

Public Works DIGEST

Volume XXV, No. 3
July/August/September 2013



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Maintenance and
Engineering**

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A Public Works Technical Bulletin helps installation DPWs assess environmental conditions and commercially available materials to ensure safe, efficient low-water crossings. Photo by Heidi Howard, ERDC-CERL

Public Works DIGEST

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JULY/AUGUST/SEPTEMBER 2013



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Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223

Public Works Digest is an unofficial publication of the U.S. Army Installation Management Command, under AR 360-1, The Army Public Affairs Program. Method of reproduction: photo-offset; press run: 1,600; estimated readership: 5,000. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.

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Printed on recycled paper.

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Army Career Program 18 Functional Chief Encourages Licensing and Certification

by LTG Thomas P. Bostick

The Army Corps of Engineers and IMCOM are the most respected governmental engineering organizations in the world. We will continue to support the Nation and our warfighters with world-class engineering and scientific expertise through these challenging times. In order to do so, it is critical that our careerists continue to foster an environment of continuous learning by providing appropriate incentives to encourage our workforce to seek and maintain professional licenses and certification whenever possible within law and regulation.

I encourage employees to obtain and renew professional credentials, including professional accreditation, professional licenses, certification, and examinations to obtain such credentials.

Commands and Direct Reporting Units have delegated authority to pay for certifications and licenses for Civilian




LTG Thomas Bostick, 53rd Chief of Engineers employees and establish their own policy in regard to reimbursement criteria, approval process and funding source and availability of funds. Reimbursement of expenses for professional credentials is

not an entitlement and the agreement between the supervisor and employee to obtain or renew specific professional credentials must be in writing prior to the employee incurring the expense. The priority for payment of expenses should be for persons in positions where licensing and certification is highly recommended. When an employee is working towards a credential that requires multiple exams, the employee may be reimbursed after each exam that is successfully completed. Each Command and Direct Reporting Unit should determine their funding priority based on mission requirements.

I encourage our Army leaders to provide non-monetary recognition for those that achieve professional licenses and certifications during award ceremonies, through memorandums from Commanders and other methods. As senior leaders we need to ensure that our workforce understands the value in achieving and maintaining licenses and certifications. Supervisors and Activity Career Program Managers should discuss the value of professional credentialing while reviewing individual development plans with employees.

In a budget constrained environment, it is imperative that we use our resources wisely and continue to develop and maintain our technical competencies. Licenses and certifications improve our professional competence and public credibility and promote professional responsibility as individuals and an organization. I encourage you to support employees seeking licenses or certification in their functional areas of expertise.

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LTG Bostick encouraging professional licensure during civilian training



USAG Red Cloud and Area 1 use Burden-Sharing to Improve Quality of Life

by Yun Heo and Patrick Hannigan

The United States expects its allies to share in the responsibilities of supporting their common defense. Public Law 104-201, "National Defense Authorization Act for FY 1997," section 1084, states that U.S. allies should provide burden-sharing support in the following four areas: defense spending, multinational military activity, cost sharing, and foreign assistance.

In the Republic of Korea (ROK), the ROK Government provides burden-sharing contributions to U.S. Forces in the form of cash. 10 U.S.C. 2350j, authorizes the acceptance of cash contributions to pay costs (salaries) of Korean National (KN) employees of the Department of Defense. The ROK Government also provides burden-sharing contributions in the form of "in-kind" contributions that are not paid in cash. These "in-kind" contributions include equipment, supplies, or services such as construction.

Burden-sharing contributions to the mutual defense are part of the overall burden-sharing program in the ROK. The USFK Commander has overall program responsibility.

This burden-sharing program is

authorized locally through the Special Measures Agreement (SMA) process. The SMA, first agreed to in 1991, establishes the sharing of non-personnel stationing costs associated with the presence of U.S. forces in the ROK. Advancing from the previous two-year agreement, the current SMA is a five-year mutually beneficial agreement which will further strengthen enduring Alliance commitments, planning and force presence, and continuity of operations.

The SMA basically states that ROK is to bear a part of the costs associated with stationing U.S. Forces in Korea. Those costs include Labor Cost Sharing, Logistics Cost Sharing, ROK Funded Construction, and Combined Defense Improvement Projects.

The ROK provides Labor Cost Sharing by paying a portion of the salaries of its citizens that work for U.S. Forces as KN employees. The ROK pays their salaries in cash. The ROK provides Logistics Cost Sharing by providing a variety of non-tactical Korean manufactured vehicles to all U.S. Forces throughout the Peninsula. The ROK provides ROK Funded Construction (ROK FC) of military facilities for U.S.

Forces to maintain the readiness of U.S. Forces. ROK FC construction projects require the use of materials manufactured in the ROK, the use of ROK construction companies, and the use of ROK contractors and ROK labors. The ROK provides Combined Defense Improvement Projects for military facilities that are jointly utilized by ROK and U.S. Forces to maintain the readiness of both ROK and U.S. Forces.

The burden-sharing by the ROK institutes an "in-kind" arrangement which significantly enhances U.S.-ROK collaboration on the execution and completion of construction projects throughout the peninsula.

ROK's burden-sharing, which was 812.5 billion won (\$747 million) in FY11 and 836.1 billion won in FY12, is estimated to be about 869 billion won in FY13, and projected to be about 1 trillion won in FY14.

Figure 1 provides an overview of the use of the burden-sharing contributions provided to USFK by the ROK.

ROK burden sharing contributions are intended to partially offset the logistical costs of stationing U.S. troops in the ➤



New flood control at Camp Casey



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ROK. In general terms, logistical costs are considered to be the movement of personnel and assets on the peninsula, repair and maintenance services, purchase of Korean-made non-tactical vehicles, and purchase of other Korean manufactured items that are not fixed or real property.

USFK is neither liable nor obligated to pay for claims from Korean contractors, to include billing invoices, which arise pursuant to the contracts providing USFK with logistics cost sharing equipment, supplies, or services.

A unique aspect of the burden-sharing program is that funds (commonly referred to as “in-kind” are not transferred directly to the U.S., but are held by the ROK Ministry of Defense (MND). U.S. Forces identify the needed item or service, develop the contract or international agreement (which is then approved by the ROK MND), takes delivery, and then passes the invoice to ROK MND for payment.

USAG Red Cloud and Area I utilize the burden-sharing program to improve quality of life for Soldiers and their families. In

Acronyms and Abbreviations	
CATV	Cable Television
DODDS	Department of Defense Dependents School
HVAC	Heating, Ventilation and Air Conditioning
KN	Korean National
LAN	Local Area Network
MND	Ministry of Defense
ROK	Republic of Korea
ROK FC	ROK Funded Construction
SMA	Special Measures Agreement
U.S.	United States
USAG	U.S. Army Garrison
U.S.C.	U.S. Code
USFK	U.S. Forces Korea

Area I, the burden-sharing program has recently provided for the construction and completion of a new fire station and a new vehicle wash facility at Yongpyong (a live fire range), a new DODDS school at Camp Casey, and numerous flood control projects at Camp Red Cloud and Camp Casey.



New flood control at Camp Casey

The construction of the \$1.56 million fire station at Yongpyong included two bays, two stories for administration functions, HVAC, fire alarm system, telephone/LAN system, CATV system, public address system, carbon monoxide system, diesel generator with integral fuel tank, and supporting facilities.

The construction of a \$5.4 million vehicle wash facility for wheeled and tracked vehicles included the construction of multiple primary facilities such as a pre-wash station, wash station, sedimentation tank, equalization tank, sand filter, recycled water tank, pumps and water lines, control building and pump house, and concrete hard-stand.


The construction of the \$6.1 million DODDS was an alteration of an existing four-story barracks and included a cafeteria, information center, pre-kindergarten classroom, general purpose classrooms, special purpose classrooms, and a multipurpose computer lab.

