foundation from which the Installation Management Command supports the Army mission. For the past decade, the Army has had to underfund infrastructure sustainment to fund other priorities. Garrison commanders, their directorates of public works, and tenant organizations now struggle with crumbling facilities. The



Maj. Gen. Lawarren Patterson  
Deputy Commanding General Installation Management Command (U.S. Army Photo)

Army can no longer afford to assume risk in this area, but solutions are difficult to create given reductions in money and manpower.

Installation Management Command is now in the process of reducing its civilian workforce by about 1,000 employees to contribute \$50 million to \$100 million to fund Army operational requirements. Like other Army commands, we cannot request more money and manpower to recapitalize failing infrastructure. Rather, we must think differently to solve our problems because without infrastructure, there is no readiness.

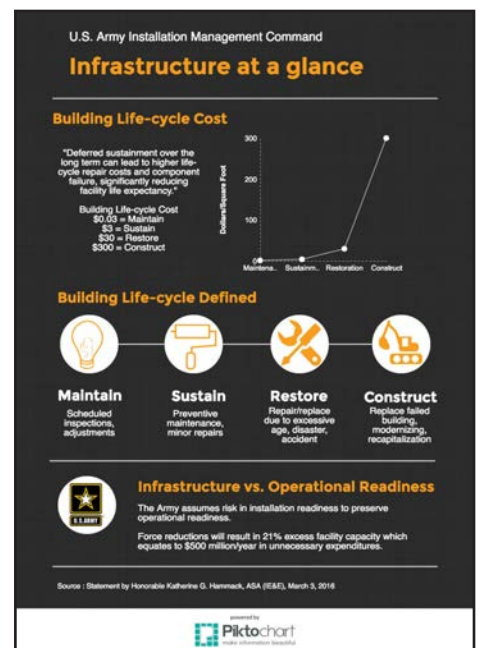
To get after this change in corporate thinking, we are transforming to a smaller, more functionally-aligned organization that is better integrated with the Army commands we support. We are transforming our regions across the continental United States to realize the same level of integration our overseas regions have in direct support of U.S. Army Europe and U.S. Army Pacific. Our two stateside regions will become three Installation Management Command Support Directorates, functionally aligned and co-located with Army Materiel Command, Forces Command, and Training and Doctrine Command. The three regional directorates will manage a smaller number of garrisons, fostering stronger relationships with senior commanders.

Just as important, this arrangement will improve integration of supported commanders and their higher headquarters into the process to validate and prioritize requirements. We intend to achieve Full Operational Capability on this complicated personnel and functional realignment process by Oct. 1, 2017.

Improved integration with other Army commands enhances access, communication, and coordination between our professionals and the garrisons and communities they serve. This connectivity between supporting and supported units is crucial as we fine tune delivery to re-scope programs that have grown beyond their original purpose or are no longer affordable. We must do this

to harvest resources to fund infrastructure projects, and to sustain training and readiness and the delivery of necessary (versus "nice-to-have") Soldier and Family programs.

Installation Management Command also is driving change on policies, regulations, and laws that constrain our ability to implement new, money-saving ideas. For example, we are pushing for legislative relief from an overly-restrictive definition of construction. The current definition, which classifies facility conversion as construction, inadvertently drives new construction when renovation is often better, faster and cheaper.



Infrastructure management in a time of limited funding requires a disciplined prioritization process involving Installation Management Command the senior commander, and his or her higher headquarters. In this way, all parties have a shared understanding of priorities to manage risk and allocate resources. Current funding is limited to the point where we can only fund a small portion of the standing prioritized list of senior commanders' projects. This funding situation necessitates

(See Challenges, page 4)



# USACE helps installations remain efficient, resilient, sustainable

by Lloyd Caldwell

With Army Chief of Staff Gen. Mark Milley's No. 1 priority being readiness, Army installations are taking a hard look at how to be efficient and resourceful despite downward budgetary pressures.

As the keynote speaker at a late March Installation Management "Hot Topics" forum in Washington, District of Columbia, Ms. Katherine Hammack, Assistant Secretary of the Army for Installations, Energy and Environment, noted that installations and their activities must become leaner, manage expectations, and prioritize essential services to ensure the Army maintains its readiness.

The biggest challenge for installations is that as more money goes to manpower and the costs of training and equipping, funding for installation and facilities maintenance

drop dramatically.

"We're trying to figure out how to support Soldiers, Families, civilians and operations without the budgets that they need, with the budgets they get, so every installations has had to prioritize based upon risk and funding the most critical," Hammack said. "It has given us an opportunity at the headquarters level to re-evaluate our programs and services ... which can be merged and consolidated."

The U.S. Army Corps of Engineers supports these initiatives. We provide innovative as well as tested solutions to America's installations, helping them to remain sustainable, resilient and efficient.

We know installations have had to make hard choices throughout the years, often underfunding infrastructure sustainment as Army put proportionally more money



Lloyd Caldwell  
Director of Military Programs,  
U.S. Army Corps of Engineers (USACE Photo)

*(Challenges, continued from page 3)*

using money to fund projects that could have been spent to dispose of vacant facilities or to repair failed and failing facilities that are still being used by Soldiers.


Given that so few of the projects will be funded this year, prioritization is key, and senior commander staffs should focus their attention on the proper completion of the Installation Status Report – Infrastructure. When done properly, the report provides good data to facilitate the proper ranking of projects by all involved, and informs the building of the Program Objective Memorandum.

Another pressing infrastructure-related concern is with excess facilities no longer in use, brought about by active Army force reductions. These excess facilities cost about \$500 million per year. While not popular in some circles, it appears that only the Base Realignment and Closure process can provide the means to divest ourselves of this unnecessary expense and use the savings to fund high priority projects.

As Installation Management Command transforms its organizational structure, its functional alignment with supported Army commands, services and how it delivers them on our garrisons, and sustains failing infrastructure, we are also transforming the way we think. It's all about proper and thoughtful stewardship of limited resources to make tough prioritization decisions, and doing so in full partnership with supported units.

The 58,000 Installation Management Command professionals around the globe are taking actions now to ensure we are best positioned and structured to meet future challenges with constrained resources and to ensure the Army can win in a complex world.

POC is Scott Malcom, 210-466-0714,  
[scott.f.malcom.civ@mail.mil](mailto:scott.f.malcom.civ@mail.mil)

Maj. Gen. Patterson is the Deputy Commanding General, U.S. Army Installation Management Command, Fort Sam Houston, Texas. 

toward other priorities, such as training and manpower. Now many installations find themselves with substandard facilities and facilities that have outlived their purpose.

As installations focus more on sustaining and maintaining facilities, our Sustainment, Restoration and Modernization program, Facilities Reduction Program and other Installation Support capabilities have become a larger part of our everyday business. Many existing facilities are being repurposed and reconfigured to meeting changing mission needs with an eye on life cycle management of critical facilities, and reducing maintenance costs.

At Fort Benning, Georgia, the Army Corps of Engineers has been working with the installation in a concentrated effort to reduce its footprint, removing excess facilities, executing a \$1.4 million contract that will ultimately remove 45 facilities totaling nearly 407,000 square feet. Of the 45 facilities, 43 are located within the historic Soldiers Plaza and 31 of them are World War II-era wood structures that are difficult to not only maintain but also heat and cool.

*(See USACE, page 5)*



(USACE, continued from page 4)

Our focus is on providing engineering and environmental services that support the Installation Management Command in its role of providing essential services, infrastructure and operations support to improve the livelihood of our Soldiers, their Families and Civilian employees.

Our master planners have been championing an enterprise approach to master planning not only within the Army, but within all of the Department of Defense, that ensures energy and sustainability considerations are integrated into a resilient planning process to meet today's military missions as well as evolving changes.

Through the efforts of our U.S. Army Engineering Research and Development Center Construction Engineering Research Laboratory, we have capabilities for energy modeling and visualization to graphically portray the energy and sustainability impacts of planning decisions. This work is at the leading edge in the overall practice of planning for communities where Soldiers live and work in order to ensure sustainable

and resilient installations.

Our Regional Planning Support Centers are an invaluable resource in providing robust master planning support worldwide as well as tools, products and services, all embracing sustainability modeling to address resiliency as it pertains to energy, water and waste.

One area where the Army Corps of Engineers has been playing a large role is assisting the Army with its energy goals, working closely with the Office of Energy Initiatives in developing renewable energy projects. We've awarded 95 percent of the Army's \$498 million in alternative financed contracts, and we are implementing a program to install smart meters on facilities to meet Department of Defense and federal legislative requirements.

On April 28, our U.S. Army Engineering and Support Center, Huntsville, Alabama, awarded a contract to SunPower Corporation for a solar facility to be built on Redstone Arsenal, Alabama, which is expected to annually generate about 18,000 megawatt hours of on-site renewable energy. The project is the first Power Purchase Agreement Program project solicited

through the renewable and alternative energy Multiple Award Task Order Contract.

Together with other renewable energy contracts, this represents a major step forward in bringing the Army closer to its energy goals and strengthens our energy security, which also is a major concern on our installations.

We are committed to working with the installations to develop innovative solutions and to make the best science, technology and management practices available to address their requirements. Our districts and centers are committed to the working relationships necessary for effective and efficient installation support and in reducing the risks wherever our capability can be of assistance.

*Editor's note: Some of the material was taken from an April 3 Army News Service article, written by J.D Leopold.*

POC is Candice Walters, 202-761-0022, [candice.s.walters@usace.army.mil](mailto:candice.s.walters@usace.army.mil).

Lloyd Caldwell is the U.S. Army Corps of Engineers Director of Military Programs. 

## Call for **ARTICLES**

The *Public Works Digest*  
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Deadline is September 2, 2016 ~ Submit articles to  
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## IMCOM takes cemetery operations from accountability to sustainment

by Peter Kendrick

**I**nstallation Management Command is the first Department of Defense command to complete a 100 percent Quality Assurance Quality Control pass of its world-wide cemetery operations for 100 percent accountability, a project that reviewed graves in 29 cemeteries on 19 Army garrisons.

Based on the success of the Arlington National Cemetery 100 percent gravesite accountability initiative in 2012, the Secretary of the Army established the Army National Military Cemeteries, directing Installation Management Command and other Army land holding commands to perform the same 100 percent gravesite accountability mission and then sustain cemetery operations at the new Army National Military Cemeteries National Shrine standards levels.

Later that year, Installation Management Command established its cemetery operations team to develop and then execute the command's Cemetery Campaign Plan.

Geospatial information system specialists traveled to each garrison cemetery to capture geospatial location information of each grave marker to a very high degree of accuracy, creating digital maps of each cemetery. The paper records of interment of each of the more than 43,000 deceased were then scanned and uploaded to a database with the unique aspects of each cemetery schema. Records spanned more than 240 years of our nation's history, with the earliest handwritten records dating back to the post-revolutionary war era, all the way to warriors who have served in Iraq and Afghanistan.

In the spring of 2013, with the infrastructure now in place, the team

received training on tools, techniques and business processes, divided into three sub-teams, and traveled to the garrison cemeteries across the nation to train cemetery staff and augmentees on how to synchronize grave location information from the geospatial digital maps with grave marker photos, records of interment and meta-data in the database.

The key to the accountability mission is the Quality Assurance Quality Control process, which ensured a 100 percent completion rate. To facilitate the final stage of the accountability initiative, the team developed a robust quality control process that uses the Army National Military Cemeteries' web-based research tool to optimize reviews and monitor trend data. Lauded by the national group as a best

*(See Cemeteries, page 7)*



*Sgt. Mark Speakman photographs a grave marker at Fort Devens, Massachusetts, as part of the Installation Management Command's efforts to review graves in 29 cemeteries on 19 Army garrisons. (U.S. Army Photo)*



*(Cemeteries, continued from page 6)*

practice, using the quality control process reduced the time of a cemetery's review by as much as three weeks and increased gravesite accountability pass rates by greater than 20 percent. The team's analysts reviewed 100 percent of the Installation Management Command's cases (one case per grave plot) to confirm the accuracy of the digital records for each plot.

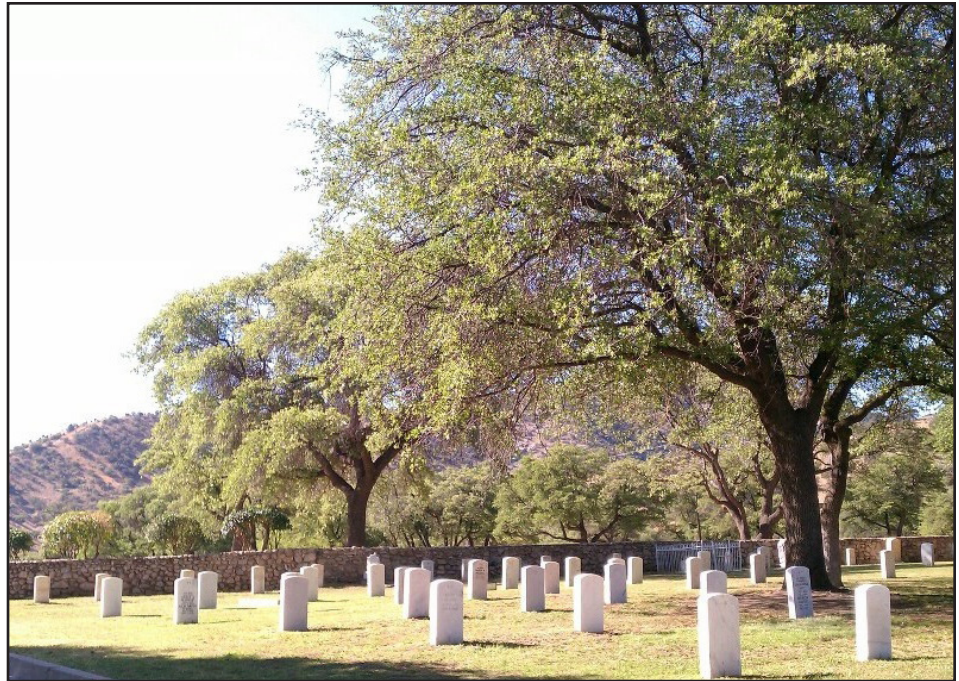
"This work honors all those who rest in an IMCOM cemetery as well as the spouses and families left behind," said Gregory Kuhr, Headquarters Installation Management Command director of facilities and logistics.

"Visitors will know their loved ones are treated with dignity and respect and are in an environment befitting their sacrifice," he said.

Due to its success, the team was asked to support garrison-specific accountability requirements for other Installation Management Command garrison and the U.S. Army Reserve cemeteries.

The team transitioned to the final phase of its Cemetery Operations Campaign Plan, sustainable operations. Sustainable cemetery operations means both ensuring 100 percent accountability and maintaining the cemetery grounds at "National Shrine Standards," the highest standards of grounds keeping the nation knows. Recognizing that his level of effort requires increased resources, the team has spent much of the past two years on developing the budget, concept plan, and manpower modeling requirements for Army recognition for increased funding and manpower requirements and authorizations.

The Army National Military Cemeteries program supports the transition to sustainable operations in two effective ways. First, it created a Cemetery Responsible Officials training and certification program at Arlington National Cemetery for key personnel and deputies. Then it implemented an Organizational Inspection Program that helped define the new



*The Fort Huachuca, Arizona, cemetery is one of the 29 cemeteries included in the Installation Management Command quality assurance quality control review. The command achieved 100 percent accountability of the graves on 19 installations. (U.S. Army Photo)*

National Shrine Standards. The inspection results are assisting the command in obtaining the additional funding required to achieve and sustain the cemeteries at the new Shrine standards.

The team also developed a knowledge management tool, known as the Installation Management Command Cemetery Wiki Library, which allows cemetery personnel to quickly navigate through large amounts of cemetery-related information in a SharePoint environment. The wiki gathers all pertinent cemetery information and compiles it into one comprehensive database that is both easy to access and easy to use. Like Wikipedia, users maintain the Cemeteries Wiki. Easier access to files and documents on the wide range of cemetery related information means less time spent searching for and finding cemetery related information. The Army National Military Cemeteries program expects to use this foundation as a best practice for the Army/DOD/Federal enterprise wide use, both for

cemetery management and eventually for a public website.

Plans call for creating a public website that will allow people to virtually explore each Army post cemetery through an online interface. They will then be able to view the grave markers and obtain specific walking directions to exact grave locations.

Installation Management Command is leading the way in validating the accountability of 100 percent of Army gravesites. With new tools, practices and sustainment efforts, the team has worked closely with garrisons and Army National Military Cemeteries to help lead the mission to ensure veterans and their family members are properly commemorated.

*POC is Peter Kendrick, 210-466-0549, [peter.f.kendrick.civ@mail.mil](mailto:peter.f.kendrick.civ@mail.mil)*

*Kendrick is the Installation Management Command's Cemetery Operations manager with Headquarters, Installations Management Command, Fort Sam Houston, Texas. *



# Facilities Reduction Program demolishes Fort Benning WWII buildings

by Amy Newcomb

The U.S. Army Engineering and Support Center, Huntsville is managing the Soldiers Plaza demolition project at Fort Benning, Georgia, as part of an existing Mid-East Region U.S. Facilities Reduction Program Multiple Award Task Order Contract.

Huntsville Center managers regional demolition contracts to remove excess facilities under its Facilities Reduction Program.

Under this task order, the contractor will perform a range of demolition services on the installation. Demolition will include, but is not limited to, the abatement/removal of asbestos containing materials and other regulated materials, disconnect/capping of utilities, disposal of all debris materials, and restoration of the site to a specified condition.

Huntsville Center has worked with Alan Bugg, Savannah District area engineer, U.S. Army Corps of Engineers, to execute the project's quality assurance that ensures safety and proper disposal of all materials.

The \$1.4 million contract kicked off Feb. 15. It will ultimately remove 45 facilities totaling nearly 407,000 square feet of excess

infrastructure from Fort Benning's real property inventory.

The excess facilities being moved by All Phase Services, Inc., of Delray Beach, Florida, will reduce Fort Benning's footprint.

Of the 45 facilities, 43 are located within Soldiers Plaza and 31 of them, or almost 120,000 square feet, are World War II-era wood structures. To date, 14 have been demolished reducing the infrastructure by more than 40,000 square feet.

The Soldiers Plaza project was completed in May, with the other two buildings scheduled to be completed in September.

This demolition will remove the installation's last World War II buildings on main post, which served most recently as administrative buildings but have been used as barracks, medical facilities and for other Soldier-related services.

The wood structures were built for temporary use in the early 1940s and removing them marks the end of an era, said Dave Shockley, Huntsville Center Facilities Division branch chief.

"They were supposed to be gone within 25 years of when they were built; they are

coming up on almost a century," he said.