In addition to the construction of a new fire station and a new school, the burden-sharing program also contributes to numerous other important projects in Area 1, like flood control. South Korea's

terrain is mostly mountainous, most of which is not arable. South Korea tends to have a humid continental and subtropical climate, and is affected by the East Asian monsoon, with precipitation heavier in summer months. Camps Casey and Red Cloud have both experienced severe flooding damage in the recent past. The use of burden-sharing to construct new flood control projects in Area 1 has been invaluable. .

The success of the burden-sharing program depends on everyone working together. Each person in the process plays an important role in meeting the overall program goals. Making smart, cost-effective decisions for project funding is critical, keeping the best interests of the U.S. Forces in Korea at the forefront. In application and execution, the burden-sharing program is an outstanding example of US-ROK cooperation.

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USACE Far East District is the Design and Construction Agent for U.S. Forces Korea

by Chris Y. Kim

The U.S. Army Corps of Engineers Far East District is the design and construction agent for U.S. Forces Korea. The district's objective is to provide not only quality facilities and systems, but to make operation and maintenance work easier for garrison and unit public works personnel.

To meet this objective, the district provides validation of locally-produced Korean material for use in construction projects and in the operation and maintenance of U.S. military facilities, leading to a maximization of use and a minimization of costs associated with the operation and maintenance of garrison and unit facilities and equipment.

The district established a local material evaluation committee in 2009 to validate the quality of local materials and equipment to meet U.S. life safety, health, code requirements and quality standards. The evaluation committee has been working with the Korean Ministry of

National Defense, construction contractors, and manufacturers, to allow maximum utilization of local materials. As of mid-2013, there are about 300 types of approved local materials and equipment available for use on U.S. facilities in Korea.

With validated and accepted local materials, a unit or garrison directorate of public works can easily replace off-shore materials or equipment used in the facilities with local materials or equipment without much delay or cost. These local materials are readily available, cost less, and their use results in a greater ease of repair and maintenance.

One district success story was the 2010 renovation of a Department of Defense Dependent Educational Activity school at U.S. Army Garrison Casey in Dongducheon. The total program amount was \$6.6 million, of which \$4.6 million – about 70 percent – was locally-produced and –procured material.



The U.S. Army Corps of Engineers Far East District installed a roof-top garden on the new health and dental clinic at Camp Carroll at U.S. Army Garrison Daegu, Republic of Korea, making it the first green roof on a U.S. military facility in the country.

Had these materials been sourced outside of the country, the construction duration would have been increased by about 30 percent, and the costs would have risen by about 50 percent.

The following examples show how the use of local materials and equipment greatly benefits public works personnel.

A specific example of successful localization is elevators. They are easily available in the Republic of Korea, meet all U.S. standards, and make procurement, maintenance and repair easy and fast.

Public works personnel can call for emergency service and the local elevator service provider responds quickly. The local elevator manufacturers provide operation and maintenance training in Korean, which is easily understood by the local public works personnel, the majority of whom are Korean.

Through the use of Korean language training and manuals, public works personnel are trained much quicker and more thoroughly on the local systems, providing efficient and fast operation and maintenance for the garrison or unit.

Other validated, accepted, and widely available local materials include simple material such as gypsum board, ➤



Far East District and Republic of Korea Ministry of National Defense leaders cut the ribbon opening the 2013 Local Materials Conference May 8, 2013. With validated and accepted local materials, a unit or garrison directorate of public works can easily replace off-shore materials or equipment used in the facilities with local materials or equipment without much delay.



Army Hawaii Responds to Federal Storm Water Management Requirements

by Hayley Diamond

Sustainable water management is not new to U.S. Army Garrison, Hawaii. There will be much less storm water running off of newly constructed Army facilities in Hawaii in the coming years.

With the passing of the Energy Independence and Security Act (EISA) in 2007 and federal requirements for sustainable design and development, more storm water must be infiltrated where it falls; reducing runoff and preventing associated pollutants from entering nearby water bodies. Since 2007, the Army in Hawaii has either completed or initiated construction of multiple projects, ranging from a two-acre parking lot to a 128-acre campus with motor pools and offices, which comply with the EISA storm water management requirements.

Section 438 of EISA requires construction projects that exceed 5,000 square feet to maintain pre-development hydrology, which can be accomplished by retaining the 95th percentile storm on the site. The Environmental Protection Agency (EPA), appointed by Executive Order to create the guidance on complying with Section 438, states that historically only the largest storms (exceeding 95 percent) generate runoff in an undeveloped woodland area. By mitigating the loss of infiltration associated with development

through green storm water infrastructure or low impact design techniques and best management practices, the Army can achieve regulatory compliance and improve nearby surface water quality.

Low Impact Design (LID) is both a site planning strategy (e.g., grade site to encourage drainage to vegetated areas and disconnect impervious surfaces) and the design of decentralized, small-scale BMPs, like bioretention, permeable paving and rainwater harvesting, to manage and treat storm water where it falls. The goal of LID is to retain the same amount of storm water on the site as prior to the project by infiltrating, evapotranspiring, capturing and using storm water. LID can have environmental, social and economic benefits, including storm water runoff volume and pollutant reduction, flood prevention, enhanced groundwater recharge, urban beautification and reduced energy demands.

Any storm water



Volunteers from the 70th Engineer Company, 65th Eng. Battalion, 130th Eng. Brigade, 8th Theater Sustainment Command, weed a bioretention facility on Schofield Barracks. Typical maintenance requirements for bioretention facilities include annual weeding and replacing of bark mulch cover. The 70th Eng. Co. learned about the importance of pollution prevention and helped to improve water quality in Hawaii. Photo by H. Diamond.

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insulation, paint, plumbing fixtures, electrical conduits and wire/cable, and larger and more complex items such as cooling towers, standing seam metal roofing, exterior insulation finish systems, overhead electrical cranes, fans, boilers, and transformers.

These validated and accepted local materials provide flexibility, and allow public works staff to quickly and efficiently obtain the materials and equipment needed to maintain and operate their facilities on a daily basis.


Another way the district helps public works is through an indefinite delivery, indefinite quantity contract for enhanced commissioning authority and through the district's quality assurance branch.

Throughout the design and construction of a project, the commissioning authority reviews and ensures the key systems meet energy efficiency and user requirements. Once construction is complete, they ensure that the systems yield improvements in energy efficiency, plus they provide training to public works operations and maintenance personnel ensuring the staffs know how to properly operate their key

building systems.

This helps garrison and units to catch mistakes, missing or incorrectly-installed equipment, minimizes occupant complaints and callbacks, reduces problems with indoor air quality and thermal comfort, and prevents premature equipment failure.

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management system requires maintenance. Typically, an LID feature can be seen, and this visibility can lead to improved maintenance response. In contrast, a traditional storm water drainage system, with underground, piped infrastructure, can mask deferred maintenance issues until it may be too late to prevent a polluted discharge or flood.

LID proponents claim that green infrastructure practices can potentially reduce traditional utility maintenance costs. Regular pumping of a water quality structure or removing debris from underground lines and vaults does sound more intensive than weeding and annual replacement of mulch required for a bioretention system. However, LID is a relatively new approach to storm water management, and more projects and data will be needed to verify if there are cost savings associated with long-term

operation and maintenance.

The EPA recently published a report entitled “The Importance of Operation and Maintenance for the Long-Term Success of Green Infrastructure,” which outlines critical aspects of a successful maintenance plan. Aspects include having a written manual, documenting and tracking maintenance activities, training, partnerships and a dedicated funding source. Often, innovative solutions can compensate for the lack of a critical aspect. For example, partnerships can facilitate maintenance in the absence of a funding source as the Army in Hawaii has demonstrated.

In April 2012, the Directorate of Public Works Environmental Division organized the cleanup of the first bioretention facility constructed on Schofield Barracks. Installed in 2007 to treat runoff from a parking lot, the bioretention facility had never been maintained. With the support of the 70th Engineer Company, 65th Eng. Battalion, 130th Eng. Brigade, 8th Theater Sustainment Command, it took 16 soldiers and civilian volunteers approximately three hours to remove weeds and replace the two-inch bark mulch cover.