Frank Hanner, National Infantry Museum and Soldier Center director, said when the structures were built, there was a demand for buildings because the nation was mobilizing for World War II, and the Army couldn't house Soldiers in tents.

"They came up with building the World War II buildings out of local material, or at least that was what they were supposed to use," he said. "Here in Georgia, that would be the great pine."

More than 600,000 World War II Soldiers were trained in the buildings, but instead of coming down after the war, the buildings housed even more Soldiers as the Cold War began, Hanner said.

"These buildings meant a great deal to the Armed Forces," he said. "They symbolized a great effort by the nation to take care of its Soldiers as it trained them for war. It was almost like a rite of passage."


Throughout the years, the buildings became costly, and in the 1990s Fort Benning was told all World War II structures would be demolished.

However, Dick Grube, former National Infantry Museum and Soldier Center director, asked that some buildings be saved.

The National Infantry Foundation was able to rescue a barracks, mess hall, orderly room, supply room, chapel, and sleeping quarters and headquarters used by Gen. George S. Patton prior to his deployment to North Africa, Hanner said.

The buildings, located at the World War II Company Street exhibit at the National Infantry Museum and Soldier Center, are the only fully preserved set of series 700 buildings in existence.

POC is Anthony Gibson, 256-895-1551, [anthony.e.gibson@usace.army.mil](mailto:anthony.e.gibson@usace.army.mil)

Amy Newcomb is a Department of the Army Public Affairs intern working in the U.S. Army Engineering and Support Center, Huntsville Public Affairs Office. 



*Soldiers Plaza building 2602, a World War II wood building used most recently as an administrative building, is demolished at Fort Benning, Georgia, under the Facilities Reduction Program, U.S. Army Engineering and Support Center, Huntsville. (U.S. Army Photo)*





# Concentrated efforts reduce Fort Benning's footprint, save money

*Compiled from the Bayonet and Saber*

**D**emolition signs. Empty buildings. New officemates. Offices are changing at Fort Benning, Georgia.

Tony Brown, a space management specialist with the Directorate of Public Works, explained that an order from the Office of the Assistant Chief of Staff for Installation Management prompted the changes.

The Army sent down 16 facility category groups for Fort Benning to focus on. Out of those 16, the Army looked at about 8.3 million square feet out of the estimated 23 million square feet Fort Benning has, excluding Family housing, Brown said.

Brown explained that they had to look at everything and determine what was authorized and what they had on hand. Once that was done, the primary goal was to get rid of all the World War II buildings.

"Soldiers Plaza is coming down now," he said.

According to Brown, office space is being readjusted as well to comply with the order. He explained that he performed walkthroughs in buildings 4, 6 and 70.

**'We're tearing down old, decrepit buildings that are not economical to fix up.'**

**- Randy Swindler**

"There were approximately 485 spaces with vacant desks. We've been trying to figure out what the best fit for these buildings because they're going to stay," he said.

The Army reports that it's costing \$500 million in excess to maintain these buildings, Brown added. "We're trying to close the gap. Right now we have 3 million square feet that we're over on those facility category groups that we're looking at so what we're trying to do is get that down to about 1.3 million. That's the amount we're allowed to have over for swing space, etc."

According to Brown, individuals working within offices on Fort Benning have



*Demolition began Feb. 16 on Soldier's Plaza, Fort Benning, Georgia, to remove old World War II-era buildings and reduce the installation's footprint. (Photo by Patrick A. Albright)*

responded positively to the changes.

"People have jumped onboard with it. Usually people are resistant to change, but everyone's been helping one another," he said.

"We're tearing down old, decrepit buildings that are not economical to fix up," said Randy Swindler, Fort Benning's Master Planning Division chief.

The division also is reconstructing training barracks as a way of reutilizing existing facilities.

"We're getting rid of the worst so we can reduce the amount of money that the Army has to spend on maintaining facilities just for the sake of maintaining facilities – we have no particular use for them," Swindler said.

"It will save tax dollars," Brown said. "If you just have grass, you can just mow it. The amount of money that goes into


running a building is astronomical."

Fort Benning's commanding general approves all plans for demolition and restoration, Swindler said.

"The idea is, they were in hard-to-maintain, deteriorating buildings so we put them into permanent structures – a building that can be maintained and has historical significance," Swindler said of the office changes. "We're making good use of existing facilities."

*Editor's note: This article was compiled from two news articles "Soldiers Plaza demolished in effort to reduce footprint" written by Noelle Wiehe and "Offices continue to move as Fort Benning seeks smaller footprint" written by Danielle Davis, both published in the Bayonet and Saber, the Fort Benning installation newspaper. Photograph by Patrick A. Albright of the Maneuver Center of Expertise Public Affairs Office, Fort Benning, Georgia.*

*POC is Lori Egan, 706-545-2622, [lori.a.egan.civ@mail.mil](mailto:lori.a.egan.civ@mail.mil)*

*Egan is the editor of the Bayonet and Saber, the Fort Benning, Georgia, installation newspaper.* 



# Stormwater management leads to facelift for Fort Bragg stadiums

by Mindy Love

**H**ector Cruz, a civil engineer and project manager at Fort Bragg, North Carolina, is in the business of creating innovative solutions to meet customer needs within a tight budget. When the Directorate of Family, Morale, Welfare and Recreation contacted him about giving the Hedrick Stadium field a facelift with artificial turf, the initial estimated costs were more than \$1 million. At that time, Operations and Maintenance, Army projects were limited to \$750,000 and when developing a project to meet all requirements, costs add up quickly.

Fortunately, Cruz had an ingenious idea for managing stormwater on-site to meet the North Carolina Department of Environmental Quality stormwater and erosion control requirements, significantly reducing project costs. Partnering with the Fort Bragg Water Management Branch, which oversees the stormwater and erosion control plans for the installation, Cruz created a project like no other.

First developed in the 1960s, artificial turf in use today hardly resembles the original. Modern artificial turf is much softer and includes an infill of sand and rubber granules. Artificial turf allows for less maintenance for fields, including no mowing or irrigation. Traditional artificial turf utilizes an impervious geosynthetic fabric as the base layer which drains water

directly to a water collection system.

Fort Bragg operates under Phase II of the National Pollution Discharge Elimination System Stormwater Permit, which grants the installation permission to discharge stormwater from industrial sites. Projects on Fort Bragg must use structural stormwater management systems that will control and treat runoff from the first inch of rain.

Thinking outside of the playing field, Cruz turned the turf world on its heels.

“The project water management features were the result of finding a balance within the budgetary constraints and compliance with Environmental requirements” Cruz said. Rather than directing stormwater runoff directly to a collection system and ultimately a detention pond, stormwater at Hedrick Stadium is treated on-site utilizing permeable geosynthetic fabric and a linear infiltration trench. This trench allows for excess water from the field to be diverted to the trench for dispersion through a permeable liner. The only time water will flow from the field to the collection system and detention pond is as overflow for the trench system.

The critical factor for this project was whether soils could accommodate the required rain event. If the water transmission rate is low, the project will not work as intended. Soil borings were used to determine the infiltration rate at the site,

which showed that the infiltration rate at Hedrick Stadium was excellent due to the loamy sand soil.


In partnership with the Fort Bragg Water Management Board, Cruz managed to design an artificial turf field with stormwater treated to state environmental quality standards beneath that layer of turf. Some of the water infiltrates directly from the playing field through the geosynthetic fabric. The majority of the water, however, is collected from the main playing field and drained to the collection trench where it slowly penetrates into the ground.

Mother Nature helped test the project’s efficiency prior to installing the turf. Once the groundwork for the project was completed the weather turned to rain. The rain continued for one week, testing the on-site drainage system’s ability to disperse water. It worked like a champ and the project was completed as designed.

The Hedrick Stadium turf project was so successful it was replicated at the Hercules Stadium on the Pope Army Air Field, with one exception. The water table at the Hercules Stadium was much higher, so the schematics for the project were slightly different. The concept remained the same although the trench was shallower and wider to accommodate the higher water table.

According to Michael Desmone of the morale, welfare and recreation directorate, the “artificial turf fields have significantly contributed to the athletic diversity of the community. Since the renovation, the infield is able to support a multitude of events: unit PT (physical training), intramural sports, and community based” events. These artificial turf fields are performing so well that this will be the standard moving forward at Fort Bragg.

POC is Hector Cruz, 910-432-4111, [hector.cruz53.civ@mail.mil](mailto:hector.cruz53.civ@mail.mil)

Love is the environmental education and outreach manager, Fort Bragg Directorate of Public Works Environmental Management Branch. 



A contractor excavates the trench at Hercules Stadium at Pope Air Force Base in preparation for the artificial turf. (Photo by Leonard Booth)



# Mine Lake Dam restoration: Dams, infrastructure, drinking water

by Matthew Talaber and Jonah Havranek

**W**est Point, New York, is home to 14 dams and eight dikes, accounting for approximately 10 percent of Army's entire inventory of dams. They include earthen, masonry, and concrete structures ranging in height from 10 feet to 80 feet, with lengths up to 580 feet. Many of these dams are part of a vast storage network that provides the installation with potable water.

Rainwater and surface runoff collect in the ponds and lakes created by the dams, eventually traveling through one of the two raw water supply lines to the cantonment area, then treated at the two water treatment plants and distributed as clean drinking water. The dams, including Mine Lake Dam, are central to the installation's adequate water supply. Integrity of the dam is essential to West Point operations in that the dam also is part of a sequence of interconnected high-hazard dams, meaning its failure has the potential to cause significant loss of property, loss of life, or mission failure.

Throughout the years, Mine Lake Dam has endured its share of heavy rainfall, tropical storms, and even hurricanes. Tropical Storm Irene tested the dam in August 2011 with water topping its entire 517-foot length. Through it all, Mine Lake Dam still stands – most impressive for a structure built in the 1850s. Although a catastrophic failure has never occurred, the ravages of Mother Nature and Father Time have taken their toll on the historic dam. Annual inspections under West Point's dam safety program noted increasing rates of seepage and potential structural issues with the dam, pushing the Installation Status Report rating for this significant structure from red to black (functional failure).

The U.S. Army Corps of Engineers New York District conducted a detailed evaluation and stability analysis of Mine Lake Dam in 2009. The study's results indicated that the extent of the deterioration of the dam had compromised the structure's stability, resulting in a reduction of the



*Renovation work at the Mine Lake Dam in West Point, New York, will help preserve the original historic structure while extending its life for another 100 years. (U.S. Army Photo)*

calculated factor of safety. As Mine Lake Dam is both an integral part of West Point's water supply system and an important historic structure, it was identified for rehabilitation.

In 2010, the Directorate of Public Works commenced the design process through the Corps of Engineers, which selected O'Brien & Gere, Inc. as the design contractor. Because the dam was identified as a historically significant structure, it was imperative to incorporate the original dam into the final rehabilitation design. Design challenges centered on establishing a new dam while maintaining the original structure. Ultimately, the design team decided to construct a buttressed concrete wall in front (downstream) of the existing dam, thereby preserving the original historic structure. This approach also allowed the reservoir to remain functional even though the water level was lowered to reduce hydraulic pressure and help facilitate construction. All associated environmental permitting was accomplished by the Directorate of Public Works Environmental Management Division.

The construction contract was awarded to Intercontinental Construction Contracting, Inc. in June 2015, with tree removal adjacent to the dam beginning the work. Years of growth had encroached on the toe of the dam, potentially compromising the structure

with invasive roots. Next the deteriorated core of the original six-foot-wide stone masonry dam was filled using a pressure grouting technique, rendering the structure stronger and less vulnerable to seepage. The final major step was constructing a five- to six-foot-wide concrete buttress wall along the entire length of the existing dam. This wall is pinned to the underlying granite bedrock, as well as to the original dam. The previously completed high pressure grout allows the steel pins to be secured in the existing dam, thus structurally linking the buttress wall to the original dam.

In late May, the restoration project was 75 percent complete and expected to be finished by June 30. "This restoration work will extend the life of the dam for another 100 years," said Enzo Palau, the Environmental Management Division chief and the project manager for the dam restoration.

That goes a long way toward helping to ensure the supply and delivery of water to serve West Point for years to come.

*POC is Jonah Havranek, 845-938-0169, [Jonah.Havranek@usma.edu](mailto:Jonah.Havranek@usma.edu)*

*Matthew Talaber is the director of the Directorate of Public Works, U.S. Army Garrison at West Point, and Havranek is with the Public Affairs Office, Directorate of Public Works, U.S. Army Garrison at West Point.* 🍀



# Geopolymer mortar system rehabilitates pipes, culverts

by Clint Wilson and Jaclyn Mathis

The U.S. Army Engineer Research and Development Center and Fort Bragg's Directorate of Public Works demonstrated and validated the performance characteristics of a new geopolymer mortar liner system for culvert rehabilitation at Simmons Army Airfield, North Carolina.

This rehabilitation technique uses geopolymer mortars that are often from the aluminosilicate family and are blended with Portland cement. This geopolymer mortar formulation can be centrifugally cast to reline pipelines while minimizing disruption to the installation by eliminating the need to dig up and replace existing pipelines and culverts. The material offers rapid cure times, higher strength, and reduced porosity as compared to traditional mortar and concrete.

The geopolymer liner system can be used to restore structural integrity and extend the life of storm water structures with little impact on the pipe's performance. A new pipe is essentially formed within the old one. The original pipe can completely fail and the remaining geopolymer liner is structurally effective on its own. It cures quickly and can reach up to 10,000 pounds per square inch compressive strength at 28 days. While the internal diameter is reduced by the added lining, the improved surface condition may provide better hydraulics to compensate. When fully cured, the



*The spin-cast head is shown at the end of the first out of three passes. The unit has been pulled through the pipe while spraying the gray-colored geopolymer liner on the inside of the pipe.*  
(U.S. Army Photo)

geopolymer mortar becomes a synthetic stone, or ceramic.

Trenchless technology for repairing and rehabilitating culverts and storm drainage infrastructure has been rapidly improving during the last two decades. There are a number of technologies available today for rehabilitating deteriorated culverts and storm water drainage rather than conventional trench and replace. Geopolymer mortar is one of the more recent emerging technologies.

At Simmons Army Airfield, geopolymer mortar was centrifugally spray-applied to a corrugated metal culvert. The culvert, approximately 100 feet in length with a 48-inch diameter, drains water from the airfield beneath a perimeter road. The geopolymer mortar is brought to the site in bags similar to ready mix concrete, and is pumped from a continuous mixer. The centrifugal spray unit is pulled through the culvert using an electric winch to control the speed and provide an even and continuous application.

The culvert drainage flow must be bypass pumped until shortly after the relining is complete. The process requires that the culvert be prepared by pressure washing. Once cleaned and any debris removed, damaged areas and holes must be filled and troweled with the geopolymer or high strength grout before the centrifugal application of the geopolymer.

The required thickness of the geopolymer was 2 inches for the relining of this culvert. The application required three layers to reach the full thickness, with one application being done each day. The application was performed at about 40 degrees Fahrenheit, which is slightly above the lower temperature limit of 37° F. Even in these conditions the geopolymer cured rapidly and achieved expected strength.

This evaluation included field testing methods, which are similar, but not the same as those for regular concrete.


Additional details are available from the U.S. Army Engineer Research and Development Construction Engineering Research Laboratory, and will be published in detail in a technical report.

The demonstration at Simmons, funded by the Office of the Secretary of Defense Corrosion Prevention and Control Program, showed that this process of culvert relining with geopolymer mortar can be an effective alternate to other trenchless lining technologies (Slip lining, Cured-In-Place Pipe, Fold-and-Form, Spiral Wound, Invert Lining). This should be especially true when the pipe diameter is 54 inches or larger.

The spin cast application is typically not compatible with pipelines less than 36 inches in diameter unless the geopolymer is applied with robotic controlled centrifugal spray equipment. It is versatile and the geopolymer can also be hand sprayed on pipes with irregular shapes and large sizes. As part of a market survey it was determined that there are multiple vendors for installing geopolymer mortar. The culvert was reevaluated after 12 months and was in good condition with only minor cracking.

This is a process that should be seriously considered by all Army organizations when planning to repair or rehabilitate deteriorated storm culverts, and storm or sanitary pipes. In particular, this is a very useful process to use when structures are located beneath roadways, since digging up the road is avoided.

POCs are Clint Wilson, 217-373-6742, [clint.wilson@usace.army.mil](mailto:clint.wilson@usace.army.mil), and Jaclyn Mathis, 217-373-3435, [Jaclyn.mathis@usace.army.mil](mailto:Jaclyn.mathis@usace.army.mil)

Wilson is a civil engineer and Mathis is a materials engineer, both with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, Campaign, Illinois. 



# Renovation gives aging commissary building new purpose

by Susan C. Galentine

**D**etermining the fate of older Army facilities is something many installations are confronting in an era of shrinking federal dollars where options of reuse, “mothballing” to conserve energy or demolishing are on the table.

The Fort Carson, Colorado, Directorate of Public Works faced the same question when it came to the installation’s old commissary building when it was replaced by a brand new commissary nearby in May 2012, leaving all of the 102,890 square footage unused.

When the Defense Commissary Agency opened the new commissary, the old commissary was turned over to the public works directorate, which conducted a feasibility study to assess the condition of the building for consolidating compatible Soldier support functions under one roof.

The primary candidate for this consolidation was the critical Soldier Readiness Processing activity, which supports the process of fully preparing a Soldier for deployment, including medical, dental and legal readiness.

The old 1960’s commissary was an ideal facility for repurposing. Centrally located on the installation and close to Soldier barracks and unit areas, it was large, with an open floor-plan. The Central Issue Facility had already moved a state-of-the-art forward issue point to a portion of the building in 2014. Finally, ample parking and proximity to other Soldier support facilities made it an obvious choice for the project.

The Soldier Readiness Processing functions were created shortly after 9/11 in the facilities available at the time, which were spread out into several buildings, said Jim Schloss, Directorate of Public Works Engineering Division lead architect on the project. There were inherent shortcomings in this arrangement, including overcrowded waiting spaces, difficulty in assisting Soldiers through the process and a challenge to maintain accountability.



*The new Mountain Post Soldier Center takes advantage of the high ceilings of the old Fort Carson Commissary with its hallway skylights.  
(Photo by Susan Galentine)*

The study found the plan cost effective and workable. Constructing a new facility of similar size, including demolition of the old structure, would have cost the Army

approximately \$43.6 million, said Schloss, whereas renovating the old commissary came in at \$6.4 million.

*(See Renovation, page 14)*



*(Renovation, continued from page 13)*

The new Mountain Post Soldier Center will provide a one-stop-shop for Soldiers both arriving and departing the installation, said Kristen Coderre, Fort Carson Directorate of Human Resources Soldier Readiness Processing manager. Coderre estimates 2,500 Soldiers a day will walk through the center's doors to use the services with an estimated 250 Soldiers there to conduct the readiness processing business.

Tackling a Sustainment, Restoration and Modernization construction project of this magnitude and complexity in addressing the needs of the different organizations operating out of the facility took time and consideration.

Most of the design work of the major renovation project was completed in-house by the public works Engineering Division architects and engineers as well as construction management. The basic construction contract work began in summer 2014 and was completed in April, with the center expected to be fully open for business this summer.

The scope of the project, according to Jose Sosa, Engineering Division lead engineer and renovation project manager, included demolition of nearly all the interior walls of the old commissary; removing and replacing the heating, ventilating and air conditioning along with all suspended ceilings and lighting; modifying existing bathrooms and the fire sprinkler system; and designing office space with movable partitions to accommodate future modifications.

During the design phase of the project, the Engineering Division staff focused on incorporating energy-saving features into the center in line with the installation's Net Zero energy and water goals.

The center has 108 solar light tubes in the common areas, eliminating the need for artificial lighting most days. Light sensors are installed to supplement the lighting on overcast days by turning on the artificial

lighting, which is supplied by energy-efficient T-8 fluorescent fixtures. New rooftop, energy-conserving air handling units provide heating and air conditioning to individual zones versus a central system. Efficient sinks, showers and toilets were installed to conserve water.

One of the project's main goals was to create large spaces that could be easily reconfigured to support future missions without having to go through costly renovations when adding new functions to the building. To that end, the building space is laid out to support the following functions but can be easily reconfigured as missions change:

One of the project's main goals was to create large spaces that could be easily reconfigured to support future missions without having to go through costly renovations when adding new functions to the building.


- Briefing room with online data input capability designed to handle large groups with the ability to subdivide in two spaces for smaller groups using sound absorbing folding partitions
- Second large briefing room for general briefings
- Central waiting area
- Neural assessment area consisting of an online classroom
- 28 Medical Department Activity offices and a pharmacy
- A Medical Department Activity lab and waiting area
- 11 immunization stations and a waiting area
- Optometry testing and waiting area
- Hearing Conservation Program testing and waiting area
- Legal office
- Large transitions office
- Central offices containing processing and fiscal functions (In/Out Processing; Reassignments,

Transitions and Retirements; Records; Promotions; processing of Absent without Leave/Drop from Rolls; Electronic Military Personnel Office; Quality Control; and the Defense Military Pay Office)

- Defense Enrollment Eligibility Reporting System/ID Cards function for Soldier In/Out processing
- Installation Voting Assistance Officer space
- Post laundry services
- Several management offices, three staff breakrooms and new staff restrooms with showers
- Snack area

One of the most notable new services incorporated in the center is an El Paso County Department of Motor Vehicles office to support all Fort Carson personnel in obtaining Colorado driver's licenses, new license plates, birth certificates and all record functions available from other El Paso County motor vehicle offices located off the installation. El Paso County will lease space from Fort Carson, which benefits both the county and Fort Carson Soldiers by bringing services near where they work and live.

POC is Susan C. Galentine, 719-526-4320, [susan.c.galentine.ctr@mail.mil](mailto:susan.c.galentine.ctr@mail.mil)

Galentine is a public relations contractor for the Fort Carson, Colorado, Directorate of Public Works. 



# Omaha District takes on dirty job of cavitation repair at dam

by Al Barrus

When it comes to work conditions for U.S. Army Corps of Engineers Omaha District employees, few have it grittier than powerhouse mechanics. A routine maintenance task for the mechanics at the Fort Randall Project in Pickstown, South Dakota, is repairing cavitation damage that slowly eats away at the gargantuan Francis turbines inside the belly of the dam's powerhouse.

"Cavitation will destroy the unit if you don't take care of it: the efficiency of the unit decreases if you don't fix this regularly," said Rod Bergin, senior mechanic at Fort Randall Dam. Cavitation damage in a hydropower turbine happens as a result of years of runtime: it also occurs on boat propellers. When water enters a low pressure area, it flows across the turbine blades, forming gas bubbles, which increases pressure causing the gas bubbles to collapse, and the reaction slowly eats away at the metal blade creating a cavity.

Corrosion and cavities on a hydropower unit lower efficiency, power production and can cause problems to other power plant components if left unrepaired. Once a hydropower unit has been set aside for cavitation repair, it's dewatered, and work scaffolding goes up.

A duct system keeps fresh air moving through the work area, because melting away steel in a confined space can be hazardous.

"To cut away the corroded steel, we use an air arc tool, which has a copper electrode that creates an arc flash to melt steel, as well as a hose that supplies 100 pounds-per-square-inch of air pressure to flow behind the arc. The electric arc turns the steel into liquid and the air pressure sprays away the material," said powerhouse mechanic Mark Nelson. "It's a down and dirty way of removing a lot of metal very quickly. Cutting with an air arc is like taking a hot knife into butter."

With steel turning to liquid in close quarters, there's a great amount of protective equipment that needs to be donned before



Fort Randall Operation's Project Manager Tom Curran, Omaha District Commander Col. John Henderson, and Fort Randall Power Plant Maintenance and Operations Manager Mike Schenkel inspect a dewatered hydropower unit's wicket gates from inside the scroll case. The unit has been set aside for cavitation repairs.

going about this task: leather coveralls, gloves, boots and hood, personal protective equipment weighs 70 pounds.

"When we're welding, the smoke and fumes produced contain hexavalent chromium," said power house mechanic Bryce Stasch. "The hood we wear is connected to an air pump that creates a positive pressure in the hood to keep fumes out."

When the mechanics begin cutting away at corroded metal, a cavity that appears to be the size of a pinhole from the surface is usually larger than meets the eye. A pinhole of corrosion may open into a cavity as wide as a baseball. The corroded metal must be melted away to non-corroded steel to make a base for fresh alloy filling.

"As filling, we use welding wire," said power house mechanic Bryce Eggers. "When you pull the trigger on this welding tool the electrode melts off fresh strips of steel, and it's constantly feeding 17-gauge wire from a 45-pound spool of stainless alloy."

Mechanics replace the rough, air-arc'd cavities with wire filling, one line at a time laying a grid pattern of the corrosion

resistant alloy until what was carved jagged is restored to the turbine's original shape.

After sufficient filling has been welded into the jagged cavity, mechanics grind the surfaces smooth to match the original contour of the Francis turbine's runner blades.

After sufficient filling has been welded into the jagged cavity, mechanics grind the surfaces smooth to match the Francis turbine's runner blades' original contour.

It's all in a day's work for a powerhouse mechanic: doing the dirty work that keeps the mission moving forward at the Fort Randall Project.

"They perform cavitation work eight weeks each year. During that time, they spend six to eight hours per day suited up in the welding gear," Bergin said. "After the cavitation work is done, we replace cooling coils on the units, which is like dismantling an automobile engine, except the parts are a lot bigger and heavier."

POC is Al Barrus, 402-995-2420,  
[alma.h.barrus@uace.army.mil](mailto:alma.h.barrus@uace.army.mil)

Barrus is a public affairs assistant, U.S. Army Corps of Engineers Omaha District.



# Construction COR documentation – What’s the big deal?

by John Kahler

The government will likely pay for substandard contractor materials and workmanship if the contracting officer’s representative fails to adequately document construction contract activities. As the eyes and ears of the contracting officer, the contracting officer’s representative is directly responsible for assuring contractor quality and achieves this through documentation utilizing such tools as their daily report, photographs and contract discrepancy reports.

Documentation is essential and must not be taken lightly. Properly completed documentation is often the only evidence the government has available to validate or disallow a contractor’s claim.

Taking the right steps to provide good documentation will help substantiate the government’s position in the case of litigation. Good documentation can be summarized as accurate, understandable and complete. An essential element of accuracy is timeliness, therefore events must be recorded promptly as memory becomes unreliable as time elapses. Events recorded must also be true, not misrepresented, and specific regarding *who, what, where, when* and *why*. To be understandable, the contracting officer’s representative must endeavor to record events in plain terms, without the use of jargon or non-standard trade terms or abbreviations. Documentation has little value if it is not complete or is missing pertinent details. The daily report is an essential tool to provide these key details.

The contracting officer’s representative’s daily report is an authenticated (i.e., signed and dated), chronological log of construction activities. A report must be prepared for each day the contractor is scheduled to work. Keep in mind that it is just as critical to record periods of inactivity; as these reports may be used to support the contracting officer’s decision to take action against the contractor for lack of diligence, as well as refute a contractor’s request for an otherwise inexcusable time extension.

For each day the contractor does work, the contracting officer’s representative should record: the type/number of workers, type/quantity of major equipment and materials delivered, work accomplished, unforeseen site conditions, key discussions with the contractor, unsatisfactory work performance, project delays, weather conditions, and safety and environmental concerns.

Properly completed documentation is often the only evidence the government has available to validate or disallow a contractor’s claim.

Photographs are an excellent way to augment this daily report. They provide a visual record of work performed, unsatisfactory materials and workmanship and incidents such as theft, vandalism, fire, flood, weather damage and injuries. Because photography is prohibited in certain areas of an installation, the contracting officer’s representative should coordinate with the installation Operations Security Office prior to taking photographs. To be of value, photos must be taken with care (i.e., with the object centered, in focus and well lit) and should contain an object (e.g., ink pen or identification card) that provides a measure of relative size. Photos are to be date stamped, features most modern digital cameras have. Photos must be labeled with the subject and contract number and cross referenced to the applicable daily report they support.


In addition to photos, contract discrepancy reports are an essential documentation element. Deficiencies are a failure of the contractor to comply with the contract and typically involve unsatisfactory materials or workmanship, unsafe acts, or a failure to perform. In the first step of documenting deficiencies, the contracting officer’s representative verifies that the deficiency exists and is supported by a contract reference or requirement, followed by immediately notifying the Contractor,

both verbally and in writing. A cognizant contracting officer’s representative should never allow a contractor to continue to perform work that is noncompliant. After notifying the contractor, the contracting officer’s representative details the deficiency in his or her daily report and initiates a contract discrepancy report (e.g., Department of the Army Form 5479), which is submitted to the contracting

officer. For follow-up, the contracting officer’s representative tracks any open deficiencies until they are resolved.

If done properly, documentation provides an accurate record of contract activities and statements made between the contracting officer’s representative and the contractor. The daily report often provides the necessary proof to resolve disputes and substantiate or disallow a contractor’s claim. Photographs help augment the daily report by recording key events such as work accomplished, unsafe conditions and work rejected. In helping to ensure the government receives satisfactory materials and workmanship, contracting officer’s representatives must continue to be vigilant in identifying and documenting contract deficiencies.

POC is Christine Gettys Hull, 910-396-3951, [Christine.g.hull.civ@mail.mil](mailto:Christine.g.hull.civ@mail.mil)

John Kahler is the chief of the construction inspection branch, engineering division, directorate of public works, Fort Bragg, North Carolina, and Hull is the operations officer, business operations and integration division, Fort Bragg. 





# Carefully managed forests provide training opportunities

by Jessica Baylor and Nicole Hernandez

There are more than 18,000 acres of forested area on the Chesapeake Bay at Aberdeen Proving Ground, Maryland. That is more than six times the amount of forested area, about 3,000 acres, which was part of the installation when it was first established in 1917

Natural regeneration has been ongoing at Aberdeen Proving Ground since its founding, when the area was primarily agricultural, to a point where today the installation is considered the second largest single owner of forest resources in Maryland. Much of the land has reforested, providing riparian buffers that stabilize shorelines and improve water quality. The natural regeneration benefit and subsequent tree canopy development have contributed to the bay's ecosystem, through reduction of total suspended solids, nitrogen and phosphorus from stormwater runoff, has been considerable. However, years of inattention many areas also have resulted in large amounts of fuel load, which, if not managed, could lead to adverse impacts to mission and to the urban wildland interface.

The large amount of forested areas sets Aberdeen Proving Ground apart from other Army test facilities as a unique outdoor testing platform. A combination of weather conditions and forested, grassland, marsh habitats creates environmental conditions that resemble 80 percent of the world's

climates and habitats. These conditions lead to a clockwork of season changes and vegetation change cycles that are critical to Army testers to use these known factors to realistically assess how programs and equipment will perform for soldiers in the field in various environmental and climatic conditions. In addition, the natural character of the installation continues to make it a vital habitat for waterfowl, fish, bald eagles, deer, and many other animals and plants.

The installation's Department of Public Works Environmental Division manages the forests as a natural resource for multiple uses including military training, sustainable yield of renewable resources, scientific research, education, and recreation all while keeping an Army mission focus.

To support the Army mission and the surrounding communities, the installation surveyed forested areas for natural fuel loads. Some areas were identified as requiring fuel load reduction efforts due to recognized risks for wildland fires. So far this year, the installation has completed two separate actions for fuel load management to address identified risks -- mechanical maintenance of a firebreak along the installation boundary near a densely populated area and implementing control burns on military range areas. Both actions were taken to allow for the maintenance of excess fuel

load under advantageous meteorological conditions, thus inhibiting uncontrolled burns, especially during poor meteorological conditions (i.e. undesirable wind speed/direction) that could adversely impact the installation's ecology as well as nearby populations.

Through a cooperative agreement with the Department of Natural Resources, APG has partnered with Firewise Communities Program, a program co-sponsored by the Department of Agriculture Forest Service, the Department of the Interior and the National Association of State Foresters, to complete mechanical clearing of an area identified as the installation's highest potential for a wildfire/community interface. Firewise was at the Van Bibber Treatment Plant in Edgewood, Maryland, on March 15 to complete mechanical clearing of an installation area of excessive fuel load near a residential community and create a firebreak between the community and the forested area. The installation's environmental program is working with Firewise to develop plans to address additional areas, with officials noting that the Firewise partnership was vital to completing this mechanical maintenance.

This spring, the installation re-initiated control burns, conducted with Army Test Center and the Aberdeen Proving Ground

*(See Forests, page 18)*



*Officials with Aberdeen Proving Ground, Maryland, partnered with Firewise Communities Program and the Maryland Department of Natural Resources to use mechanical maintenance to clear an area of the installation that was identified as high potential for a wildfire/community interface.  
(Maryland Department of Natural Resources Photo)*



# Border collies solve bird control woes at lock and dam

by Patrice Creel

**L**ike scientists and engineers, border collies are problem solvers, so research biologist Dena Dickerson of the U.S. Army Engineer Research and Development Center's Environmental Laboratory, Vicksburg, Mississippi, knew this intelligent animal could be an ideal solution for bird control at Oklahoma's Robert S. Kerr Lock and Dam.

Personnel from the dam requested the research center's assistance in finding an innovative solution to roust thousands of cormorants and gulls. For the past decade increasing numbers of these birds have roosted all over the dam in October through April, resulting in health and safety hazards, as well as costly equipment repairs and labor for constant bird droppings' cleanup. The Corps of Engineers Tulsa District estimated yearly dam equipment damage at \$10,000 due to metal corrosion, while yearly cleanup charges spiraled to \$27,000 in 2015.

The \$3,500 problem solver, named Ellie, appeared last October.

As a well-known conservationist, Dickerson called upon her expertise as an avid dog enthusiast and professional trainer to demonstrate what resulted in the perfect solution when formerly used bird spikes, wires and loud noises failed. She was the principal investigator for the project,

supported by the Dredging Operations Technical Support Program, coordinated by the lab's Cynthia Banks, and the Coastal and Hydraulics Laboratory's Navigation Systems Program, managed by Eddie Wiggins.

"When I was approached with this problem, I immediately thought about trying border collies," Dickerson said. "These dogs are incredibly smart and have a natural instinct to herd. When they see the large birds all over the structure, they immediately try to herd them away. They primarily just want to make the birds move away and are not interested in killing them, which is why they can be used safely for the birds.

"This breed has been used to haze and scare off geese and other wildlife from runways of military bases for at least 20 years. They are also used to scare off nuisance geese at places such as cemeteries, golf courses, soccer fields and the National Mall in Washington, DC. They had never been used at a lock and dam facility for cormorants and gulls, but we felt that it was worth a try," Dickerson said.

In April 2015, Dickerson took one of her personal border collies, trained in agility and herding sheep, for a demonstration to the Kerr facility personnel to see if the concept



*Research biologist Dana Dickerson continues to monitor Ellie's care as the highly trained border collie keeps Oklahoma's Robert S. Kerr Lock and Dam free from thousands of cormorants and gulls. Using Ellie is saving the U.S. Army Corps of Engineers Tulsa District dam equipment damages estimated at \$10,000 a year due to metal corrosion and yearly bird dropping cleanup charges of \$27,000. (Photo by Jan Hoover)*

(See Border Collie, page 21)

*(Forests, continued from page 17)*


Department of Emergency Services to reduce the frequency of wildland fires, maintain line of sight at ranges, and reduce the spread of phragmites in specific range areas. About 900 acres of military testing and training range areas were burned: 300 on March 9, 100 on April 19, and 500 acres the next day. The controls burns were a success as they cleared ranges of excessive fuel load, and the controlled burns did not impact nearby populations or forested areas. All control burns at the installation follow the Installation Wildland Fire Management Plan, the

purpose of which, in part, is to address potential wildland fire risks while sustaining mission landscape for testing and training activities.

Control burns are considered the best way to maintain military range areas due to unexploded ordnance concerns throughout the installation as well as minimizing vehicle disturbance that would cause additional erosion. Natural resource managers coordinate the burns to ensure they do not cause ecological damage beyond the ecological benefits, which include returning nutrients to the environment, controlling invasive species and pests, and improving habitats for specific desired species. A pre-

burn ecological assessment was completed and quarterly post-burn monitoring will continue for three years to assess the impacts and effectiveness of the control burns.

POC is Jessica Baylor, 410-436-7198, [jessica.m.baylor.civ@mail.mil](mailto:jessica.m.baylor.civ@mail.mil)

Nicole Hernandez was an Oak Ridge Institute for Science and Education Fellow for the Directorate of Public Works Environmental Division and Baylor is an environmental protection specialist in the Directorate of Public Works Natural Resources Branch, Aberdeen Proving Ground, Maryland. 



# Tackling the bane of installation motorists: potholes

by Rick Akers and Ashley Gore

We generally do not think too much about the roads we drive until we hit or dodge an unexpected obstacle, utter the requisite expletive, and carry on with our daily routine. Any area with a system of improved roads has professionals working away to maintain these surfaces to keep them safe for travel. However, sometimes potholes, the ubiquitous bane of drivers, appear. They can become more than an inconvenience as damage can result, such as flattened tires, suspension damage or accidents that could result in injury or worse.

They cause problems for the Directorate of Public Works at Fort Bragg, North Carolina, as well as at every other installation across the Army and for the road maintenance staffs in any city or town. Everyone asks the same two questions: What causes these hazards? What can be done to prevent or repair them?