Subsequently, an article on the activity was published by 2nd Lt. Lauren Loooper in the Hawaii Army Weekly, and the EPA chose to use an image of the activity in its “Maintenance of Low Impact Development” fact sheet, available online at <http://water.epa.gov/polwaste/green/upload/bbfs6maintenance.pdf>.

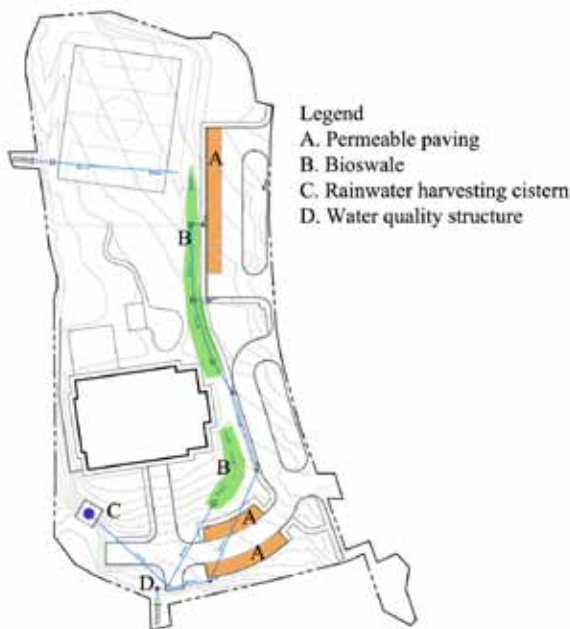
Acronyms and Abbreviations	
BMPs	Best Management Practices
EISA	Energy Independence and Security Act
EPA	Environmental Protection Agency
LID	Low Impact Design
USAG-HI	U.S. Army Garrison, Hawaii

pdf2013.

According to the EPA storm water runoff is the top cause of water pollution in the United States. The Army in Hawaii is doing its part in improving water quality in new development projects that incorporate sustainable storm water management practices. The challenge will continue to be the proper maintenance of both the LID features and traditional storm water drainage system to ensure regulatory compliance and improved water quality.

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Fort Shafter Child Development Center LID. Features include permeable paving, bioswales and rainwater harvesting. LID will improve water quality prior and provide educational opportunities for the Army community. Diagram by H. Diamond.

Fort Shafter Child Development Center

• Scheduled to be complete June 2014, the Fort Shafter Child Development Center will include various LID features to achieve compliance with Section 438 of EISA 2007.

- Permeable paving in parking stalls.
- Bioswales to capture and treat runoff from parking areas.
- Rainwater harvesting system to capture storm water that falls on the building's roof and using it for the drip irrigation system.



Problems at Fort Tank

by Ronald K. Mundt

Fort Tank scenarios have been featured in prior issues of the Public Works Digest and are based on resolved issues on one of our installations:

It was the first week in January after the big snow and there had been no electrical problems. The Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Army facilities that Joe Spark's office was responsible for did not incur any major power problems during the past year until now.

Joe's group was responsible for providing technical support for C4ISR facilities around the world. His home installation was located at Fort Tank.

Joe was looking out the window of a twenty eight seater island jumper on his way to the small island of Utack located west of Hawaii. Three days ago he had received a phone call from Bill Pliers, the site manager complaining about his new facility. Bill was a close friend from college the facilities manager responsible for the new data center in the middle of nowhere. This small island had an area of two square miles that contained several large buildings plus support facilities and was one of the C4ISR sites that Joe's group provided periodic assistance to. However Joe's office had not been involved with the design of the new building. This job just appeared out of nowhere as Joe's tasks usually did and frequently came up. Sometimes the "planning norm" was just to "fly by the seat of your pants".

Joe's eyes shifted back to his sketches of the island power system. For years electrical power was supplied from the remote utility power plant to the building in question. Electrical power was delivered at 12.47 kV on the high side to 480/277 volts wye grounded on the secondary side of the transformer. It was a very old system of 40 plus years but it was working. Two years ago the building electrical distribution system had been renovated.

The new system consisted of a 12.47

kV-480 V delta-delta transformer; a distribution ungrounded system. The design engineer had checked the standard and for a 480 volt distribution it indicated a three wire system. The system operated without any problems until a large uninterruptible power supply (UPS) was installed a year later. There were continuous problems since installation and the UPS never passed the commissioning tests. This was the point where Bill Pliers called on his "old college buddy".

After a four-hour plane ride Bill Pliers greeted Joe at the International Utack Airport. A relaxing lunch quickly ended when Bill put down his phone and said, "Joe, the UPS went down again, I think we should proceed to the site. After Joe spent some time at the new building facility and questioning the electrician about the electrical distribution he told his "old buddy that he was not going to like what he was about to say. Joe continued to explain....

"The problem started when you assumed that the three wire system that the standard talked about was an ungrounded delta system. It really meant that it was a grounded wye system. That is a common mistake that people make; three wire systems can be ungrounded or it could be grounded wye or ungrounded wye connected. You can either replace the transformer with a new one (delta wye grounded connected) or you could install a zigzag transformer on the secondary to create a grounded system. I recommend replacing the transformer. That's not the worst part. The standby generator was also specified as a delta generator that should be replaced. In addition, the UPS requires a four wire system when going to bypass, so a neutral bus will have to be installed in the switchgear that will result in a major shutdown. Unfortunately this was what was specified on the scope of work; unfortunately neither the contract designer nor anyone else had caught the mistakes".

After Pliers had taken this all in he

Acronyms and Abbreviations	
ASC	Army Security Command
C4ISR	Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance
DISA	Defense Information Systems Agency
DOD	Department of Defense
INSCOM	Information Security Command
JCS	Joint Chiefs of Staff
NMCS	National Military Command Structure
PREP	Power Reliability Enhancement Program
UPS	Uninterruptible Power Supply

asked Joe, how could this have been avoided. Joe replied, "Our office has experience in power engineering and our charter is to offer guidance when new C4ISR facilities are built or renovated. Unfortunately our customers do not have to ask for assistance."

This scenario has happened at an Army installation. How could this have been avoided? Many facilities or through contractors have access to good power engineers, however sometimes they do not. The Power Reliability Enhancement Program (PREP) is available upon request for technical assistance in these specialized areas to help avoid costly and unintentional mistakes.

PREP is part of the U.S. Army Corps of Engineers, Special Missions Office, located in Building 316, Fort Belvoir, VA. The PREP Program is responsible for evaluating "C4ISR" sites (Command, Control, Communication, Computers, Intelligence, Surveillance, Reconnaissance sites) in the area of critical utility systems. Some additional customers that PREP supports include National Military Command Structure (NMCS), Defense Information Systems Agency (DISA), Information Security Command (INSCOM), Army Security Command (ASC), Corps, Divisions/Districts and other Department of Defense (DOD) services, activities and agencies. PREP is responsible for the program management and execution of the DOD/Joint





Setting the Stage to Prepare Cadets for Combat

by JoAnne Castagna

When our Soldiers are performing combat operations in villages and cities in Iraq and Afghanistan with complicated terrain, such as Baghdad and Fallujah, they're in areas that are familiar to the enemy, but not to them," said Retired First Sergeant, Alec Lazore, range operations officer at the U.S. Military Academy at West Point, N.Y. "Training our Soldiers to maneuver in this unknown environment is important for them to sustain the fight, defeat the enemy and for their own survival." Lazore knows this from personal experience having fought in Afghanistan and Iraq.

It's because of this that Lazore supports the construction of West Point's first Urban Assault Course by the U.S. Army Corps of Engineers, New York District. Army Corps contractor Doyle Contracting of Pearl River, N.Y., is performing the work.

An Urban Assault Course is a series of training stations designed to increase the knowledge of combat in an urban environment. The cadets will work through stations on the course, which show the different urban settings they may encounter in combat. The course trains Soldiers, squads and platoons on tasks necessary to operate within a built-up urban area.



One of several structures that make up the Urban Assault Course at the U.S. Military Academy at West Point, N.Y.

West Point's Urban Assault Course will cover over 11 acres of property and include five stations that are interconnected by roadways. The stations will include simple wood structures to simulate buildings, a large scale firing range, an underground tunnel system, an ammunition breakdown

pad and support facilities.

Tim Pillsworth, project engineer, U.S. Army Corps of Engineers, New York District said, "The Urban Assault Course is beneficial for the Soldiers because it is training them to fight like they are fighting right now. They are fighting in an urban environment with tight roadways and buildings that they're defending and attacking. It makes it as real world as you can get."

Construction of the Urban Assault Course will be completed this summer - six months ahead of schedule - making the complex available to Soldiers for use for summer training.

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Chiefs of Staff (JCS) Power Reliability Enhancement Program for critical facilities.

In addition, the PREP group provides engineering support to installations upon request in the area of power systems (electrical and mechanical) on a reimbursable basis.

Some of the services offered by PREP include

1. Power Quality Evaluation Site Surveys
2. Utilities Systems Evaluation Surveys

(i.e. electrical power systems-high and low voltages, mechanical chiller and boiler systems)

3. Design Review
4. Procurement of specialized A/Eservices
5. SOW development and equipment development and applied research

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19TH Century Churches, 21ST Century Technologies

by Jonelle Kimbrough

The heritages of two antebellum churches on Fort Bragg – Long Street Presbyterian Church and Sandy Grove Presbyterian Church – will be preserved for posterity as a result of recent Historic American Buildings Survey (HABS) documentation and cutting-edge technologies.

Respectively constructed in 1847 and 1854, Long Street Church and Sandy Grove Church are the two oldest structures on the installation. They served as the cultural, social and religious centers for

their surrounding communities until they were purchased by the United States Army in 1921 and 1923.

Now, the Fort Bragg CRMP preserves the churches and their rich histories to comply with Federal cultural resources management regulations and to provide a connection between the past and the present. “We consider (Long Street Church and Sandy Grove Church) to be our largest and most precious artifacts,” said Dr. Linda Carnes-McNaughton, an archaeologist with the Fort Bragg CRMP.

“As such, they are unique and irreplaceable.” Long Street Church is currently listed on the National Register of Historic Places, and Sandy Grove Church is eligible for listing on the NRHP. They are considered to be stellar representations of vernacular religious architecture in pre-Civil War North Carolina.

The HABS Level I documentation of Long Street Church and Sandy Grove Church was part of a project facilitated by the Fort Bragg CRMP to recompense the October 2011 demolition of Lee Field House. Dr. Carnes-McNaughton explained that Lee Field House was eligible for NRHP inclusion, and its demolition created an “adverse effect” that required mitigation according to Section 106 of the National Historic Preservation Act, one of the primary drivers of the Fort Bragg CRMP. To mitigate the adverse effect, the Army agreed to

Acronyms and Abbreviations

CRMP	Cultural Resources Management Program
HABS	Historic American Buildings Survey
NRHP	National Register of Historic Places

support the documentation of the churches per a Memorandum of Agreement with the North Carolina State Historic Preservation Office. The documentation included standard HABS Level I drawings, large-scale digital photography and three dimensional digital modeling conducted by a combination of traditional land surveying techniques and state-of-the-art laser scanning.

The Savannah District of the United States Army Corps of Engineers, the cultural resources management firm New South Associates and digital preservation specialists CyArk conducted the documentation. Thorough documentation of the churches was imperative for various reasons. Neither church was ever equipped with fire protection. They have remained intact only as a result of the care bestowed upon them by their original builders, the 19th and 20th century communities of worshippers and the United States Army. In addition, neither church was built according to any architectural plan, as was common practice at that time. Therefore, detailed construction and design information on the structures simply did not exist – until now. So, if the wooden structures are lost due to any natural disaster, the legacies of Long Street Church and Sandy Grove Church will be sustained even if the actual buildings do not survive.

“The drawings, the photographs and the three dimensional digital models will provide rich and textured images for us to ‘experience’ the churches,” Dr. Carnes-McNaughton said. “The descendants of the original congregations and those whose ancestors are interred in their cemeteries will be overjoyed to see these churches properly recorded for future generations. This information will be so important to many scholars of early Sandhills



CyArk Alex: CyArk production specialist Alex Reinhold prepares to laser scan Sandy Grove Church as part of a Historic American Buildings Survey documentation project at Fort Bragg. Photo by Jonelle Kimbrough.



The Joint Personal Effects Depot

by Dovi Meles

Two years ago workers at the Joint Personal Effects Depot processed the first Personal Effects (personal property) in the facility's new home at Dover Air Force Base, Dover, Del. Prior to the move to Dover Air Force Base the JPED was located at Aberdeen Proving Ground, Md, and before that, Fort Myer in Va. The mission of the JPED is to receive, safeguard, inventory, store, process and determine the final disposition of personal effects of killed, injured or missing Department of Defense personnel serving in support of overseas contingency operations.

Fallen service members being brought back from combat are sent to Dover Air Force Base, where the dignified transfer of fallen service members occurs. Additionally, it is at Dover Air Force Base that both the Armed Forces Medical Examiner System (AFMES) and the Air Force Mortuary Affairs Operations facility are located.

And so, in 2006 it was decided that consolidation of mortuary affairs and personal effects processing done together at Dover Air Force Base would significantly enhance operations, eliminate inefficiencies, and provide surviving families with the appropriate dignity, honor and respect that they deserve.

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settlement, architectural historians, our military community and patrons of all ages.”

The documentation of the churches will eventually be available for the public through certain North Carolina educational institutions, state archives and the Fort Bragg CRMP.

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Entry to building

Since the facility's move to Dover Air Force Base this difficult, but honorable task has become more manageable, streamlined, and more efficient than ever before thanks to a state of the art facility designed and built by the U.S. Army Corps of Engineers. Construction of this 58,000 square foot, \$17.5 million facility was completed in March 2011. The first personal effects were processed in May 2011. In addition to the actual processing rooms, the new facility includes a large conference room, computer lab, class rooms, and offices. The JPED staff is comprised of 148 personnel, including Army, Air Force and Marine service members as well as civilians and contractors.

From the outside, the JPED facility looks no different from any other building on a military installation. But this building, closed to the general public, is anything but ordinary.

The JPED processes the personal effects

of those killed in action, wounded or missing, from all military services including the Coast Guard, Department of Defense civilians and contractors. Unlike transfer items which come into the JPED at the same time the body arrives at Dover Air Force Base, the personal effects left behind in theater will return to the JPED usually within one to two weeks after the time of death. It is within the walls of the JPED that the most personal of articles that belonged to the service member are photographed, inventoried, cleaned, and prepared to be returned to their owners, or to their next of kin.

“It is honorable work, I honestly cannot think of a better job in the military than to help bring some sense of closure to families torn apart by the unfortunate cost of

Acronyms and Abbreviations

Del	Deleware
JPED	Joint Personal Effects Depot



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war,” said Army Major Darius Highsmith. Major Highsmith directs a team of more than a dozen active duty soldiers who are assigned to the JPED and neighboring mortuary. He explained how getting assigned to the mortuary or the JPED is not easy work, but it is honorable and “you know that you are making a profound difference in someone’s life.”

Across the military it’s now agreed upon that bringing the JPED to Dover Air Force Base was a good move, and one that surviving families are directly benefiting from. According to Lt. Col. Baker, commander of the JPED, “having the JPED co-located next to the mortuary, medical examiner as well as the Center for the Families of the Fallen and the Fisher House allows for better coordination of each organization’s efforts to service our nation’s wounded and fallen service members.”

At the end of the day, “it is all about the




Exterior of building



family. That is our main concern in all of this, comforting the family and bringing them as much closure as possible, in the shortest amount of time as possible” said Capt. William Wightman of the JPED. Wightman, a summary court martial officer, explained how with one consolidated facility for processing personal effects “every single surviving family will receive the same experience. That means that whether their loved one was a private enlisted, or a four star general, the results will be the same. Every family will be dealt with in the exact same way - that is with honor, dignity and respect.”