Roads, like any engineered structure or system, depend greatly upon a proper foundation. Making certain the soil underneath is properly prepared with correct materials and compaction ensures the longevity and reliability of the structure. If laid improperly, roads can suffer a shortened lifespan and develop cracks which turn into potholes. Small defects turn in to cracks, which, in turn, create a system of cracks called “crocodile cracking” due to its appearance. Rain water entering these cracks increases the degradation of the pavement. Any defect in a road can (and generally does) turn into a greater hazard with continuous traffic. Potholes are created in this way.

In areas with freezing temperatures, frost heaving can cause small flaws in the road to become potholes. Frost heaving occurs when water seeps beneath the surface of the pavement, freezes, and thaws. This cycle repeats itself and causes the road to rise, creating further damage. Continual traffic multiplies this effect and potholes result.

Poor drainage or compromised drain pipes under roadways can cause “sink holes”



*Poor drainage or compromised drain pipes under roads can lead to sink holes that undermine the road and cause serious issues, both for an installation and for a driver. (U.S. Army Photo)*

that undermine the road and cause serious issues. Utility repairs done under roads and are improperly compacted, paved and sealed can also begin the cycle of degradation that leads to potholes. Now that there is a pothole, what can be done?

Many methods for permanently or temporarily repairing potholes exist. One method is throw and roll. This is where you fill the pothole with patch material and drive over it with a vehicle for compaction. This is the most popular method but it does not make for a lasting repair. Another method is the semi-permanent repair. Here you remove water and debris from the hole, cut and square up the edges with a saw, fill the hole with the patch material and compact with a plate tamper or small roller. These repairs tend to last a lot longer. The last method is spray injection repair. First you blow water and debris out of the hole. Second, you spray a tack coat of binder on the sides and bottom of the hole. Next you blow a mixture of liquid asphalt and aggregate into the hole in layers or lifts. Finally, you cover the patch area with clean aggregate to prevent asphalt from sticking to vehicles. This method requires no compaction.

Weather, traffic and safety concerns provide challenges to the pothole repair

process. Ensuring the safety of workers in the performance of their duties should be a chief concern for all travelers. Slowing to a safe speed and providing adequate clearance should always be done in work zones.

What can be done to prevent these road hazards? Proper installation is the first guard against premature failure. Preventing drainage issues with infrastructure monitoring is key. Sealing cracks as soon as they appear is also critical. This will prevent moisture from seeping into cracks and under pavement which will inhibit frost heaving and any further damage.

Road defects should immediately be reported as the repair utility may not be aware of any issues in a particular area. Responding quickly and appropriately to potholes is key to ensuring safety and limiting further damage to pavement.

POC is Christine Gettys Hull, 910-396-3951, [Christine.g.hull.civ@mail.mil](mailto:Christine.g.hull.civ@mail.mil)

Rick Akers is the roads and grounds supervisor, Operations and Maintenance Division, Ashley Gore is the exterior branch chief and operations officer, Operations and Maintenance Division, and Hull is the acting operations officer for the Business and Operations Integration Division Directorate of Public Works, Fort Bragg, North Carolina. 🍌



# Teamwork creates innovation in airfield damage repair

by Kerry Larsen

Researchers with the U.S. Army Engineer Research and Development Center in Vicksburg, Mississippi, recently marked a milestone in their collaboration with Soldiers from Fort Bragg, North Carolina, and experts with the Maneuver Support Center of Excellence at Fort Leonard Wood, Missouri, in demonstrating key components to upgrade the Airfield Damage Repair process.

Dr. John Rushing and his research and development center colleagues teamed with engineer battalions throughout March at Sicily Drop Zone at Fort Bragg to train and prepare Soldiers on the newest airfield damage repair materials, equipment and techniques the center developed.

They demonstrated their successful efforts March 17 at Sicily Drop Zone with Soldiers from the 27th Engineer Battalion, the 127th, 37th and 307th Brigade Engineer Battalions, and the Army Reserve's 844th Engineer Battalion participating. The Vicksburg center provided materials, equipment, trainers and general support for the demonstration, and the Maneuver Support Center of Excellence Maneuver Support Battle Lab provided a formal assessment of equipment package performance

Approximately 125 visitors attended the event, including Maj. Gen. Richard Clarke, 82nd Airborne Division commanding general, Col. Jayson Gilberti, 20th Engineer Brigade commander, and Col. Bryan Green, the research and development center commander. The 173rd Airborne Brigade sent observers from Vicenza, Italy, with other Air Force and Marine spectators.

"Ultimately, the greatest benefit is that we created a group of Soldiers across four battalions that were trained on the ADR (airfield damage repair) mission in the exact same way. They now have a commonality of language and approach for how to execute the mission. At the end of the training, their leadership saw how well they could execute given the best equipment," Rushing said.



*Soldiers from Fort Bragg, North Carolina, race to install fiber reinforced panels during an Airfield Damage Repair demonstration held March 17 at Fort Bragg. The U.S. Army Engineer Research and Development Center, the Maneuver Support Center of Excellence and Fort Bragg engineer units have been working on the project since January 2015. The intent is to upgrade the Army's airfield damage repair procedures, making them faster and more efficient. (U.S. Army Photo)*

"The Soldiers were great. They brought a variety of experiences to the training that really helped our perspective of how they execute the ADR mission in real life. They rapidly became proficient at the tasks we trained throughout the exercise, which was very impressive."

Before the innovations in airfield damage repair technology, the airborne community could only make repairs to sustain C-130 aircraft. A quick and safe means to deploy Soldiers and equipment to any location in the world is critical to the success of military and disaster response operations.

Today, there is the C-17 Globemaster, one of the largest military transport aircraft in the United States. With a maximum payload capacity of 170,000 pounds and maximum load takeoff weight of 585,000 pounds, the behemoth C-17 can deliver a powerful punch when landing on airfields.

And while runways take a hit with every pass, after enough landings, airfields become dangerous and unusable, dramatically

slowing down response operations.

"The larger air platform is a strategic force projection necessity when opening a theater. ERDC's newly developed airfield matting is the primary technology enabler," said Nick Boone, Engineer Research and Development Center technical director of force projection for maneuver support.

"The capability advancement for the airborne engineer community is the ability to restore a damaged airfield within eight hours and sustain 100 C-17 landings," Boone said. "If the engineer mission can be accomplished with fewer pallet positions on the air-drop platforms, that leaves room for additional pallets of ammo or medical supplies that can be provided to paratrooper assault teams."

Throughout the year leading up to the Fort Bragg training, the center staff worked closely with the 20th Engineer Brigade to optimize an Army-specific prototype

*(See Teamwork, page 21)*



*(Teamwork, continued from page 20)*

airfield damage repair kit for use with the Army's existing light airfield damage repair package. The kit features a redesigned fiber-reinforced polymer mat to cover the repaired crater, certified for use by C-17 and F-15 aircraft. The matting and all tools and materials for installation are contained in an air-droppable box. The kit is scalable to match the size of any bomb-damaged crater, but the current configuration contains all materials and tools needed to complete repair of one 25-foot crater, three 15-foot craters, or five 10-foot craters using fiber-reinforced polymer matting.

Chief Warrant Officer 2 Dustin Nistle, 37th Brigade Engineer Battalion-82nd Airborne Division, played a key role in developing the airfield damager repair kit and oversaw a significant portion of the Soldiers' training on the kit.

"It's great to see Soldiers and Civilians alike come together to tackle one of the major capability gaps within the ADR Community. This expedient repair method allows our engineer paratroopers to shorten



*A Fort Bragg engineer guides the High Mobility Engineer Excavator through its paces at the Airfield Damage Repair Demonstration held March 17 at Sicily Drop Zone, Fort Bragg, North Carolina. U.S. Army Engineer Research and Development Center engineers and researchers collaborated on the demonstration with Soldiers as part of an Airfield Damage Repair upgrade project during the past year. (U.S. Army Photo)*

the time necessary to clear, assess and repair any landing strip anywhere in the world," Nistle said.

"Working with MsCOE (Maneuver Support Center of Excellence) and ERDC is always a pleasure. The professionalism and expertise brought to the table from those communities is unparalleled. I've learned more from ERDC about ADR in the last

four months than 13 years in the engineer community."

*POC is Kerry Larsen, 601-634-2553, [Kerry.Larsen@usace.army.mil](mailto:Kerry.Larsen@usace.army.mil)*

*Larsen is a public affairs specialist with the U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.*

*(Border Collie, continued from page 18)*

might work.

"My dog had never seen anything like cormorants but immediately knew what to do and hazed the birds off the railing and walkways of the structure. The lock personnel were so impressed that I identified where to get one of these dogs that was specifically trained to do this type of job," Dickerson said.

Owned by Rebecca Moore of Flyaway Farms in North Carolina, Ellie was initially leased but just four months later was purchased, because lock personnel said she was so successful in keeping the birds away from their structure.

"The birds still use rocky areas near the structure to roost and feed during winter, but they no longer use the Kerr structure as long as Ellie is present," Dickerson said.

"I facilitated the implementation of the dog patrol at the Kerr structure and have conducted a monthly monitoring program to evaluate the success of the dog patrol effort and monitored the care and safety program for the dog.

"We are also working with the Kerr facility personnel to develop training exercises and activities that they can do with Ellie to keep her 'tuned up' until the birds come back again for next year's winter roosting," she added.

Dickerson said she was not surprised the collie would be successful.

"I was surprised at how fast we had success. As soon as Ellie arrived, the birds were gone from the structure. The lock operators have to work hard to find birds for her to get to work. I am thrilled that this has been such a team effort to implement a win-win solution to a really

nasty problem," she said.

Ellie and her accomplishments have received a great deal of media attention from internet postings, newspaper articles and on the scene television news stories. Once again, the research and development center has provided an innovation solution making Oklahoma's Robert S. Kerr Lock and Dam safer and better.

As Dickerson noted, "Ellie is especially happy," Dickerson said. "She gets to have a border collie's dream job."

*POC is Patrice Creel, 601-634-2100, [Patrice.Creel@usace.army.mil](mailto:Patrice.Creel@usace.army.mil)*

*Creel is a public affairs specialist with the U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi, and Jan Hoover is with the center's environmental laboratory.*



# Installations explore intergovernmental service agreements

by Audrey D. Oxendine

Anyone who has worked in contracting knows that procedures and regulations make for a long and sometimes frustrating process. The Federal Acquisition Regulation is comprised of 53 parts that dictate competition, contract types, special programs, requirements and management.

Many good but small companies are discouraged from bidding on solicitations, either because they do not understand the process or cannot afford the legal analysis needed to navigate the regulation. Companies bidding on those contracts transfer that cost into the contract. Thus, customers soliciting what they thought was a simple, reasonably priced service contract, often have sticker shock when proposals are received. Until now, a Federal Acquisition Regulation contract has been the only tool available for acquiring installation services.

The 2013 National Defense Authorization Act allows the Department of Defense to enter into Intergovernmental Support Agreements with local and state governments that can be sole-sourced using community wage rates as long as it is beneficial to the defense department. At Fort Bragg, North Carolina, two Intergovernmental Support Agreements have been implemented and a third is being developed.

While all three agreements will save Fort Bragg hundreds of thousands of dollars in this fiscally constrained environment, the public-public partnership also provides benefits to local government. Fort Bragg entered into an agreement with Cumberland County for stray animal control due to the poor condition of the installation animal control facility and a change in the Management Decision Evaluation Package. It was a logical step since the county has provided this service for years and Fort Bragg would save thousands of dollars in facility repairs.

Fort Bragg's Airborne Special Operations Museum also has benefited from this type of support agreement through a custodial services agreement with the City of Fayetteville. The museum is listed as the #1 "Thing to Do" in the City of Fayetteville according to *tripadvisor*<sup>®</sup>. Fayetteville benefits from this high visibility tourist attraction, and thus is

incentivized to maintain it, even though the city doesn't own or operate it.

Now although a new maintenance Intergovernmental Support Agreement for the museum is still in development, the concept has received approval from Installation Management Command headquarters. Because the museum is located in the heart of Fayetteville and not on Fort Bragg, the city can make repairs and respond quickly to facility needs.

In fiscal years 2014 and 2015, the facility did not have an executed maintenance contract as contract bids under the Federal Acquisition Regulation were three times higher than the Independent Government Estimate, resulting in emergency maintenance being performed by government staff or simply deferred. The projected savings for the museum's maintenance Intergovernmental Support Agreement, as compared to the last contract proposal, is \$200,000.

Many installations are small cities within themselves. More than likely, the county and/or city is providing the same services the installation provides including refuse collection, custodial services, grounds maintenance, and stray animal control. Any service the municipality is currently providing, except emergency and fire services, can be considered for one of these agreements.

The first step is to determine the cost of the services being contracted and then check to see if the local government can perform these same services. Does the local municipality have the capacity to support the installation? If yes, then there may be possible economic and community benefits of a public-public partnership.

Intergovernmental Service Agreements are a mutually beneficial tool available to installations and municipalities alike. Municipalities do not provide services based on cost plus profit. Generally, the rate is the actual cost needed to perform the service, which is financially advantageous to the installation.

The once complicated process of developing an acquisition regulation contract is streamlined into a concept package

that includes a cost benefit analysis and a performance work statement, which are negotiated between the two parties. While legal and command approvals exist throughout the process to ensure proper oversight, the approach is less time consuming and much more economical.


Other installations have taken advantage of these agreements. Presidio of Monterey, California, has entered into agreements with the City of Presidio that has resulted in a 22 percent savings to the garrison. An agreement between the City of Sierra Vista and Fort Huachuca, Arizona, was used for a library at the post, resulting in an estimated savings of \$300,000 annually and a net savings of \$2.2 million. At Fort Gordon, Georgia, in partnership with the City of Augusta, a water and wastewater treatment Intergovernmental Support Agreement has resulted in a cost avoidance estimated at \$7.4 million in capital upgrade costs and an annual savings of \$47,500 in commodity costs.

While this is the first year Fort Bragg has successfully implemented these agreements, opportunities to use the tool continue to present themselves. As budgets become tighter and regulations grow, Intergovernmental Support Agreements are becoming a critical tool for the future.

For more information, visit <http://www.acsim.army.mil/installationservices/igsa.html>. As a legal reference, Intergovernmental Support Agreements have been codified in 10 United States Code 2679.

*Editor's note: Additional information for this article was provided by Dr. Lynn Odom, Headquarters Installations Management Command Sustainability.*

POC is Christine Gettys Hull, 910-396-3951, [Christine.g.hull.civ@mail.mil](mailto:Christine.g.hull.civ@mail.mil)

Audrey D. Oxendine is the Energy and Utilities Branch Chief, Operations and Maintenance Division, and Hull is the Acting Operations Officer, Business Operations and Integration Division, Fort Bragg, North Carolina. 



# Empowering workers energizes savings at Presidio of Monterey

by Jay Tulley

When most people think of energy conservation on military installations, they picture solar panels, new Leadership in Energy and Environmental Design buildings, and signs on walls telling people to turn off the lights when leaving a room.

At the Presidio of Monterey, California, Directorate of Public Works staff realized that persistent energy savings cannot be sustained without good operations and maintenance processes. So we worked with the Presidio Municipal Service Agency to embed energy conservation into our maintenance contract and the maintenance staff's daily practices. Our "Low-Cost / No-Cost" program allows energy conservation measures to become standard practice, and empowers maintenance staff to correct energy waste when and where necessary.

## Insights like these from guys in the field every day created these cost-saving measures, not a formal energy audit.

These low- or no-cost energy conservation measures are categorized as operations and maintenance processes in the Department of Defense Energy Management Handbook. They are embedded into the Presidio's maintenance contract with an associated cost accounting code. By delegating the work to the operational level, technicians can efficiently make the changes during their daily work.

For example, heating, ventilation and air conditioning technician Enrique Cardenas installed a motion sensor that enables a computer lab air conditioning unit to run only when the room is occupied, saving more than \$2,000 per year.

Electrician Don Neal recognized an opportunity when replacing the light bulbs on the theater aisles that were always on. He installed LED running lights and a switch at a cost of about \$2,000, saving the installation more than \$3,000 annually.

Steve Lang, lead heating, ventilation and air conditioning technician, installed an outdoor air reset on the boilers at one of the largest barracks. The work cost less than \$1,000 and saves Presidio of Monterey more than \$20,000 per year. Insights like these from guys in the field every day created these cost-saving measures, not a formal energy audit.

As more Building Automation Systems were installed, a service contract was necessary to support them. Presidio Municipal Service Agency bid out the service contract, and there has been impressive results. Technicians already have identified and worked with the emergency management and control system contractor to correct numerous deficiencies.

By putting the Base Automation System in the hands of the maintenance staff, they now have access to a powerful tool to assist them with trouble-shooting, repair, and energy savings.

Another Presidio practice is including efficiency upgrades into standard repairs. There was a failed supply fan motor in an old dental clinic that had been renovated into an instruction building. In analyzing the new air-flow requirements, the maintenance team determined that the existing 40-horsepower motor could be replaced with a 30-horsepower one, which will save thousands of dollars annually.

One of the most important developments in the Presidio of Monterey Energy Program has been advancing Retro-commissioning practices into our skillset. We've integrated those practices into our program and have seen robust energy savings, a deeper understanding of our buildings, and better occupant comfort. We now will regularly use these skills such as data-logging, trend analysis, boiler tune-ups, and control loop tuning to make our buildings run more efficiently.

POC is Jay Tulley, 831-242-7508,  
[jay.h.tulley.civ@mail.mil](mailto:jay.h.tulley.civ@mail.mil)

Tulley is the energy manager for the Directorate of Public Works at the Presidio of Monterey, California. 🌟



By downsizing the supply fan from a 40-horsepower one to a 30-horsepower one, a maintenance team at the Presidio of Monterey, California, saved replacement costs and long-term energy and usage costs. (U.S. Army Photo)



# Army Corps of Engineers makes Soldier health a priority

by JoAnne Castagna

**W**hen American Soldiers leave home to fight for their country, many return with various injuries.

“To get the critical health treatment they need many have to go to places like Walter Reed National Military Medical Center in Bethesda, Maryland, where they have to separate from their units and uproot their families so that they can be with them. This can cause great anxiety, stress and depression complicating their health conditions further,” said Staff Sgt. Elizandro Gonzales, noncommissioned officer in charge of Occupational Therapy at Fort Drum, New York, Medical Department Activity.

This will now be a thing of the past. The U.S. Army Medical Department Activity has redesigned its health care services so Soldiers can remain on their installations with their units and families and promptly receive the critical care they need all in one place.

At Fort Drum, New York, home of the 10th Mountain Division (LI), one of the most deployed divisions within the Army, the U.S. Army Corps of Engineers, New York District, the Army’s construction agent, recently completed building two Soldier medical clinics

using this new design.

“Many studies have shown that people who are undergoing a healing process or who are trying to recover, that their stress level is directly affected by their ability to heal, so anything we can do to lower stress is just going to be better for the patient,” Gonzales said.

The new clinics are the Soldier Specialty Care Clinic and the Bowe Troop Medical Clinic. Both clinics, constructed by Structural Associates Inc. of Syracuse, New York, under the management of the U.S. Army Corps of Engineers, are part of an existing medical complex on the installation and were added to help establish the Army’s new Soldier health care design and to support medical readiness.

The 23,000-square-foot clinics were constructed with energy efficient features making it Leadership in Energy and Environmental Design Silver certifiable. Some of these energy efficient features include low ampere lighting fixtures, double thermal windows, white roofing to reflect heat, and high efficiency boiler, air conditioning and heating systems.

## Bowe Troop Medical Clinic

Considered a one-stop shop for Soldiers to receive primary care and medical readiness

services, the clinic also provides medical care for American and Canadian Air Force members visiting the installation. It includes space for 16 examination rooms, a radiology department, medical records department, a laboratory department, procedure room, and triage area.

“When a Soldier comes in to see us we can usually get them an appointment within 24 hours,” said Maj. Tranessia M. Hanson, chief, Bowe Troop Medical Clinic Complex. “You don’t see this type of care in a lot of places. In the past this would take three days and now we can get treat them in less than 24 hours.”

Soldiers who are patients at this clinic who may need additional medical care can receive a referral and receive treatment at the recently completed the Soldier Specialty Care Clinic.

## The Soldier Specialty Care Clinic

The Soldier Specialty Care Clinic is connected to the Guthrie Ambulatory Healthcare Clinic and provides occupational therapy services and Traumatic Brain Injury care.

“Soldiers can receive functional fitness treatment, which will allow them to return to duty faster and better. They can get functional evaluations and functional capacity evaluations, which is ultimately an assessment of their capability to perform,” Gonzales said.

“This has implications. It can return a Soldier to duty with a better explanation for their chain of command of their capabilities or it can provide a medical board a very clear picture of the deficits that these Soldiers have.”

Soldiers who come into this clinic benefit greatly because the facility is consolidated and has three occupational therapies under one roof.

“In the past Soldiers needing different care would have to go to different medical centers spread out on the installation. Now all occupational therapy treatment is under one roof,” he said.

“This allows for inter-specialty consultation. A provider from the TBI (Traumatic Brain Injury) section who suspects that a patient might benefit from something the Orthopedic section has to offer can just walk right down the hallway. They can consult with the



*Soldiers sit in the waiting room of the newly built Bowe Troop Medical Clinic, Fort Drum, New York. This clinic provides primary care and medical readiness for Soldiers of the 10th Mountain Division and Air Force on Fort Drum. The clinic will provide better and faster service for our servicemembers.*

*(Photo by JoAnne Castagna)*

*(See Army Corps, page 25)*





# Fort Campbell pest control office diligent in fighting mosquitos

by Heather Clark

**F**ORT CAMPBELL, Kentucky - Workers with the Pest Control division of Fort Campbell's Directorate of Public Works are taking steps to keep the mosquito population under control, advising Soldiers, Families and civilian employees of the installation to protect themselves and help protect the community

While the bite of a mosquito can be itchy and annoying, health officials warn that irritation can be the least of the problems that come with the bite of an infected female. Female mosquitoes have the capability to transmit a variety of bloodborne diseases, including West Nile, Dengue, Chikungunya and Zika viruses. The newest arrival of the Zika virus from South America has national health institutions on alert as the illness makes its way to the United States.

"Most of what we've learned is not reassuring," said Dr. Anne Schuchat, principal deputy director of the Centers for Disease Control and Prevention during an April press conference in Washington, District of Columbia. "Everything we look at with this virus seems to be a bit scarier than we initially thought."

Edward Legere, a pest control foreman at Fort Campbell, said that an important factor in controlling the local mosquito population will be habitat reduction.

"That's the most important thing that can eliminate the probability that you'll have a problem," he said.

Female mosquitoes will lay their eggs in the vicinity of water so hatched larvae can thrive in the liquid until they mature. Minimizing the availability of standing water can ensure that fewer females have a place to deposit their eggs.

"Of course, many of the places here on base, you can't just eliminate the water," Legere said. "What you have to do is deal with what's left behind, and that's when we come in. We put out larvicide."

As the larvicide does its job on the larvae population, the Preventative Medicine division of Blanchfield Army Community Hospital keeps a watch on the adult population, letting Pest Control know when it is time to deploy the foggers.

"You don't have to go running inside when we bring out the foggers," Legere said. "It's an ultra low-volume application; the chemicals are micron-sized when they're pumped into the air."

Legere said the use of larvicides and mosquito fog trucks have been effective tools in helping to keep the mosquito population under control at Fort Campbell.

"Here on base we've always been successful



*The Pest Control Division of Fort Campbell's Directorate of Pest Control is undertaking the process of mosquito population control on the installation, including the placement of larvicide into standing water sources and the use of foggers to kill adults. Residents on the Kentucky installation can assist in the process by eliminating standing water in their yards in places like birdbaths and kiddie pools. (U.S. Army Photo)*

in our program to not have any mosquito-borne diseases among the people [who] live here and work here," he said. "I think we've done pretty good over the years."

Fort Campbell residents and employees can help further reduce the problem by taking a few simple preventative measures.

"You can go around your yard and look for things you might not pay attention to -- a bucket of water, kiddie pools, birdbaths," Legere said. "Even HVAC units. They sweat, they condensate and create water. Many times we'll get calls and we'll see that an HVAC unit is creating a mosquito habitat in a person's yard. Eliminating water is very important."

Legere said that personal protection is very important as well -- in the form of protective clothing and insect repellent.

"Some people are averse to putting DEET on because it's a pesticide, but they're going to have to get over that," he said. "It works, and it works all the time."

Information about mosquito bite prevention, as well as symptoms of mosquito-borne illnesses and travel advisories, can be found at the Centers for Disease Control and Prevention website, [www.cdc.gov](http://www.cdc.gov).

POC is Maria McClure, 270-798-6090, [maria.i.mcclure.civ@mail.mil](mailto:maria.i.mcclure.civ@mail.mil)

McClure is the editor of the Fort Campbell Courier newspaper, Fort Campbell, Kentucky. 🍷

*(Army Corps, continued from page 24)*

providers in those sections and come up with a better clearer treatment plan. That will hopefully be more effective in returning the Soldiers back to duty or return them to any level of independence they may not currently have."

Health care providers also use the activities provided in the Daily Living Room to assist in the recovery. It is set up like a real functioning home to help Soldiers perform self-care tasks, such as bathing, eating, grooming, feeding and taking care of others. Health care providers work with Soldiers, sometimes with the assistance of families members, to help them do such things as make their bed, make coffee, and cook dinner for their family.

Just outside that room is a Healing Garden where Soldiers can rest before or after their therapy. The garden also is part of the Army's new Soldier healthcare design.

"We want Soldiers to be in an environment that is conducive to their rehabilitation and guided by skilled therapy staff which is what we have here," Gonzales said. "Overall it's going to be much better for the Soldiers. This setup is the new plan of Army wide health facilities. It's a lot of exciting stuff."

POC is JoAnne Castagna, 917-790-8219, [joanne.castagna@usace.army.mil](mailto:joanne.castagna@usace.army.mil)

Castagna, Ed.D., is a public affairs specialist, New York District, U.S. Army Corps of Engineers. 🍷



# Corps of Engineers assists Benelux with consolidation, transformation

by Jennifer Aldridge

**W**IESBADEN, Germany - European Infrastructure Consolidation, a process announced by the Department of Defense in January 2015 to save the U.S. government approximately \$500 million annually, is transforming and consolidating installations throughout Europe, including U.S. Army Garrison Benelux, by 2022.

Benelux officials have the unique mission of consolidating their footprint in two countries -- Belgium and the Netherlands. The garrison, with the assistance of U.S. Army Corps of Engineers Europe District and the Dutch Ministry of Defense, will execute a \$122 million transformation program. Upon completion, Daumerie Caserne, and the Brussels and Schinnen Emma Mine leased sites will close with all tenants relocating to Chievres Air

Base, Sterrebeek Annex and Joint Force Command Brunssum, respectively.

Shortly after the announcement, Benelux leadership established a dedicated office to manage consolidation work, said John Phelan, Benelux Transformation Office director.

“As the command started getting into the planning details, the realization of the complexity -- three sites over two countries -- was too much for an additional duty as assigned. It required an additional office,” he said.

The Army Corps of Engineers Europe District is supporting the garrison with planning, design and construction oversight of 10 transformation projects in Belgium. Work includes renovating buildings used by the directorates of Emergency Services and

Family and Morale, Welfare and Recreation; Value Added Tax Office, veterinary clinic and post office; and building new facilities for Department of Defense Education Activity-Europe, Benelux Directorate of Public Works and the Auto Skills Center. A utilities study also was completed to assist with the consolidation effort.

During the next decade, the garrison community will benefit from a new school and sports fields for students in kindergarten through 12th grade, infrastructure upgrades and relocation of garrison headquarters, facilitating the termination of two existing leases, said Émile Pitre, a Europe District Installation Support Branch project manager.

“This will save the garrison \$6 million to

*(See Benelux, page 28)*



*The interior of the offices of the Fire and Department of Emergency Services building at U.S. Army Garrison Benelux underwent a complete renovation thanks to a transformation project supported by the U.S. Army Corps of Engineers Europe District. It is part of transforming and consolidating installations throughout Europe. (U.S. Army Corps of Engineers Photo)*



# Installation consolidation topic for U.S., German engineers

by Vince Little

**L**EIMEN, Germany – Understanding responsibilities and identifying challenges early on will be paramount in meeting an aggressive timeline for structural requirements within European Infrastructure Consolidation, U.S. and German construction leaders said recently at their annual Partnering Conference.

The national defense strategy, which aims to realign and balance American forces in Europe during the next decade, was among several key topics discussed here April 13-14 as U.S. Army Corps of Engineers Europe District met with key counterparts from German federal and state ministries. The forum also included representatives from regional construction offices in Bavaria, Baden-Württemberg, Rheinland-Pfalz and Hessen.

“This conference is a very important tradition for the U.S. and German sides,” said Matthias Vollmer, director of the Building Engineering Division for the German Federal Ministry of Environment, Preservation of Nature, Construction and Reactor Safety. “It’s always an interesting and informative venue, and we hope it leads to better cooperation and continued success for our partnership.”

The gathering, first held in 1992, is set up to create better understanding between the partners, strengthen common functions and provide the latest developments. Officials say it’s a chance to draw on lessons learned from past and current projects while seeking improvement and efficiencies for U.S. programs in Germany.

More than 100 attendees from the Corps of Engineers, the German Construction Administration, Installation Management Command-Europe and the Air Force Civil Engineer Center took part in the two-day session. The group also heard a progress report on the Rhine Ordnance Barracks Medical Center Replacement near Ramstein Air Base, an overview of German nature-protection laws and how they affect U.S. construction projects.

“I’m impressed with the amount and



*Jeff Jackson, Installation Management Command-Europe’s chief of construction, talks about the Army’s plans for European Infrastructure Consolidation at the 2016 U.S.-German Partnering Conference on April 13 in Leimen, Germany. The program was conceived a decade ago under the model of “consolidate, divest and invest,” he said. (U.S. Army Corps of Engineers Photo by John Rice)*

quality of construction executed by our agencies,” said Col. Matthew Tyler, the U.S. Army Corps of Engineers Europe District commander. “We have played a major role in NATO as we improve our collective defense to adapt to a rapidly changing security environment. The EIC [European Infrastructure Consolidation] program is expected to top \$1 billion in the next few years ... [and] events like this set the stage for even better communication to further our partnership. It’s always good for us to come together and have open, candid dialogue. It’s very important for our future success.”

The infrastructure consolidation process will return 15 sites to their host nations and save about \$500 million annually in operating costs for U.S. forces in Europe, the Department of Defense announced in January 2015. It calls for consolidation and restructuring of troops and assets at key locations across the Continent to bolster regional security, capacity and increase readiness.

Engineers say that means considerable design and military construction through about 2024, including major work for the Air Force at Ramstein and Spangdahlem air bases to move missions out of the United Kingdom.

The scope of Europe District’s Army European Infrastructure Consolidation workload includes five projects worth about \$115 million for garrisons in Wiesbaden, Stuttgart, Bavaria and Rheinland-Pfalz, according to program managers.

The infrastructure consolidation program actually dates back a decade under the concept of “consolidate, divest and invest,” said Jeff Jackson, Installation Management Command-Europe’s chief of construction.

“The Army was spending a lot of money, and it was unsustainable. Facilities were not being utilized to the fullest,” he said. “EIC has been a long time in the planning. ... But the geopolitical climate can suddenly change, and we get new mandates to which we have to adjust and adapt our EIC projects. It can impact our planning concepts and strains our resources.”

Ongoing Army infrastructure consolidation actions across Germany include the closures of Giessen and Mannheim’s Coleman Barracks next year, along with Mainz-Kastel station and housing and Barton Barracks in Ansbach in 2018. A partial closing of Kaiserslautern’s Pulaski Barracks also is scheduled for 2018, with a similar measure unfolding at Artillery

*(See U.S., German Engineers, page 29)*



*(Benelux, continued from page 26)*

\$9 million in operations and maintenance costs annually,” he said.

The initiative not only saves money, it enables better service to the community, Phelan said, as “we’re moving the services closer to the customer, becoming a one-stop shop and creating a community center rather than decentralized services.”

Due to the quantity and complexity of projects, many district branches and sections are involved in the transformation.

The Europe District Planning Section worked with Benelux partners to create a future development plan, utilities study and request for proposal packages for design-build projects; the Engineering Branch assists by designing Job Order Contract projects and reviewing designs provided by contractors; the Project Management Branch will execute the Brussels school and athletic fields project for Department of Defense Education Activity-Europe; and the Installation Support Branch designs and executes Job Order Contracts and Multiple Award Task Order Contract projects. The Benelux Resident Office, located at Chievres Air Base, oversees the contractors’ daily work on-site.

Amy Holmes, the Benelux Transformation Plans and Operations chief, recognizes the capabilities and technical expertise that Europe District brings to the team.

“The garrison benefits from USACE’s experience working with host-nation contractors and delivering quality products in complex multinational environments,” she said.

Although the concept of transformation is not new to either the Defense Department or Installation Management Command-Europe, each location has its own set of objectives and unique circumstances, Phelan said.

“The biggest challenge we have here is working with the Schinnen transformation

piece. Based on national agreements and since we live in Belgium, we have more of a habitual relationship with the Corps and the Corps has experience working with the Belgians as well,” he said. “On the other hand, the Netherlands has different national agreements that do not include the Corps, so we don’t have that resident expertise there, making it more of a challenge for us.”

While the Army Corps of Engineers has experience in Belgium - the district recently completed American elementary, middle and high schools at NATO’s Supreme Headquarters Allied Powers Europe in Mons - the transformation work is complex due to the number of projects taking place simultaneously, the partners involved in the decision-making process, and the languages spoken.

Stakeholders such as IMCOM-Europe, the Benelux Directorate of Public Works and transformation offices, and tenant organizations all provide guidance to the Army Corps of Engineers, Pitre said.

Due to the quantity and complexity of projects, many district branches and sections are involved in the transformation.

“Identifying the primary decision-maker when there are multiple financial sponsors or 23 tenant units on one project is tricky,” he said.

Also, there are many different languages spoken during transformation meetings. Everyone speaks English, but sidebars are spoken in other languages, Pitre said. “DPW local nationals and the contractors’ designers primarily speak French, the prime contractor speaks German and tenant organization representatives speak English,” he said.

But the challenges of executing the consolidation are minor in comparison to the anticipated benefits, officials said.

According to the Benelux Real Property Master Plan created in March

2015, garrison leadership will be able to successfully support missions and focus on the long-term use and sustainability of the Chievres community as an enduring presence within Europe.

This transformation postures Benelux to better support U.S. and greater NATO missions as well, Phelan said, adding that “the garrison is centrally located and is gaining more capacity to take on emerging missions, like European Activity Sets.”

Many of the Army Corps of Engineers-managed renovation projects will modify the designs and configurations of available, but underutilized facilities to meet unit requirements, Pitre said.

“U.S. forces at Benelux will be better prepared for future missions,” he said.

Returning the sites in Belgium and the Netherlands will allow more resources to be focused on other U.S. European Command mission requirements, according to Department of Defense officials.

“In the end, this transformation of our infrastructure will help maximize our military capabilities in Europe and help strengthen our important European partnerships, so that we can best support our NATO allies and partners in the region,” former Defense Secretary Chuck Hagel said.

*POC is Jennifer Aldridge, DSN 314-570-2084, [Jennifer.h.aldrige@usace.army.mil](mailto:Jennifer.h.aldrige@usace.army.mil)*

*Aldridge is a public affairs specialist with Europe District, U.S. Army Corps of Engineers.* 



# Lucky 13 tour new Diamond Elementary School site

by Chelsea Smith

**E**xcavators, bulldozers and dump trucks garnished the construction site of the new Diamond Elementary School at Fort Stewart, Georgia, where 13 wide-eyed students discovered diamonds aren't forever but they can be your best friend.

Donning safety gear at a site actively conducting work, students shadowed Archer Western officials who hosted a tour for winners of the firm's safety poster contest May 3. Archer Western is the prime construction contractor for the project.

The contest challenged kindergarten through sixth-grade students to create original designs covering safety themes of their choice in recognition of Safety Week celebrated May 2-6. Safety Week aims to inspire best practices, infuse a safety culture within the industry and increase awareness and commitment to safety at construction sites across the nation.

Winning entries from every grade landed spots in Archer Western's 2016-2017 calendar distributed across the Fort Stewart community. Winners scored a first look at construction in progress, which currently sits at about 60 percent completion.

Students paced through unfinished compartments of frames, concrete and space as declarations revealed students' need to fill in the gaps – literally.

"We can fit a whole house in here!"

exclaimed a fifth-grader documenting the framework of the new amphitheater on his smartphone. "It's going to be huge!"

Facilitators also impressed by offering a simulated tour through a virtual reality headset developed using building information modeling, a technology that provides a digital representation of the physical and functional characteristics of a facility. It also aids in resolving design conflicts before facing issues on field sites and allows material to be fabricated off site before arrival on site. Consequently, the tool mitigates for potentially costly delays, said Matthew Gaskin, an Archer Western project engineer.