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USACE Maintenance Management – Back to Basics

by Robert B. Leitch

The U.S. Army Corps of Engineers (USACE) Civil Works program is well-known as builders of the nation’s water resources asset portfolio with more than \$250 billion in capital investments and 1,600 projects located in all 50 states, as well as several international river basins. What’s less well known are the tremendous efforts USACE makes to operate and maintain these assets to ensure their reliable performance.

As part of those efforts, between 2010 and 2012 USACE deployed DoD’s Facilities and Equipment Management (FEM) system and completed a series of internal assessments of maintenance practices. This led to a surprising conclusion: while there was a proven track record of maintaining facilities well beyond their design life, USACE lacked a corporate maintenance management strategy with which to enhance that reliable performance. Although certain USACE maintenance management practices were identified as “best practices”



Hartwell Dam powerhouse generator repairs. Photo by Savannah District

for innovative and successful methods to maintain assets, the majority of existing maintenance management activities were very inconsistent nationally.

In response to this, USACE convened subject matter experts from all levels and all functional elements of the organization

with the mission of developing a maintenance management strategy. This Maintenance Management Strategy team addressed all maintenance practices and responsible elements (Planning, Engineering & Construction, Operations, and Logistics), and developed a framework for consistent maintenance planning, execution, and analysis.

This follows industry best practices, where leading asset management organizations have embraced a strategic approach to maintenance management – a planned and proactive lifecycle approach to asset ownership to optimize asset performance while minimizing total costs. Maintenance is the primary factor

associated with different levels of reliability in similar equipment (“Maximizing Asset Reliability Requires Reliability Driven Maintenance”, Society for Maintenance and Reliability Professionals, 2002), and also accounts for the largest investment by USACE Civil Works over the life of the assets. Maintenance investments typically account for more than 75 percent of the total cost of ownership (“Investments In Federal Facilities – Asset Management ➤

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Acronyms and Abbreviations

FEM	Facilities and Equipment Management
LoP	Level of Performance
MMIP	Maintenance Management Improvement Plan
NAP	National Academies Press
PMMP	Project Maintenance Management Plan
USACE	U.S. Army Corps of Engineers
VTN	Value to the Nation



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Strategies for the 21st Century”, NAP, 2004). Based on industry data, a USACE maintenance management strategy represents an estimated \$750 billion opportunity to enhance the efficiency and effectiveness of the asset portfolio while reducing risk and improving the overall Value to the Nation (VTN).

To carry out this strategy, a Maintenance Management Improvement Plan (MMIP) was developed along with common maintenance definitions to improve maintenance guidance, performance, and reporting. “We called it an improvement plan because there were so many best practices already in USACE – they just weren’t coordinated and shared effectively across the organization,” related Pete Dodgion, USACE team lead for the MMIP effort. “We didn’t need a whole new program, just an organization-wide tune-up.”

Two key pieces emerged from the development of the improvement plan: the first was the creation of Project Maintenance Management Plans (PMMP) reflecting the total maintenance requirements of the mission-critical assets at a given project. The second was assigning Levels of Performance (LoP) to the identified maintenance tasks. In this way, managers are able to articulate what maintenance requirements would be needed to achieve each LoP; and conversely, what tasks would not be performed at lower levels of funding.

The PMMP is a powerful planning and communication tool, which lets local managers plan their maintenance and build a budget submittal aligned with the desired level of performance. In connection with other USACE Asset Management tools, changes in condition due to maintenance (and through that, changes in total risk exposure) can be effectively portrayed.

If an asset’s maintenance is not funded




Wilson Lock dewatering inspections & repairs. Photo by Nashville District

adequately, the PMMP illustrates the significance of the maintenance which becomes deferred. Deferring maintenance over time usually leads to a reduced useful life, which often leads to increased costs for early replacement or rehabilitation (the ‘pay now or pay later’ scenario). The PMMP helps this become a conscious, planned decision.

As the USACE asset portfolio continues to age and maintenance resources become increasingly constrained, an effective maintenance management strategy that requires maintenance investments to provide efficient results, aligned with

desired levels of asset performance, is essential. Implementation of this strategy offers USACE a means to communicate lower levels of performance when maintenance funding becomes constrained, and to maximize the benefits of available funding based on impacts to that performance.

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Army Housing Services Offices: the Single Point of Entry for All Housing Needs

by Megan Purkey

A rmy Housing Services Offices (HSOs) are the single point of entry for all housing needs on an Army installation. The HSO mission is to offer non-discriminatory listings of rental and for-sale housing, rental negotiations and lease review, property inspections, home buying counseling, landlord-tenant dispute resolution, in-and-out processing housing assistance, housing discrimination complaint processing and monitoring, and to be the liaison between the installation and local and state agencies for the housing needs of the local Military population. The HSO provides an invaluable service often minimally utilized and Headquarters, Department of the Army (HQDA) has been working since 2011 to change that through several initiatives.

In the first quarter of Fiscal Year (FY) 2013, the Office of the Assistant Chief of Staff for Installation Management (OACSIM) executed through the Installation Management Command (IMCOM) an HSO assessment that sought to identify the current operational ability of Army HSOs. The assessment asked installation HSOs to evaluate themselves in four areas: services, management, oversight, and office set-

up. In addition, the HSOs were tasked to provide to HQDA a year's worth of manpower data, specifically the number of hours it takes to complete each HSO job function identified in Army Regulation (AR) 420-1. The information gathered by the assessment is already helping HQDA plan and program for the future of Army HSOs. HQDA and IMCOM have identified successes and areas of improvement for all HSOs and HQDA is in the process of developing policy and updating manuals to adapt HSOs to the current and future operating environments.

Fiscal constraints across the Army are being taken into consideration as HQDA and IMCOM develop their HSO strategic plans. Section 331 of the 2013 National Defense Authorization Act (NDAA) encourages a Service Secretary to enter into an intergovernmental support agreement with a State or local government for the purposes of providing, receiving, or sharing installation-support services when it is determined that the agreement will enhance mission effectiveness, create efficiencies, or create economies of scale, including a reduction in cost. The positive news is that HSOs have been establishing and maintaining such relationships in accordance with their governing documents long before it became a requirement and will continue to work with the local communities on the best ways to meet the housing needs of our Military Families.


HQDA recognizes the growing reliance by Soldiers and Families on the internet and social media to locate adequate and affordable housing worldwide. HQDA has been leading an effort to standardize and formalize a virtual housing experience through the Army Housing Online User Services (AHOUS) website for Soldiers and Families. This endeavor provides Soldiers and their Families world class, customer-focused housing information as early as possible to make informed housing choices regarding off-post, privatized or

Acronyms and Abbreviations	
AHOUS	Army Housing Online User Services
AHRN	Automated Housing Referral Network
AR	Army Regulation
FY	Fiscal Year
HQDA	Headquarters, Department of the Army
HSO	Housing Services Office
IMCOM	Installation Management Command
NDAA	National Defense Authorization Act
OACSIM	Office of the Assistant Chief of Staff for Installation Management

government housing at Army installations across the globe. Specific assistance to be provided as part of this effort puts in a single place information on housing floor plans, pet policies, housing allowances, schools, links to websites for the local privatized partner and the Automated Housing Referral Network (AHRN) when applicable, as well as links to virtual tours of the available housing units. HSOs are the primary points of contact for AHOUS and are charged with ensuring the information on the website is correct.

HSOs are located on just about every Army installation worldwide and are staffed to provide housing assistance to any Servicemember and their Family. Specific HSO location information can be found on the AHOUS website (www.housing.army.mil) and many can be reached quickly through official accounts on Facebook and/or Twitter. Army HSO staffs take pride in their work and are prepared to assist Military Members and their Families with any housing concerns, questions, or issues that may arise or be present. Soldiers, Family Members, and DA Civilians are encouraged to visit their local HSO today.

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Managing Stormwater to Meet the Chesapeake Bay Total Maximum Daily Load

by Heather Cisar and Mary L. Shively

On May 12, 2009, President Obama signed Executive Order (EO) 13508, Protection and Restoration of the Chesapeake Bay, renewing our commitment to restoration of the Bay. To implement the EO and meet the requirements of two consent decrees, the Environmental Protection Agency (EPA) published their intent to establish a Bay wide Total Maximum Daily Load (TMDL) for nitrogen, phosphorus and sediment in the September 17, 2009 issue of the Federal Register. The TMDL denotes the maximum amount of a contaminant a water body can receive and still achieve desired water quality standards. The Bay TMDL, as it is referred to, is comprised of both wasteload allocations for point sources such as treatment plants and load allocations for non-point sources such as polluted rainfall runoff from agricultural lands and impervious surfaces, and a margin of safety. As the first watershed-wide TMDL in the nation, the Bay TMDL addresses all segments of the Chesapeake Bay and tidal tributaries identified in the 2008 Clean Water Act (CWA) Section 303(d) list of impaired waters for nitrogen, phosphorus and sediment. The Bay TMDL addresses 92 impaired segments within the 64,000 square mile Chesapeake Bay watershed.

By 2012, EPA required each of the six watershed states and the District of Columbia to develop and submit a Watershed Implementation Plan (WIP)

Acronyms and Abbreviations	
BMPs	Best Management Practices
CWA	Clean Water Act
DoD	Department of Defense
EO	Executive Order
EPA	Environmental Protection Agency
GIS	Geographic Information System
MS4s	Municipal Separate Storm Sewer Systems
TMDL	Total Maximum Daily Load
WIP	Watershed Implementation Plan



Aberdeen Proving Ground, MD

in support of the Bay TMDL and an implementation framework. These plans outline how the states and the District of Columbia will achieve and maintain the nitrogen, phosphorus, and sediment loadings. Many of them are planning to utilize existing stormwater programs like the Municipal Separate Storm Sewer Systems (MS4s) program to implement and enforce the TMDL by revising MS4 permits to include load allocations and/or treatment of a percentage of impervious land use. WIPs identify specific pollutant reduction target goals by location and sector, as well as a description and schedule of actions that the states, the District and local governments will implement to achieve the reductions. Federal facilities

such as DoD installations and National Guard properties are included in this Bay TMDL.

For the Department of the Army sites that are located in the Chesapeake Bay watershed, obtaining wasteload information for permitted point sources was fairly easy because sampling data is typically available due to permit requirements. Non-point source loading was a more difficult undertaking. To develop the specific installation and facility loads, first the Army calculated a basic “No Action” baseline; a loading condition based solely upon boundaries and land use, without including removal efficiencies for any existing Best Management Practices (BMPs). ➤



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Once the Army calculated the baseline loading conditions, the Army then conducted an inventory and inspection of all existing stormwater BMPs, developed BMP associated GIS layers (drainage area and point location), modeled using GIS information and water quality modeling software removal efficiencies for each stormwater BMP. From this information, a BMP database was developed to manage the inventory, inspections, operations and maintenance for each BMP. This BMP database is used by installations and facilities to store stormwater BMP information in order to manage, track and report Bay TMDL related data to the states and the District of Columbia as required. The BMP database contains the following data:


- (1) Type of stormwater BMP installed
- (2) Geographic location (hydrographic unit code)
- (3) Waterbody the BMP is discharging into
- (4) Number of acres treated
- (5) Whether or not the BMP is inspected or maintained and
- (6) Visual condition assessment

The next phase of the Army's project is to develop a stormwater BMP opportunity assessment plan for installations. The Army will determine BMP design size and cost for future implementation and budgeting. The BMP database has the ability to estimate cost for design an implementation of future stormwater BMPs, as well as the ability to calculate expected load reductions. Army installations and facilities can use this information to identify the most cost efficient way to achieve their load allocations.

The Army documented the process used to meet the Bay TMDL in a document entitled "A Guide to Total Maximum Daily Implementation" (March 2013,

Army Chief of Staff for Installation Management- Environmental) for installations and facilities across the nation to consider as a guide for meeting TMDLs. A tutorial for the BMP database is also included in the Guide to assist facility managers in how to maintain stormwater management BMPs long term.

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Fort Meade, MD



Fort Polk Renovates Gym for Energy Savings and Comfort

by Gregory Corum

With a hot, humid climate in central Louisiana, attaining energy savings while meeting comfort requirements can be a challenge at Fort Polk. Cantrell Gymnasium was built in 1976 with only ventilation fans to provide cooling. Air-conditioning was added to the gym in 2003 that brought relief from the heat, but the interior relative humidity levels were still very difficult to control.

The traditional method for controlling relative humidity is to chill the air until the moisture condensates out of it, then reheat to a comfortable temperature for building occupants. In today's focus on energy efficiency, new methods are being used such as incorporating dedicated outdoor air systems (DOAS) into the HVAC design. DOAS has been used successfully in Fort Polk's barracks for humidity control. This success extended to the renovation of Wheelock Gymnasium where additional energy saving measures was implemented such as LED lighting and building envelope renovation.

With one gymnasium successfully renovated, Cantrell Gymnasium was selected for renovation with the advantage of being located near a recently renovated central energy plant. During the central plant upgrade, supply and return lines for hot and cold water were extended to several buildings, including Cantrell Gymnasium, with future incorporation in mind as these buildings had been operating as stand-alone facilities.

A "lessons learned" approach was used to address energy savings including



Solar panels at Fort Polk

retrofitting gymnasium lighting from high pressure sodium to LED, and converting exterior lights from high pressure sodium to photovoltaic-powered LED. The photovoltaic system uses a grid-tie inverter to send excess electricity generated into the electric grid. Additionally, the pneumatic HVAC system was completely replaced with an industry-standard digital-direct-controlled system receiving heating and cooling energy from the central energy plant. The natural gas fired boiler was also eliminated, being replaced by a hydronic solar array that heats 30% of the domestic water, and the central energy plant hot water loop that heats the remaining 70% (the solar heated water is used first). The new HVAC system uses a DOAS that not only controls the internal relative humidity, but also captures energy from exhaust air to send back into the gymnasium, thus reducing the amount of energy required for conditioning.

Air distribution in the large workout area (converted from a basketball court) is augmented by the use of duct socks instead of traditional metal ducting. The fabric construction of the duct socks is lightweight, hypoallergenic, easily cleaned, and eliminates "hot/cold spots" by diffusing

air over its entire surface.

The culmination of these energy saving efforts is a gymnasium that was consuming electricity at a rate of 1,226 kWh per day to a reduced rate of only 586 kWh per day, a savings of 52%.

Prior to the renovation, the gymnasium was used sparingly despite its status as only one of the two brigade gymnasiums on Fort Polk. Now, the gymnasium is heavily used by Soldiers, dependants, and civilians alike.

This project has demonstrated that energy savings can be found without trading off occupant comfort, even in a gymnasium located in a challenging climate. The Fort Polk Directorate of Public Works (DPW) will use these results to help drive future projects.

DPW anticipates that the continued success with HVAC/DOAS systems, LED lighting, and hydronic and photovoltaic solar arrays that will put Fort Polk on the path to greater future energy savings.

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Acronyms and Abbreviations	
DOAS	Dedicated Outdoor Air System
DPW	Directorate of Public Works
HVAC	Heating, Ventilating and air conditioning
LED	Light Emitting Diode
JRTC	Joint Readiness Training Center (Joint Readiness Training Center and Fort Polk)
KWH	Kilowatt-Hour



Fort Carson's Facility Preventative Maintenance Program Heads Off Issues

by Susan C. Galentine

Fort Carson, Colorado, ensures facility upkeep and customer satisfaction is a high priority through its Facility Preventative Maintenance Program. The program, which the Fort Carson Directorate of Public Works started with approximately 40 buildings four years ago, continues to grow and now includes 135, approximately 20 percent, of the major occupied buildings in the cantonment area, including all Soldier barracks, said Terry Hagen, DPW Operations and Maintenance Division, DPW Base Operations branch chief.