Archer Western began construction on the \$40 million facility in October 2014 about 1.5 miles east of the existing facility. The school's modern design features an open layout with operable wall panels that slide open, promoting a collaborative educational environment. The two-story, 122,000 square foot facility also includes a kitchen and teachers area for each quad of classrooms, an outside amphitheater with a stage, gymnasium, three playgrounds and an interactive energy dashboard that tracks electricity-saving efforts, said Susan Smith, U.S. Army Corps of Engineers Savannah District lead project engineer.

The original facility, built in 1963, does not meet current Americans with


Disabilities Act criteria or satisfy current design standards of the Department of Defense Education Activity, which outlines goals to meet 21st century learning objectives through innovation in education, curriculum delivery, use of technology and requirements for sustainability and energy conservation.

Poised to become a beacon among military educational facilities worldwide, the school will better meet the education activity's educational needs and satisfy the U.S. Green Building Council's Leadership in Energy and Environmental Design silver certification requirements, a nationally recognized benchmark for green building design, Smith said.

Despite all its bells and whistles, the main concern is to provide a comfortable educational environment conducive to optimal instruction and learning, Smith said, adding that "the verdict is still out."

Nearly 700 students will have a chance to make their own judgments when the school opens its doors in August 2017, but a lucky 13 seemed to have already come to a consensus – and it's likely to dazzle.

*POC is Chelsea Smith, 912-652-5756, [Chelsea.G.Smith@usace.army.mil](mailto:Chelsea.G.Smith@usace.army.mil)*

*Smith is a public affairs specialist with the U.S. Army Corps of Engineers, Savannah District.* 

*(U.S., German Engineers, continued from page 27)*

Kaserne in Garmisch the following year.

For Installation Management Command-Europe, the final step in the initiative will be closing Wiesbaden's Amelia Earhart Center around 2025 – once work is completed on the Landstuhl Regional Medical Center replacement, Jackson said.

"Also, we are looking to reduce the population stresses that we currently have in Stuttgart and relocate about 800 people


to Baumholder," he added. "2017 looks to be a very austere year when it comes to funding ... and IMCOM has been told to reduce its staff across all our garrisons. We live in challenging times, and EIC is just one of the many challenges with which we deal. Fortunately, we get great support from the Corps of Engineers and our host-nation partners."

Overall, the opportunity to exchange experiences and ideas with leaders and project managers from both sides is invaluable, participants said.

The 2017 Partnering Conference is tentatively set for the spring in Bavaria.

"In the end, we are interested in solutions that work for both sides," Clemens Haury of the German Ministry said through a translator. "Formats like this are always helpful."

*POC is Vince Little, DSN 314-570-2847, [Vince.Little@usace.army.mil](mailto:Vince.Little@usace.army.mil)*

*Little is a public affairs specialist with U.S. Army Corps of Engineers Europe District.* 



## Fort Carson builds structure to house cliff swallow nests

by Michelle Blake and James Kulbeth

At Fort Carson's Piñon Canyon Maneuver Site in Model, Colorado, there are many natural events that signal the onset of spring, including the arrival of hundreds of cliff swallows returning to nest.

Upon arriving at the maneuver site, the cliff swallows historically nested under the catwalk around the base of the 170 foot-tall water tank near the site's entrance. However, when the aging water tank was repainted during 2013-2014, netting was installed to prevent the swallows from building their mud nests on the tank, and when the project was completed, the swallows were not able to adhere mud nests to the tank's slick, freshly painted surface.

The loss of their historic nesting habitat was stressful for the birds. Some swallows failed to build nests, while others were forced to seek undesirable alternative nesting locations. Several swallows used the metal structures at the fuel facility, but the extreme temperature generated under the hot metal roofs and above the pavement below resulted in high fledgling mortality. Other birds attempted to construct their nests in the breezeways and on the sides of cantonment buildings. The buildup of droppings below the nests and presence of parasitic insects inside the nests can create other human health issues. Swallows nesting above fueling operations and on the buildings was problematic to the Soldiers. It was time to take action.

Cliff swallows are insectivores, meaning their diet consists primarily of insects including flies, wasps, beetles and mosquitos. They are very skilled aerial feeders, consuming hundreds of insects daily. Since mosquitos can spread various diseases, including West Nile virus, swallows are considered a beneficial species by many people. They are also federally protected by the Migratory Bird Treaty Act of 1918, and it is illegal to destroy a nest with eggs. To reduce health hazards to Soldiers and prevent future fledglings from dying, the maneuver site staff washed the nests off the



*James Kulbeth, Directorate of Public Works Environmental Division biologist at Fort Carson, Colorado, installs five man-made mud nests onto the structure to encourage the cliff swallows to build their own nests. (U.S. Army Photo)*

fuel structures and breezeways on a daily basis before the birds could complete their nests and lay eggs.

The Directorate of Public Works Environmental Division biologists assigned at Fort Carson and the maneuver site were concerned with the loss of the cliff swallows' original nesting habitat and they devised a plan to create a safe, alternative nesting location for the swallows.

James Kulbeth, Directorate of Public Works Environmental Division biologist, designed and spearheaded the Piñon Canyon Maneuver Site cliff swallow project to build a 12-foot-tall structure that could house hundreds of swallows.

The planning and construction of the structure began in January 2014. However, the design concept came as inspiration in June 2013 as a result of more than a year of considering the future nesting problem the swallows would have when the water tank painting project began. Considerable research into swallow nesting site selection and behavior, and observation of numerous nesting sites on cliffs, under bridges and inside large box culverts, provided specifications for the design details.

There are three basic habitat conditions that cliff swallows require to successfully reproduce -- wide open foraging space over

prairie or wetlands, safe nesting location and a source of appropriate mud to construct their nests.

Cliff swallows are reluctant to build nests lower than 8 feet off the ground. Therefore, it was determined that the minimum distance between the base of the nesting area and the ground needed to be 10 feet, which is well out of the reach of terrestrial predators. The use of recycled telephone poles as vertical support beams for the structure helped reduce costs. The seven roof modules, constructed of new materials, cost less than \$2,000.

Kulbeth and Tom Allred, a former transitioning Fort Carson Soldier, assigned to the Directorate of Public Works, hand built the nesting structure modules, which included several safety features such as predator guards around the support poles and well insulated and vented attics to reduce high temperatures in the nests.

The Directorate of Plans, Training, Mobilization and Security Range Control staff at the maneuver site drilled the holes, set the poles and provided lift machinery to safely install the modules.

It took two days to assemble the nest structure, which was situated close to a water retention pond near the fuel yard

*(See Swallow Nests, page 31)*



*(Swallow Nests, continued from page 30)*

where some swallows previously nested. Since a pair of swallows must make 900 to 1,400 trips carrying tiny mouthfuls of mud for their nest construction, proximity to a water source helps to reduce the birds' individual energy expenditure. Actual construction was completed on May 21, 2014, which was too late for even the last arriving colony of cliff swallows.

As spring approached in 2015, the biologists routinely monitored the new nesting structure but were disappointed that the swallows showed little interest in their new accommodations. The first waves of swallows remained determined to nest in the fuel yard and on the sides of buildings, despite the daily washing to remove partially constructed nests.

To entice the birds to the new structure, biologist contractor Bobby Day created life-like cliff swallow wooden decoys that were suspended from the structure on stiff wires. To further attract the swallows, Kulbeth attached five actual mud nests caulked to plywood pieces under the overhang to encourage the swallows to build their own

nests. PCMS site staff placed a water tank nearby, which slowly released water to create a reliable mud puddle near the structure. The combination of the three attractions had the desired effect. On June 3, 2015, the swallows began to use the new structure and the final count for 2015 was an estimated 196 birds using 98 nest structures.

This May the swallows once again returned to the maneuver site and, due to their strong nest site fidelity, most of them began building and repairing their nests on the structure. The expectation is that at a few of the small, late arriving groups may still attempt to nest in the breezeway or at the fuel yard, and if that occurs the staff will deter their nesting activities.

The nest count by mid-May was 135 nests, which indicates approximately 270 birds using the nesting structure. The structure is large enough to accommodate 350 nests, so there is plenty of room to accommodate new nests.


The Fort Carson Directorate of Public Works Environmental Division staff has an unwavering commitment to support the military mission while protecting and living



*A cliff swallow peeks out of its new mud nest on the man-made nesting structure at Pinon Cañon Maneuver Site, Fort Carson, Colorado. Cliff swallows (*Petrochelidon pyrrhonota*) are easily identified by their orange rump, rust colored red throat and cheek, metallic blue back, white patch on their forehead and a square tail. (U.S. Army Photo)*

with wildlife and restoring the environment. This wildlife habitat improvement project is one of many ongoing projects that help to offset the impacts of training.

POC is James Kulbeth, 719-526-1685, [james.kulbeth.civ@mail.mil](mailto:james.kulbeth.civ@mail.mil)

Michelle Blake is a wildlife biologist with Fort Carson, Colorado, (stationed at Piñon Canyon Maneuver Site), and James Kulbeth is a natural resource specialist at Fort Carson. 

## Man-made surfaces pose challenges, homes for cliff swallows

Cliff swallows are Neotropical migrants and each spring these remarkable social birds embark on a strenuous voyage from their wintering grounds in South America to their breeding/nesting areas in North America. For instance, their famous annual return to the San Juan Capistrano Mission, California, is highly anticipated and celebrated March 19.

Historically, the birds built their nests on tall vertical cliffs with an element of overhead protection but eventually they began to occupy available man-made structures including bridges, overpasses and sides of buildings. The swallows may nest in small colonies or large colonies of hundreds.

Upon arrival they quickly begin building or re-occupying their small gourd-shaped mud nests. Mud is carried in their mouths from sources up to half a mile away. The quality and consistency of the mud is critical to ensure that the nests adhere securely and do not crumble. Both sexes are involved in the labor-intensive nest building process, which can take up to two weeks, and in the incubation of three to four eggs. Nest building is a highly social event and even birds that are not reproducing will participate.

Most nests are innocuous, but the accumulation of messy droppings below some nests, and presence of parasitic insects inside the nests, can create a human health concern. Several species of hematophagous (bloodsucking) insects and mites, including swallow bugs may infest the birds and their nests. These parasites can spread rapidly by crawling to new nests or hitching a ride on adult birds to new locations.

Swallow bugs can live for several years in vacant nests, and severe infestations may cause a 50 percent mortality in fledglings. Adult cliff swallows will carefully inspect potential nesting areas and avoid areas where swallow bugs are present. Swallow bugs are not known to transmit human pathogens, however their bites can cause itchy red bumps.

Since the swallows are a protected species, it is illegal to destroy a nest with eggs, and in some places, a depredation permit from U.S. Fish and Wildlife Service is required prior to removing nests. The best way to limit human-cliff swallow interaction is to prevent the swallows from nesting in undesired areas, and then to provide them with alternate nesting sites.

Clear strips of vinyl plastic can be temporarily hung in doorways to exclude the swallows. These allow easy passage through the doorway and do not completely obstruct the view. For buildings, structure modification is necessary.

Since the swallows prefer a textured surface upon which to bond their nests, often a slick coat of paint is sufficient to prevent nest construction. Another option is to use smooth materials (Plexiglas®, sheet metal, fiberglass panels, etc.) to form a concave surface over the joint between the eave and the wall. Very limited success has been reported with bird spikes or scare tactics (e.g., plastic owls and noise makers). Once the swallows have been excluded from the undesired locations, an alternate nest site should be installed and ready.



# Corrective measures help restore Fort Buchanan site

by Derrick Stepanof

The United States Army takes seriously its commitment to continually improve environmental and safety management practices on its installations.

At Fort Buchanan, Puerto Rico, the installation's Environmental Restoration Program is cleaning up and restoring former contaminated sites to remove land use restrictions and improve land use options.

In 2005, the United States Environmental Protection Agency notified Fort Buchanan that Trichloroethylene, also known as TCE, a chemical used mainly as a solvent to remove grease from metal parts, was detected in the groundwater at the Caribbean Petroleum Refinery, now known as PUMA Energy. The Army conducted an investigation to determine the boundaries and the contamination concentrations. Although the contamination's source was never found, it was presumed to be in the radius area located immediately south of Building 539.

In 2012, the Army conducted a Corrective Measure Study and selected enhanced bioremediation, reductive dechlorination, monitored natural attenuation, and land use controls as the remedy.

Bioremediation at the site includes injecting a carbon substrate electron donor, a patented formula consisting of a mixture of fatty acids and emulsified vegetable oil to condition the aquifer, followed by injection

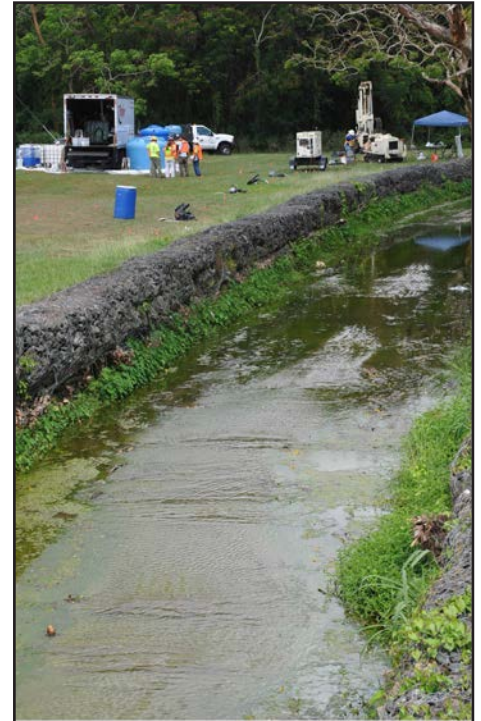
of bacteria that can sustain and increase the breakdown of chlorinated solvents.

Enhanced bioremediation uses bacteria to help break down chlorinated solvents into non-toxic byproducts. Monitored natural attenuation describes a range of natural physical and biological processes, which, unaided by human intervention, reduce contaminant volumes and concentrations in the subsurface. These processes include biodegradation, adsorption, and dilution from recharge, dispersion, and volatilization. Monitored natural attenuation combines these processes with a carefully designed monitoring program to ensure remediation goals are achieved.

In 2014, the U.S. Army Environmental Command contracted with KEMRON Environmental Services, Inc., to design and implement the selected remedy for the Fort Buchanan site. The contractor performed a bench-scale treatability study and determined that the right kind of bacteria exists at the site to break down the TCE to ethene once the bacteria population is enhanced.

In May 2015, KEMRON began implementing the corrective measures at the site by installing injection points, followed by injecting carbon substrate in June and adding bacteria a month later.

The company will continue to conduct Monitored Natural Attenuation at the site for 30 years or until contamination levels



U.S. Army Environmental Command contractor KEMRON performs Corrective Action Enhanced Bioremediation, Reductive Dechlorination at Fort Buchanan, Puerto Rico. (U.S. Army Photo)

reach safe drinking water standards.

POC is Derrick Stepanof, 787-406-5151, [derrick.a.stepanof.ctr@mail.mil](mailto:derrick.a.stepanof.ctr@mail.mil)

Stepanof is an Installation Restoration Manager at Fort Buchanan. 🌱

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## Bulletin discusses land management practices, strategies

by Anne Koster

**P**ublic Works Technical Bulletin 200-1-150, *Multinational Analysis of Military Vehicle Impacts and Regulatory Pressures on Training Land Management*, is proactive guidance for Installation range managers, trainers, natural and cultural resource managers, and related planning areas on Army installations.

It is intended to assist the U.S. Army with potential future adjustments or implementation of new Land Management Practices that can efficiently solve potential stringent future compliance requirements. The Land Management Practices included in this bulletin are not only physical/structural practices but also management strategies, logistical approaches, and good housekeeping practices to reduce environmental impacts and meet regulatory needs. The bulletin, published July 30, 2015, shares strategic insight by documenting how certain nations that are allied with the United States have dealt with challenges related to intensifying human development, encroachment, soil conservation, climate change, and ecosystem management on

their military training lands.

The Army's ability to sustain its lands and ranges for continued training activities is a critical component to maintaining operational readiness. Such land-based training provides essential realism to support the Army's cardinal principle: "Fight as You Train, Train as You Fight." The long-term condition of soils and vegetative cover are keys to providing sufficient carrying capacity for sustained land-based training activities.

The Army also is responsible to the American public as a legally accountable caretaker of federal lands, as outlined in Army Regulation 200-1. This responsibility contributes to the many compliance-driven actions taken across the Army enterprise, such as caring for threatened and endangered species populations; cultivation, maintenance, and protection of habitat for any species with a protected status (whether state or federal); or environmental compliance associated with stormwater, pollution prevention, or erosion control.

The Army has pioneered land

rehabilitation with land management practices and innovative technologies for maintaining their training lands under the Integrated Training Area Management program. These efforts respond to legal compliance requirements and proactively sustain land resources for continuous and future training capabilities. However, changing environmental regulation and funding are putting added pressure on training land management.

Opportunities identified and lessons learned are presented to enable the Army to save money, optimize co-land utilization, and preserve training land resources long-term. This bulletin includes a country-by-country review of the environmental legislative/regulatory/compliance drivers that exist, relative to military training and installations management. It also includes a country-by-country review of the land-based management practices that have been developed relative to the regulatory restrictions and training and/or land sustainment targets in each country.

(See *Land Management*, page 34)



*Joint Multinational Readiness Center Hohenfels Training Area and Grafenwoehr Training Area, Germany, have the largest and most dynamic live-fire training facility in Europe. An extensive soil erosion and sediment control network system has been implemented around the entire training area to facilitate the prevention of sediment from leaving the installation. (U.S. Army Photos)*



# PWTB looks at stormwater management using bioswale technologies

by Heidi R. Howard

The U.S. Army Corps of Engineers has issued a new Public Works Technical Bulletin that describes the methods by which the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory demonstrated, assessed, and quantified effectiveness of an underdrain bioswale approach for stormwater management at Fort Hood, Texas.

Public Works Technical Bulletin 200-1-139, "Evaluation of Demonstrated Bioswale," can be found on the Internet at [http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb\\_200\\_1\\_139.pdf](http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_139.pdf).

Using Low Impact Development or Green Infrastructure can help mitigate and reduce pressure from stormwater runoff on an installation's infrastructure. One such approach is the use of a vegetated bioswale. A bioswale increases infiltration and decrease stormwater runoff in poorly drained soils. An additional benefit from bioswales is the mitigation of pollutants common to stormwater runoff, including petroleum, oil, and lubricants.

The Public Works Technical Bulletin provides the lessons learned from the demonstration of this technology at Fort Hood on very poorly drained soils adjacent to a parking lot and high-use roads. It discusses bioswale technologies as well



An infiltration test is conducted prior to biomedica and planting installation, incorporating an underdrain bioswale approach for stormwater management at Fort Hood, Texas. (U.S. Army Photo)

as lessons that were learned from the demonstrated installation, maintenance requirements, and stormwater management benefits of a bioswale when used in areas with low permeability soils. The focus was on discussing the requirements for maintenance to retain the bioswale effectiveness. The bulletin outlines the evaluation process used and results to help land managers select bioswale systems and understand limitations of these low impact

development technologies.

POC is Heidi Howard, 217-373-5365, [heidi.r.howard@usace.army.mil](mailto:heidi.r.howard@usace.army.mil)

Howard is a researcher at the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory in Champaign, Illinois.

(Land Management, continued from page 33)

Innovative technologies are identified that have been developed in other countries that may assist the United States in dealing with more stringent future regulations. Comparisons and contrasts are provided to assist translating applicable foreign solutions, strategies, innovations, or technologies to U.S. military installations.

From this research, novel responses to environmental regulatory requirements can be developed and/or incorporated for military training and response to mission requirements. These could relate to vehicles utilized, particular training doctrine and cultural contexts, as well as

governmental requirements. Differences in the installation training environment versus the operational environment also can be realized in developing Land Management Practices, as the environmental sensitivities may differ per activity and context. The knowledge gained will bolster stewardship, enhance land rehabilitation, and promote military training sustainment across the Army.

POC is Anne Koster, 217-419-8379, [anne.p.koster@usace.army.mil](mailto:anne.p.koster@usace.army.mil)

Koster is a research scientist, U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory, Champaign, Illinois.

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# 100 years of protecting migratory birds and counting

by Lucas Cooksey and Rebekah Rylander

This year marks the 100th anniversary of the first migratory bird treaty between the United States and Canada. This centennial year is being celebrated across the nation, enhancing awareness of what the treaty entails, and promoting best management practices that can benefit these avian species.

Migratory birds are key indicators for the health of our ecosystems; thus protecting them as part of our national heritage is something all citizens should do.

The Migratory Bird Treaty Act, enacted by Congress two years after the treaty, has evolved throughout the past century and still stands as one of the longest natural resource related laws. Today the act prohibits the unpermitted “take” of migratory birds and their parts, their active nests or eggs, and applies to all U.S. and Canadian citizens. This applies to military installations, military training, and residents on military bases, with few exceptions to the act’s rules in certain scenarios.

Since there are only a few closely-controlled actions that allow the take of migratory birds, you may expect that their populations are thriving with the protection the act provides. However, even with strict federal laws, migratory birds are rapidly declining due to many every-day occurrences that result in their incidental take to otherwise lawful activities.

Cars, building windows, power lines, and free roaming cats have far greater impacts on migratory birds than all permitted activities combined. The extent to which these additional stressors affect bird populations

is difficult to determine and is just recently being assessed. Yet, being aware of these common hazards for migratory birds, can help minimize unintentional impacts. Here are a few examples where you can help.

According to the U.S. Fish and Wildlife Service, the number one cause of bird mortality across the country is cats, both feral and free-roaming individual ones. Cats, even those well-fed by their owners, tend to kill indiscriminately due to their ingrained and instinctual behavior. While their hunting is not limited to just migratory birds, cats account for an estimated 2.4 billion avian deaths annually. The root cause of this issue is allowing domestic pets to roam free, which can ultimately result in unmanaged feral populations.

Do your part by keeping cats indoors, microchipping, spay/neutering, and not feeding or harboring stray or feral animals.

Window collisions are the second leading cause of mortality for migratory birds, and on the low end, at least 300 million birds die annually in this manner. Minimizing bird/window collisions is easy and can be done by making the window more visible.

Using window blinds and shades, as well as moving indoor plants and outdoor feeders away from windows, reducing attractants adjacent to them. Turning out lights at night is the easiest action that greatly reduces window collisions. Many bird species migrate in the dark, so decreasing the amount of ambient light results in less confusion during their long seasonal flights.



*Altamira Orioles are found in south Texas and are known for making basket-like nests that can be over two feet long. These were found at Santa Ana Wildlife Refuge, Texas.*  
(Photo by Rebekah Rylander)

A few other considerations to help comply with the act and minimize incidental take is not to remove active nests for any reason without the appropriate permit. Reduce outdoor entanglements/ entrapments such as mesh, wires, and open pipes. Properly use and store chemicals according to their labeled instructions to reduce accidental poisoning. Educate others about migratory birds, their threats, and areas where everyone can make a difference.

As the Migratory Bird Treaty Act celebrates its 100th anniversary, we can all do our part to respect and reduce the impacts we have on migratory birds.

POC is Lucas Cooksey, 210-466-1596, [matthew.l.cooksey.civ@mail.mil](mailto:matthew.l.cooksey.civ@mail.mil)

Cooksey is a wildlife biologist with the U.S. Army Environmental Command, San Antonio, Texas, and Rebekah Rylander is a PhD Candidate researching migratory birds at Texas State University-San Marcos, Texas.

## Helpful migratory bird websites:

U.S. Fish and Wildlife Service Migratory Bird Treaty Act Centennial Page:	<a href="http://www.fws.gov/birds/MBTreaty100/index.php">http://www.fws.gov/birds/MBTreaty100/index.php</a>
U.S. Fish and Wildlife Service Migratory Bird Treaty Act Threats Page:	<a href="http://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php">http://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php</a>
U.S. Fish and Wildlife Service Reducing Bird Collisions with Buildings & Glass Best Practices:	<a href="http://www.fws.gov/migratorybirds/pdf/management/reducingbirdcollisionswithbuildings.pdf">http://www.fws.gov/migratorybirds/pdf/management/reducingbirdcollisionswithbuildings.pdf</a>
U.S. Fish and Wildlife Service Birds, Buildings, & Lights Flyer:	<a href="https://www.fws.gov/migratorybirds/pdf/management/bgllunchroomflyer.pdf">https://www.fws.gov/migratorybirds/pdf/management/bgllunchroomflyer.pdf</a>
Department of Defense Partners in Flight Main Page:	<a href="http://www.dodpif.org/">http://www.dodpif.org/</a>
Department of Defense Partners in Flight, Don't Let Your Cat Go AWOL:	<a href="http://www.dodpif.org/downloads/cats-awol_2008.pdf">http://www.dodpif.org/downloads/cats-awol_2008.pdf</a>



# Military training, endangered species protection can go hand in hand

by Jean Noellsch

Can a large Army training center with tanks and live-fire weapons co-exist with two endangered species of small birds? One might assume the answer is no, but that assumption would be wrong.

According to a 2015 Department of Defense annual report to Congress on sustainable ranges, Fort Hood, Texas, is the largest active-duty armored post in the United States. The installation is known as the “Home of America’s Armored Corps” and is the only U.S. military installation capable of supporting two armored divisions.

Every acre counts, to both the U.S. Army, which needs Fort Hood lands to train its Soldiers, and to two endangered species – the golden cheeked warbler and the black capped vireo – that call Fort Hood home. Both bird species are co-existing and thriving on Army training lands in central Texas.

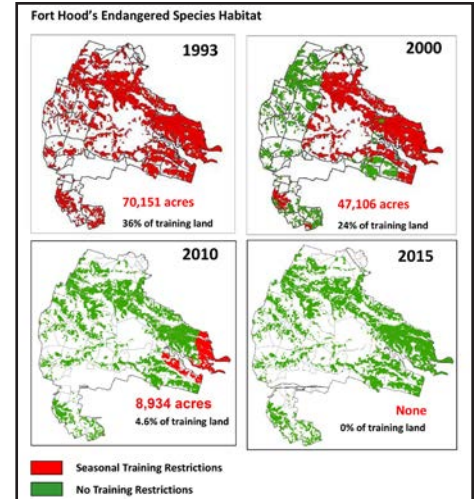
This peaceful co-existence works because Fort Hood’s staff includes wildlife biologists and their teams who are committed to wildlife population and habitat as well as a long-standing working relationship with the resources of the U.S. Army Engineer Research and Development Center’s Construction Engineering Research Laboratory in Champaign, Illinois.

Teams headed by Dr. Jinelle Sperry and

her predecessor, Dr. Timothy Hayden (now retired), have assisted Fort Hood biologists with researching the habitats, sources of negative impacts, and potential stress from military training on both of the endangered bird species. They also have worked with Fort Hood to develop military training improvement projects to enhance warbler and vireo habitats and populations.

According to Sperry, the laboratory’s work provides the “bridge from science to solution” that is the cornerstone of the Engineer Research and Development Center’s mission. The laboratory’s researchers and Fort Hood personnel have been “integrally involved in wildlife management and research,” she said. Personnel from the University of Illinois at Urbana-Champaign have been involved in some seasonal research efforts as well.

The research and monitoring efforts show that military impacts on the endangered species are nominal and that current habitat and species management strategies have positive impacts on both endangered birds. Fort Hood personnel monitor the warbler and vireo populations and habitats by a variety of methods, including nest monitoring, point counts, banding, field surveys, aerial imagery, and adequate law enforcement presence.



Sperry, her assistant Brett A. DeGregorio, and Dr. Brett M. Moule (formerly at Fort Hood) recently compiled a biological assessment of potential habitat impacts to the birds. The 42-page assessment for the U.S. Fish and Wildlife Service supplied analyses and justifications to request a complete elimination of endangered species core habitat on the installation for military training purposes, while still protecting the species’ populations.

The biological assessment resulted in an extremely favorable biological opinion from the fish and wildlife service. As of the beginning of 2015, there were 9,541 acres of Fort Hood training land still designated as core habitat, with seasonal training restrictions and limitations to driving on existing trails. With USFWS’ issuance of the biological opinion, there are now NO training lands designated as core habitat, but Fort Hood will continue using its resources to monitor and protect the two endangered species.

“Installations are often islands of habitat in urban-surrounded areas,” Sperry said.

Fort Hood has always adhered to successive opinions, which are rendered and updated periodically. “Over the years, the Fort Hood biological opinions have served as a tool for leadership to ensure that both

(See Endangered Species, page 37)



Artillerymen from Battery A, 1st Battalion, 82nd Field Artillery Regiment, 1st Cavalry Division Artillery, fire a 155mm round from a M109A6 Paladin as part of a fire coordination exercise Aug. 25 at Fort Hood, Texas, during Ironhorse Challenge, a 16-day combined arms live-fire maneuver and coordination exercise. (Photo by Capt. Pete Bogart, 1st Armored Brigade Combat Team Public Affairs, 1st Cavalry Division)



*(Endangered Species, continued from page 36)*

our training and our ecological stewardship are sustainable,” said Virginia Sanders, who supervises Fort Hood’s endangered species management team.

Fort Hood had 36 percent (70,151 acres) of its training land in 1993 under seasonal training restrictions for habitat protection. By 2000, the percentage had dropped to 24 percent (47,106 acres); by 2010, it was 4.6 percent (8,934 acres), and by 2015, it was at 0 percent (no acres).

The 2015 biological opinion specified “additional flexibility” was granted for the use of Fort Hood’s existing training lands. This flexibility allows the Army to manage all training lands without seasonal restriction, but within agreed-upon impacts to the bird species. According to Sperry, “that’s a very unique and supportive opinion, showing that Fort Hood’s hard work, attention to documentation, and caring for species will be recognized.”

Sperry is quick to note the ruling does not mean there are no restrictions on Fort Hood’s training activities. It does, however, give an “unprecedented amount of flexibility to the installation” on when it can use its lands while still protecting the endangered birds.

In issuing its opinion, the fish and wildlife service cites the “success of endangered species management” at Fort Hood. “The installation’s progress is incredibly



*The golden-cheeked warbler is one of two endangered species found on Fort Hood, Texas, that is thriving and co-existing with Army training units. (Photo by Gil Eckrich, former outreach coordinator, Fort Hood)*

well documented,” Sperry said, and Fort Hood will continue to document the two endangered species and report annually to the service.

The installation’s documentation is summarized in the biological assessment, and outlines Military Training Improvement Projects and conservation actions that Fort Hood takes to protect warbler and vireo habitats. These actions include incorporating preventive measures to avoid uncontrolled fires, restricting the use of off-road recreational vehicles within habitats, and controlling the brown-headed cowbird population. The cowbird is a much larger bird that will become a parasite by taking over a vireo nest to raise cowbird nestlings, which often results in hatching failure for the vireo’s eggs.

The importance of the most recent favorable biological opinion to Fort Hood’s training lands cannot be overstated. Fort Hood’s training lands encompass 88 separate ranges, 56 numbered training areas, four airfields, artillery ranges, rappel towers, land navigation courses, leadership reaction courses, and several airborne and equipment drop zones.

The installation covers about 218,000 acres, with 196,797 of them designated as training lands, according to Chris Haug of Fort Hood’s Public Affairs Office. Despite those numbers, training lands are still needed as the report to Congress noted that Fort Hood still has an estimated shortage of 153,545 acres for training maneuvers.

Why, in the age of virtual training opportunities, are real-life training maneuvers and land on which to conduct them still so important? According to the Congressional report, “Simulation can provide meaningful training, but live training is ultimately required to sustain military readiness.” The Army’s motto “we train as we fight” expresses its stance on the importance of live training. Allowing front-line Soldiers to actually try out new equipment and concepts is proven to reduce combat casualties.



*The black-capped vireo, shown with monitoring bands, is one of two endangered species found on Fort Hood, Texas, that is thriving and co-existing with Army training units. (Photo by Gil Eckrich, former outreach coordinator, Fort Hood)*

There are some lessons learned that others can utilize in preparing their own biological assessments, including: early and frequent interaction with the fish and wildlife service by heavily involving it, even in the draft stage; ensuring the quality and quantity of data is sufficient; and demonstrating a long-term dedication to threatened and endangered species.


“This accomplishment is the culmination of many years of effort,” Sperry said.

The U.S. Army now provides guidance for other installations to follow to achieve similar favorable biological opinions. While conservation is not a traditional military mission, Sperry points out “there needs to be a balance between military training and native species protection.”

“A win-win situation can be created through effective species management,” she said.

One need look no further for proof than the work of Fort Hood and its partnership with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory.

POC is Dr. Jinelle Sperry, 217-373-4543, [jinelle.h.sperry@usace.army.mil](mailto:jinelle.h.sperry@usace.army.mil)

Sperry is a wildlife biologist and Jean Noellsch is a writer-editor. Both are with the U.S. Army Engineer Research and Development Center’s Construction Engineering Research Laboratory in Champaign, Illinois. 



## DOD recognizes Army for natural, cultural resource management

by U.S. Army Environmental Command Public Affairs

**T**he Army captured three of the nine award categories in the Secretary of Defense Environmental Awards Program this year.

“Our men and women work hard to keep environmental stewardship a top priority while simultaneously advancing our National Defense Mission,” said Frank Kendall, under secretary of Defense for Acquisition, Technology and Logistics. These efforts “foster a special type of innovation worthy of national recognition.”

The West Virginia Army National Guard’s Camp Dawson Army Training Site won the award for Natural Resources Conservation at a small installation. Fort McCoy, Wisconsin, won the Natural Resources Conservation Team Award. White Sands Missile Range in New Mexico won the Cultural Resources Management Award for a large installation.

The Natural Resources Conservation awards recognize efforts by small installations, teams and individuals to promote the conservation of natural resources, including the identification, protection, and restoration of biological resources and habitats; the sound long-term management and use of the land and its resources; support of the military readiness mission; and the promotion of a conservation ethic. Protecting endangered plant and animal species on our installations and other Department of Defense lands ensures the preservation of these valuable environmental assets for current and future generations and assures the availability of these resources to sustain military readiness.

The Cultural Resources Management, Large Installation award recognizes efforts to promote cultural resources stewardship in DOD through effective examples of cultural resources management. The award is designed to showcase DOD’s stewardship of its extensive cultural resources, including archaeological sites, the historic built environment, and cultural landscapes. Desired initiatives include partnering with external stakeholders



*The Army was recognized for its innovative environmental leadership in conserving natural resources and preserving cultural resources in the Secretary of Defense Environmental Awards Program. The Army’s commitment to prevent, mitigate, reduce, and eliminate environmental liabilities which can impact readiness is demonstrated by Army environmental staffs every day, and formally recognized once a year.*

such as Native Americans, State Historic Preservation Officers, local communities, and those working with internal, installation stakeholders such as master planning, public works, and range management. Through cultural resources management programs, DOD identifies areas likely to contain cultural resources and works to protect these assets for future generations.

In fiscal year 2015, the Department of Defense invested approximately \$3.8 billion for its environmental programs: \$1.8 billion to clean up contamination from past DOD activities; \$1.3 billion to comply with environmental laws; \$377 million to protect natural and cultural resources; and \$184 million for research and development to reduce the environmental impacts of DOD activities and improve the efficiency and effectiveness of environmental solutions.


Each year since 1962, DOD has honored individuals, teams, and installations for their outstanding achievements and innovative

work protecting the environment while sustaining mission readiness.

The 2016 Secretary of Defense Environmental Awards recognize accomplishments from Oct. 1, 2013 to Sept. 30, 2015.

A diverse panel of judges with relevant expertise representing federal and state agencies, academia, and the private sector evaluated all nominees to select one winner for each of the nine categories that cover six subject areas: natural resources conservation; environmental quality; sustainability; environmental restoration; cultural resources management; and environmental excellence in weapon system acquisition.

POC is Cathy Kropp, 210-466-1590, [Cathryn.I.kropp.civ@mail.mil](mailto:Cathryn.I.kropp.civ@mail.mil)

Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. 



# Planning, energy team wins USACE green innovation award

by James Frisinger

**F**ORT WORTH, Texas – As reaching aggressive Net Zero energy efficiency goals will require new tools, the U.S. Army Corps of Engineers recognized the role new planning technology will play by giving the Sustainable Tools Integration Team its 2016 Sustainability Award for Green Innovation.

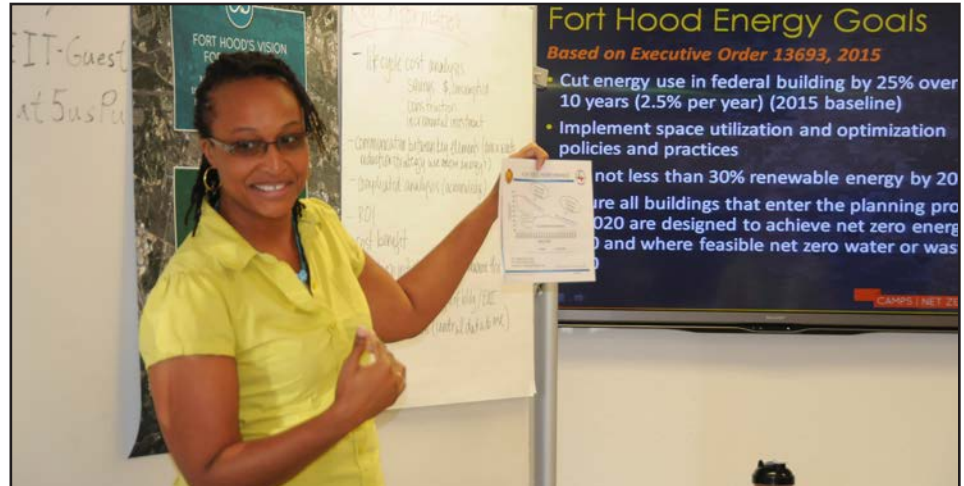
The national award honors a joint team for developing and demonstrating this new Combined Tool technology to help installations improve and speed energy planning.