Facility preventative maintenance programs are an established strategy directed by Army Regulation 420-1, Army Facilities Management. The programs decrease costly repairs through routine maintenance efforts before more critical issues arise. The post's operations and maintenance contractor, Kira, Inc., which provides the program's staff, received approximately 39,600 service orders for facility repairs across post in 2012. Since the maintenance program's implementation, the contractor has tracked a five percent reduction in the number of routine maintenance service order calls for building's already in the program. The ultimate goal is to include all of the major occupied facilities in the cantonment in the preventative maintenance program, which could save the installation up to \$600,000, estimated Rodney Miller Kira work control manager. Currently, Fort Carson saves approximately \$120,000.

Routine preventative maintenance appointments, conducted three times a year, start with the contractor's team coordinator and the facility manager assigned to the buildings meeting to determine any existing issues, check on outstanding service orders and to perform a room-by-room walk-through. Any

deficiencies encountered are tracked with an estimate for the amount of time and personnel required to complete the work.

Once the initial inspection is performed, a team of service order staff come through and correct any problem areas within a week of the walk through, said Hagen. The backlog of service orders has dramatically decreased, in part, with the implementation of this program but also with the shops estimating their labor hours and effective scheduling of the work.

"We have seen a dramatic decrease in the amount of service orders called in and deficiencies identified during walk-throughs," said Hagen of the program's positive impact.

"The Preventative Maintenance program has definite advantages, one being the customer does not need to call for repairs unless it is an emergency," Mark Kendrick, Kira quality control inspector who provides oversight on the contract work. "It is cost effective because the technicians are kept in one location to accomplish multiple repairs, reducing travel time, work order processing time and equipment usage time, which are all cost savings to the government and in turn to the tax payers." Kendrick also said the technicians like the program because they like the stability in knowing where they would be working and, having gained the knowledge of the buildings, the types of repairs to expect.

Mark Bartle, Kira Fort Carson program manager, said the primary reason for the success of the preventative maintenance



Brad Marquardt, Kira painter, repairs water damage to walls in a Soldiers room in the 43rd Sustainment Brigade barracks.

program is its proactive approach. Facility maintenance prevents repair problems arising later. Feedback has been very positive for the program. "Our customer is our biggest fan when it comes to the viability of this program," said Bartle.

Sgt. Marcus Barton, the repair and utility noncommissioned officer with the Headquarters, Headquarters Company, 4th Combat Aviation Brigade, building 1352, has worked closely with the preventative maintenance program staff since his arrival on Fort Carson in May. "The service has been great, the employees have been courteous, professional and positive," said Barton. "Ninety percent of the time they are spot on, I make the call and they deploy faster than the 82nd Airborne."

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Acronyms and Abbreviations

DPW Directorate of Public Works



Extending Our Reach to the 81st RSC

by Sean McBride

In 2008, the military construction mission at Fort Jackson, in Columbia, S.C., was turned over to the U.S. Army Corps of Engineers, Charleston District, resulting in an increasingly large workload to support the base that sees 50 percent of all Soldiers entering the U.S. Army each year. While this mission has thrived, it has also provided new opportunities for future growth, such as the mission for the U.S. Army Reserve's 81st Regional Support Command.

The U.S. Army Reserve is broken into four regional support commands, with the 81st RSC, which is headquartered at Fort Jackson, managing nine southeastern states and Puerto Rico, which cover approximately 700 Army installations, and are further broken down into 11 sub-regions, labeled by letters.

In fiscal year 2010, the 81st RSC's deputy director of Public Works, Frank Eubanks, requested support from the Charleston District. During FY 10 and FY 11, the District was given several design and sustainment, restoration, and modernization projects. After performing well with these projects, in FY 12, the District was asked to do a base operating services and preventive maintenance pilot project in Region A, which consists of Louisiana and part of Mississippi.

The project included doing inventory on the installations in the region, performing tasks such as identifying equipment that needed maintenance and validating the square footage of facilities. The District developed contracts for municipal services (custodial, pest, refuse and grounds) and preventive maintenance and emergency

repairs in all facilities throughout Region A. Several additional SRM and design projects, including waterside repair in Morehead City, NC, and HVAC resets in Vicksburg, Miss., and Fort Jackson, S.C. were also completed. The success of the work completed by the District has warranted the receipt of preparing the BOS and PM contracts for the remaining regions of the 81st RSC's command, starting with Region G.

Awarding a BOS and PM contract in Puerto Rico and an inventory on the remaining eight regions will soon be completed by the district. Currently, in Puerto Rico, multiple contracts exist for all BOS and PM work. Upon award of the contract in Puerto Rico, the existing contracts will be reduced to just one contractor who can do all of the required services. Implementing this forward-thinking approach in each region will reduce the multitude and level of effort in contracts required by the 81st RSC, thereby considerably reducing contract administration, manpower and cost to the government. Also, the benefits of preventive maintenance will extend the service life of all equipment and provide better support and care of each installation.

"The ultimate goal set by the leadership of the 81st RSC is to eventually be able to have Utility Monitoring Control Systems throughout the regions, which are computer systems allowing them to manage both servicing and usage of HVAC, lighting, and water systems at every installation," said Lonnie Nielson, project manager. "Once in place, many




David Mongiardo, of O'Brien & Gere Engineers, using a tablet to enter inventory data at the AL035 Facility, Building MB202 the SGT William W. Seay USARC, in Mobile, AL

of their maintenance problems can be detected and isolated immediately at the headquarters level, thereby providing timely response and corrective actions at each installation while also conserving more energy."

The Charleston District is providing project management, contract administration, design, engineering support, and construction management, while collaborating with the Corps' geographic districts to provide quality assurance during service contracts and SRM projects for the 81st RSC regions. The District strives to create more sustainable solutions throughout all new projects, and this is one step forward. U.S. Army Reserve Headquarters will be looking at the success of the District's programs with the potential to expand it to the other three regional support commands.

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Acronyms and Abbreviations	
BOS	base operating services
FY	fiscal year
HVAC	heating, ventilation and air conditioning
PM	preventive maintenance
RSC	Regional Support Command
SRM	sustainment, restoration and modernization



Center Offers One-Stop Help with Paints and Coatings

by Dana Finney

Do you need an expert to answer questions or do field work for a paint issue? Look no farther than the Paint Technology Center, part of the U.S. Army Engineer Research and Development Center. Located at ERDC's Construction Engineering Research Laboratory in Champaign, Ill., the PTC is the U.S. Army Corps of Engineers Center of Expertise for paints and coatings.

The paint experts at PTC have at their disposal an extensive array of laboratory equipment and instrumentation to conduct tests and evaluations and perform research and development on a broad range of coating types. PTC field and laboratory tests can measure the performance of paints and coatings under mild to extreme conditions for many infrastructure programs, including:

- Quality assurance testing of paints and coating for use on military and civil works projects



PTC Director Susan Drozdz measures paint viscosity in the laboratory at Champaign, Ill. Photo by Dana Finney

- Comparative testing of paint/coating formulations
- Failure analysis of field-applied products
- Specification development
- Training and criteria document development

“On average, we receive about 600 inquiries a year from the public and private sectors,” said Susan Drozdz, PTC director. “Most requests come from USACE civil works and military construction activities, along with other U.S. Army and Department of Defense activities. Questions range from paint system selection, surface preparation, and paint application to inspection, training, and research.”

PTC's specialized equipment and instrumentation support both laboratory and field evaluation of paint and coatings—from the common laboratory tools and supplies necessary to perform routine paint testing to the sophisticated electronic instrumentation required to perform research, development and forensic-type studies.