The team achieved a major advance in sustainability master planning by integrating two proven software analytic tools: the Net Zero Planner and the Comprehensive Asset Master Planning Solution (CAMPS) Dashboard. The team successfully demonstrated the Combined Tool at Fort Hood, Texas, and Joint Base Pearl Harbor-Hickam's Ford Island, Hawaii, under a Department of Defense grant.

"This award shows how our newly developed Net Zero technology can help military installations reduce energy use across the globe," said Col. Calvin C. Hudson II, commander, Fort Worth District, U.S. Army Corps of Engineers.

Members of the joint team were drawn from the Fort Worth District Regional Planning and Environmental Center Master Planning Section; Headquarters Army Corps of Engineers Master Planning; the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory; and Ecology & Environment Inc.

"The NZP Tool/CAMPS integration was a very exciting and rewarding project for the entire team," said Michael Case, U.S. Army Engineer Research and Development Center program and project manager. "The really exciting part about this project was the enthusiastic buy-in by the installation team members as they worked with the Combined Tools and were able to visualize the alternative investment strategies available to them to cost-effectively meet



*The Sustainable Tools Integration Team showed the power of a new Net Zero planning aid in August at Fort Hood, Texas. Africa Welch-Castle, a Fort Hood mechanical utilities engineer at the Directorate of Public Works Energy Management Branch, was part of the three-day roll out workshop that put the Combined Tool through its paces. Fort Hood has already come a long way in cutting energy use, she said, but it is being asked to go much further. The Combined Tool streamlines the process of writing Sustainability Component Plans for military installations. (Photo by James Frisinger)*

their mission goals."

"With Sustainability Component Planning, the Army Corps of Engineers team has developed a planning tool that not only meets the defense department's vision for comprehensive installation master planning that includes the sustainability aspects of energy, water, waste and low-impact development but also offers to the broader planning practitioners, including federal, state and local communities, a unique comprehensive state-of-the-art approach to planning," said Jerry Zekert, chief of the Corps of Engineers master planning program.

"The tool offers a consistent methodology and format to not only complete a plan, but also the ability for stakeholders to conduct planning scenarios as base planning situations change."

Zekert notes that during prototyping, he has been amazed by the reception the approach has received from the defense department installations and other federal agencies that are leveraging the approach. "We intend to work with other Corps of Engineers' Regional Planning Support Centers to build regional capability across


the agency," he said.

"I applaud the team for its imaginative, comprehensive and visionary solution that enhances the practice of planning," Zekert added.

The Department of Defense has asked the team to develop even more capabilities for the new tool and to request additional grants under its Environmental Security Technology Certification Program.

The Sustainability Awards Program highlights significant contributions the Corps of Engineers is making to implement energy efficiency and sustainable solutions to reduce impacts to the environment and surrounding communities, and preserve the quality of the country's natural resources. The team's winning entry will now be nominated for consideration for the 2016 Presidential GreenGov Awards, which will be awarded in the fall.

POC is Jerry Zekert, 202-761-7525, [jerry.c.zekert@usace.army.mil](mailto:jerry.c.zekert@usace.army.mil)

James Frisinger is a public affairs specialist with the Fort Worth District, U.S. Army Corps of Engineers. 



# Mobile District employee wins USACE Installation Support award

by James Frisinger

**C**had McLeod has been named the U.S. Army Corps of Engineers 2016 Installation Support Professional of the Year.

McLeod serves as the Resident Engineer at the Anniston Army Depot, Alabama, providing installation support to the Anniston Director of Public Works, the Department of Homeland Security, and the Department of Veterans Affairs.

A member of the Corps of Engineers Mobile District, McLeod's duties include the construction and repair program at Anniston, highlighted by the execution of 24 new projects from concept to construction award from June through September 2015. He also brought two Veterans Affairs hospital repair projects back within scope, schedule and budget to maintain the daily operations of Veterans Affairs medical facilities throughout the southeastern United States.

He was selected for a temporary promotion in late 2015 to become the Acting Area Engineer of the South Alabama Area Office, Mobile District. This position increased his authority and responsibility to include Army Corps of Engineers programs at Maxwell Air Force Base and Fort Rucker, both in Alabama. His support to the Garrison's Directorate of Public Works and installation tenants has resulted in significant enhancements to the quality of life for Soldiers, Families, and Civilians.




*Chad McLeod, left, the area engineer at Anniston Army Depot, Alabama, reviews construction work with Keith Slick, center, project superintendent for Birmingham Industrial Construction, and Kevin Hightower, right, a pipe layer for Taylor Corp. (U.S. Army Photo)*

“The Army Corps of Engineers is fortunate to have many great installation support professionals,” said Stacey Hirata, director of the Installation Support Division for the Army Corps of Engineers. “This year’s nominees join the ranks of prior year candidate pools as representing the very best within the Army Corps of Engineers. They represent the many installation support community members who are exceeding their customers’ expectations in the delivery of products and services that enhance the quality of life of our Soldiers, Families, and

Civilians wherever they serve.”

McLeod will receive his award in August as part of the Army Corps of Engineers annual awards recognition ceremony.

*POC is Edmond Gauvreaux, 202-761-0936, [Edmond.g.gauvreaux@usace.army.mil](mailto:Edmond.g.gauvreaux@usace.army.mil)*

*James Frisinger is a U.S. Army Corps of Engineers Fort Worth District public affairs specialist. Gauvreaux is chief of the Planning Branch, Installation Support Division, Headquarters, U.S. Army Corps of Engineers, Washington, District of Columbia. *

## Public Works Digest

### 2016 Theme and Deadline Schedule

Issue	Theme	Deadline
Jan-Feb-Mar	Master Planning, Housing and Barracks	30-Nov-15
Apr-May-Jun	Environment and Sustainability	4-Mar-16
Jul-Aug-Sep	Operations, Maintenance and Engineering	3-June-16
Oct-Nov-Dec	Energy, Water and Waste	2-Sept-16





# Fort Campbell strikes gold, named one of DOD's top communities

Compiled from the Fort Campbell Courier newspaper and DOD and Army news releases

**F**ort Campbell, Kentucky, has claimed gold as one of five 2016 winners of the Commander in Chief's Annual Award for Installation Excellence.

The award recognizes the outstanding and innovative efforts of the people who operate and maintain U.S. military installations, according to Pentagon officials. The five recipients – U.S. Army Garrison Fort Campbell; Marine Corps Logistics Base Barstow, California; Naval Air Station Whidbey Island, Washington; Spangdahlem Air Base, Germany; and Defense Supply Center Richmond, Virginia – of this highly competitive presidential award were selected for their exemplary support of Defense Department missions.

“Congratulations to all of you and your teams as this reflects all of the hard work and tremendous commitment you’ve had to making Fort Campbell truly the best Soldier and Family Experience,” said Garrison Commander James “Rob” Salome, in a message to the post shortly after learning that the installation had won its first gold in the Installation Management Command Army Communities of Excellence competition, a precursor to the presidential award contest.

“I am very proud to be on this team and wish the sincerest congratulations to each and every one of you and our teammates.”

During the 2016 Army Communities of Excellence Awards May 24 at the Pentagon, Gen. Mark A. Milley, the Army’s chief of staff, said that well-run installations provide for families. And knowing that fact provides Soldiers with the confidence to do their combat mission.

“It’s really a direct and causal contributor

to the readiness of our force,” Milley said, noting that readiness is the Army’s No. 1 priority.

The competition uses the Malcolm Baldrige National Quality Program Criteria for Performance Excellence – an internationally recognized integrated management system – to evaluate installations. The criteria ensures the leadership considers all stakeholders, tailors the post’s processes and resources accordingly, and employs visionary thinking through the application of proven business

and responsiveness.”

Not only does this award reflect a level of excellence through the efforts of the installation, it also symbolizes the strong symbiotic relationship with the surrounding communities of Clarksville, Tennessee; Hopkinsville, Kentucky; and Oak Grove, Kentucky.

“Together, on post and off, we all work seamlessly in making Fort Campbell a place that Soldiers and Families want to come to and return to again if they transfer or retire,” Salome said. “I’ve never seen anything like

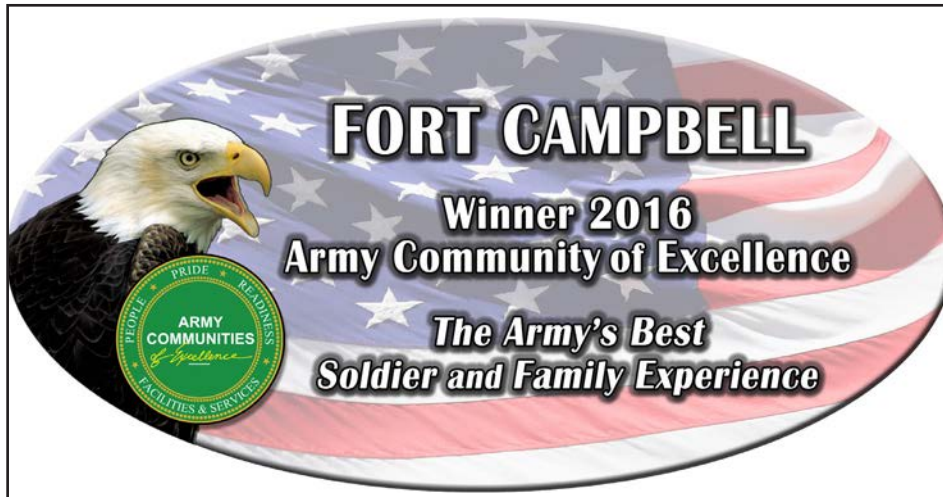
it in my career. The support from our community partners is phenomenal. That was keenly demonstrated during the 2015 Community Listening Session, but it’s actually demonstrated on a daily basis, year-round.”

“This award can only be earned. Submitting the annual competition application guarantees nothing,” Halford

said. “In order to be recognized, we and all other competing installations, had to have systems and processes in place and provide documented evidence that we are delivering meaningful, measurable, verifiable results based on a coherent, focused strategy. This award recognizes that our installation has developed and followed a strategic plan that has been effective, responsive and flexible over a sustained period. Our strategic plan was first developed in 1994 and it has been updated annually or bi-annually for more than 20 years.”

When establishing the Commander in Chief Annual Award for Installation Excellence in 1985, President Ronald Reagan challenged the men and women of DOD to search for installations where

(See Fort Campbell, page 42)



principles in six distinct, but integrated categories. Those categories include leadership, strategy, customer focus, measurement, analysis and knowledge management, workforce focus and operations focus.

“What this means to Fort Campbell is that our continuous process improvement efforts extending over more than 20 years have systematically led to our recognition as IMCOM and the Army’s role-model installation,” said James A. Halford Jr., the installation’s plans, analysis, and integration office director. “This award recognizes how our various organizations, system and processes, but most of all people, have teamed together throughout the years to be the Army’s premier installation supporting Soldiers, Families and the greater community while enabling Army readiness



(Fort Campbell, continued from page 41)

personnel have done the best job with their resources to support the mission, and to seek-out the most imaginative solutions to the many complex problems they face.

Fort Campbell's achievements include:

- **Mission Support:** Effectively supporting rapid force projection, enduring sustainment and full operational readiness reconstitution of combat forces in accordance National Military Strategy requirements. The Installation Operations Center maintains 24-hour command and control with a 98 percent reporting rate. Campbell Army Airfield performed 553,754 aircraft movements without incident while maintaining a 99 percent operational air traffic control during the first three quarters of fiscal year 2015.
- **Energy:** Aggressive energy and water conservation project, which will provide energy security and help meet renewable energy goals. In FY15 Fort Campbell commissioned 1.8 megawatts of a planned 5 megawatt solar array.
- **Quality of Life:** Award-winning Better Opportunities for Single Soldiers program. Sustaining a variety of activities and facilities for Soldiers and

Families including Warrior Adventure Quest indoor climbing wall, skeet range and paintball course and eight physical fitness centers.

- **Unit Morale:** Soldiers, Families and citizens for the surrounding area join together to participate in the Eagle Challenge Fitness Tour that features a variety of events for all resiliency and fitness levels. Leadership continues to recognize employees for exemplary achievements with the most enduring being the Civilian Employee of the Year awards that began in 1958.
- **Environment:** Fort Campbell emphasizes environmental stewardship through events like its annual Project Clean Streams, Earth Day observance and its award-winning Pollution Prevention Operations Center that embeds conscientious environmental practices throughout the installation.
- **Health and Safety:** Fort Campbell's Installation Safety Office has surpassed federal and Army safety mandates and program elements. Fort Campbell experienced 38 percent reduction in privately-owned vehicle fatalities in FY15 from FY14, Child Youth School Services has an 88 percent reduction in accidents and Directorate of Family and Morale, Welfare and Recreation experienced a


63 percent reduction.

In terms of the winning edge, Halford said "nothing was done differently with regard to the competition itself.

"However, because our strategy and focus have allowed us to consistently and continuously improve our processes and delivery methods with the results we provided as part of our competition application reflected our sustained excellence and called attention to our innovative 'can do' culture like never before," he said. "Our workforce is known throughout IMCOM and beyond as one of the most innovative and responsive in the Army."

"Excellent installations enable better mission performance and enhance the quality of life for military men and women and their Families," Defense Department officials said in a statement announcing this year's recipients. "Each winning installation succeeded in providing excellent working, housing and recreational conditions."

*Editor's note: This article was compiled from information provided by Defense Media Activity, Army News Service, Maria Rice McClure, editor-in-chief of the Fort Campbell Courier, and Michele Vowell, assistant editor of the Fort Campbell Courier.*

*POC is James A. Halford, Jr., 270-798-3746, [james.a.halford2.civ@mail.mil](mailto:james.a.halford2.civ@mail.mil)* 

## Showcase your **STORY**

Would you like to see your installation, agency, program or project featured in the Public Works Digest?

Submit a story by sending it to:

[editor.pwdigest@usace.army.mil](mailto:editor.pwdigest@usace.army.mil)



## What should I know to make my career what I want it to be?

by Ted Kanamine

**Y**ou've got to be very careful if you don't know where you are going, because you might not get there. - Yogi Berra

Berra's malapropism above wonderfully captures how career planning can be rewarding—and frustrating. This short article won't give you the map for your career. Rather, it offers some thoughts that, hopefully, mitigate some of the frustrations with your own career planning.

Army civilian career development presumes no one knows better than you what's best for your career. You'll see lots of career related information, get lots of advice, and be afforded many various opportunities. But no one can really answer the basic question career development question we all have: What should I do? Career development is based on your career development choices and decisions. You are responsible for your own career development. You are your own career manager.

A globally engaged Army requires a breadth and depth of experience and technical competence not found in a career built in one job, in one location, done forever. Effectively advancing in your career means mobility and risk-taking to develop your talent and build competencies. In other words, you'll have move around geographically and organizationally to gain experience in different jobs, duties, responsibilities, people, and relationships to gain more career breadth and depth.

Final bit of basic advice is that whatever your job, do it well! Successful job performance underlies and shapes our career development, and the opportunities that open to you. All else is secondary.

### What's out there for me?

There are countless possible career development opportunities from online courses, to job development assignments, to career broadening different jobs. The challenge is choosing which opportunities are best for you personally and professionally. More career decision-making

advice from Yogi Berra: "When you come to a fork in the road, take it." What would help you decide?

No magic formula, but consider appraising your own talent, assess your current competencies and skills from the perspective of your chosen profession or livelihood (the technical nature of what makes you good at what you do). Then, roughly assess what you may need. Also, consider two other professional, non-technical perspectives that will demand you have increasing talent and competencies if you want to progress in your career—service to others (e.g., customer service, public service), and leadership (supervisory and managerial).

### What are the rules to getting the career development experiences I need?

Carving out the time to find and apply for the right development experience for you can be challenging. You're likely confronted the specific qualifications and application rules. Some are straight forward like applying for online continuing education or short, technical courses. Or, if the experience is expensive and highly sought after (e.g., academic degree training, special enterprise training), applications can involve rigorous and time-consuming justification statements from you, your boss, and others.

Remember, "other people's money; other people's rules." The Army and your organization really do want you to be technically up-to-date. But, it's no surprise that many organizations are continually challenged with limited resources to accomplish their mission, and invest sufficiently in their workforce to ensure future mission accomplishment. Get familiar with Army Regulation 350-1, Army Training and Leader Development, that prescribes the framework and "rules" commands and aspiring civilians must follow.

Next, every Army civilian today is a member of one of 31 Army career programs, such as Career Program-18 engineers and

scientists (construction and resources), Career Program-27 housing managers, and Career Program-29 installation managers. All of the career programs manage Army civilian training, education, and development system funding for career development of their respective members. Following Army regulation and the funding rules, career programs provide additional career training, education, and professional development resources for civilians.

Finally, there are several other training, education and professional development authorities for civilians if they meet applicable criteria. For example, civilians in position descriptions coded as "acquisition workforce" are eligible for Defense acquisition workforce development funded training, education and professional development.

### Who can help me?

Although you are your own career manager, you are not alone. Your supervisor's leadership responsibilities compels a career development conversation with you. So do your mentors. Look to your colleagues. Who's done that learning experience before? Look for your organization's staff with career training, education and professional development responsibilities, like training coordinators. Finally, reach out to various Army career program managers for program related guidance. You must make your training, education and professional development decisions, but look to others for their counsel, advice and recommendations to help guide you.

Send all questions to the Career Program-18 Proponency Office at: [CP18ProponencyTeam@usace.army.mil](mailto:CP18ProponencyTeam@usace.army.mil)

POC is Ted Kanamine, 202-761-8702, [ted.s.kanamine@usace.army.mil](mailto:ted.s.kanamine@usace.army.mil)

Kanamine is the Army Career Program-18 Career Program Manager and Director of the Army CP-18 Career Program Proponency Office at Headquarters, U.S. Army Corps of Engineers, Washington, District of Columbia.

U.S. Army Installation Management Command  
2405 Gun Shed Road  
JBSA Fort Sam Houston, TX 78234-1223  
[www.imcom.army.mil](http://www.imcom.army.mil)