Researchers at PTC have studied coating systems for wood, concrete and metallic substrates and various types of application equipment. Current research efforts include:

- High-performance coatings for corrosion protection in atmospheric and water immersion exposures
- Abrasion-resistant coatings
- Coatings for use on aluminum
- Coatings that meet air pollution regulations
- Coatings for high temperature applications



PTC Director Susan Drozdz sprays test panels in the laboratory at Champaign, Ill. Photo by Dana Finney

According to Drozdz, “A recent example of our research is a new epoxy primer that is formulated with carbon nanotubes and half the amount of zinc dust in a traditional zinc-rich epoxy. The new primer maintains the excellent corrosion protection of the traditional formulation, but with better adhesion, flexibility, and impact resistance.” The PTC worked with industry partner Tesla NanoCoatings, Inc., to produce this new paint which has been successfully demonstrated on a fuel tank at an Army installation.

In addition, PTC staff continuously monitors new developments in the paint and coatings industry to select new products for evaluation in the laboratory prior to demonstration at field test sites. Successful new products are included into current criteria documents so that USACE project designers can specify them on future projects. ➤

Acronyms and Abbreviations	
CERL	Construction Engineering Research Laboratory
ERDC	Engineer Research and Development Center
ILL	Illinois
NACE	National Association of Corrosion Engineers
PTC	Paint Technology Center



Shughart Middle School Receives First Green Certification in DoDEA

by Jonelle Kimbrough

Shughart Middle School has achieved recognition as the first certified green school on the installation and within the Department of Defense Education Activity (DoDEA) under the Fort Bragg Green Schools Initiative. The Fort Bragg Green Schools Initiative was based on the Sustainable Sandhills Green Schools Program and was developed by Sustainable Fort Bragg.

Sustainable Fort Bragg education and training manager Mindy Love-Stanley collaborated with Shughart Middle School science teacher Tara Nye to create the program when Nye participated in an internship with Fort Bragg as a Kenan Fellow through North Carolina State University. The Kenan Fellows program is designed to enhance curriculum relevance, engage educators and agencies in unique professional partnerships and promote growth opportunities for teachers.

To participate in the Fort Bragg Green Schools Initiative, schools on post are encouraged to implement a series of sustainability measures including energy conservation, recycling, waste reduction, pest management, water conservation and

sustainable purchasing for items such as supplies and food services. Schools can tailor the Green Schools Initiative to accomplish specific objectives and meet the unique needs of their students and personnel.

Nye and school counselor Dr. Mona Hegarty were driving forces behind the implementation of the Green Schools Initiative at Shughart Middle School. When they proposed the program to Principal Mary Leinard and their fellow faculty, they received enthusiastic support. “We have many environmentally conscious teachers on our staff, and many students have identified themselves as environmentalists in our Roots and Shoots environmental club and our gifted program,” Hegarty explained. These proponents encouraged pursuit of their Green Schools certification with participation in contests, community involvement opportunities, daily announcements and signage. They also developed new policies to support environmentally sound culture changes.

According to Leinard and administrative officer Stuart Wheelless, Shughart Middle School has integrated numerous initiatives for environmental improvement into operations. A Green Team including students and faculty members is responsible for ensuring adherence to program goals. Personnel have programmed their copiers to enter conservation mode after five minutes and power down after four hours. They send forms electronically, and they maintain a recycling program. Many students use alternative transportation, as evidenced by the full bicycle racks on campus. The school has also instituted “no idle” zones for vehicles. Students recently planted a school garden as well.

The Green Schools Initiative can produce many benefits for schools. Participants can save money for DoDEA through reduced resource use and increased operational efficiency. “The Green Schools Initiative supports Army sustainability

directives and also serves as a vehicle to involve students in the problem solving process,” said Love-Stanley. Teachers can use the themes of sustainability, the environment and resource conservation in their lessons to enhance their Science, Technology, Engineering, Arts and Mathematics (STEAM) curriculum. STEAM attempts to transform the typical teacher centered classroom by encouraging a curriculum that is driven by problem solving, discovery and exploratory learning and by requiring students to actively engage a situation in order to find its solution. For Shughart Middle School, the entire facility is a living laboratory for students.

“Being a green school enriches our curriculum and the opportunities available to students,” Nye said. “Students want to see real world applications of what they are learning. As a teacher, it is common to hear a student say, ‘Why do we have to learn this?’ The Green Schools Initiative answers that question for the students, and they start to make the real world connections with what they are learning.”

As for the future of the Green Schools Initiative, Hegarty and Nye hope that the program will expand. “We would like to be a model for other schools and influence them to practice conservation every day,” said Hegarty. “I hope that all Fort Bragg schools will work towards receiving this recognition,” Nye added. “More importantly, I hope all DoDEA schools throughout the world will work with their installations and become green schools, too. Teaching our students to respect their environment should be a part of every school’s curriculum.”

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The PTC uses state-of-the-art weathering equipment to assess paint performance over prolonged periods of naturally occurring distress. Included are paint coupon racks exposed to normal environmental stress; salt- and fresh-water immersion tanks, a salt fog chamber and ultraviolet exposure equipment to create accelerated corrosion environments for rapid stress testing.

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Susan Drozd is director, PTC, and a research chemist at ERDC-CERL in Champaign, Ill. She is a NACE Certified Paint Inspector – Level 3.





First Green Roof at Fort Bragg

by Jonelle Kimbrough

The Installation Transportation Deployment Support Area at Fort Bragg is growing ... literally. Its roof – the first vegetated roof on Fort Bragg – combines a beautiful garden with versatile and cutting edge technology that requires minimal maintenance but provides substantial benefits.

The LiveRoof® at the \$13 million ITDSA is 10,000 square feet and contains more than 500,000 evergreen and deciduous sedum plants. Sedum is a succulent, or a fleshy plant that efficiently retains water in arid climates or soil conditions. They have a special type of metabolism that allows them to exchange water and gases during the night when temperatures are more moderate. Thus, they are ten times more water efficient than other plants. Although they are not native plants, succulents still thrive in the often hot and dry conditions of the North Carolina sandhills. “This mix was specifically selected for the Carolina climate,” said Seth Leff, the



LiveRoof1: The first vegetated roof at Fort Bragg features over 500,000 evergreen and deciduous sedum plants designed to manage storm water, reduce the urban heat island effect and conserve energy. Photo by Jonelle Kimbrough.

LiveRoof® Area Manager. “The evergreens ensure year-round vegetation and variation while the deciduous plants that lose their leaves nourish the soil.”

According to Leff, the LiveRoof® combines the most advantageous elements of plant-in-place methods with container methods of vegetative roofing. Traditional plant-in-place methods leave soil exposed and plants susceptible to wind scour, water erosion and weed encroachment during the long establishment and maturation process. The LiveRoof® plants are installed when they are mature and dense in pre-vegetated modules. The module system prevents plant loss due to wind and water and discourages weed growth. In addition, it is immediately aesthetically pleasing, offering turn-

key benefits to the owner. The LiveRoof® modules are particularly special, though. Whereas conventional modules are prone to photodegradation and unattractive compartmentalization, the LiveRoof® modules feature a subterranean design that virtually disappears following placement, so the module edges are obscured to prevent photodegradation, to enhance the aesthetics and to allow full soil connectivity. With full soil connectivity, the plants can share water, nutrients and beneficial organisms for optimum health. Furthermore, the LiveRoof® modules are created with recycled content. Even the inorganic soil is ecologically sustainable, durable and suited to the climate.

“The entire system is designed to last



LiveRoof Seth Leff: LiveRoof Area Manager Seth Leff surveys the plants on the roof at the Installation Transportation Deployment Support Area at Fort Bragg. Photo by Jonelle Kimbrough.

indefinitely,” Leff said.

The plants and their modules require basic and periodic maintenance. LiveRoof, LLC recommends an annual pruning, an annual soil test and a bi-monthly “weed walk.” Since the materials are engineered to tolerate a dry environment, the plants will require minimal watering.

A vegetated roof has many environmental benefits. The succulents act as sponges and filters to absorb storm water on the site and prevent contaminants from polluting the aquifer. The roof at ➤

Acronyms and Abbreviations	
ITDSA	Installation Transportation Deployment Support Area
LEED	Leadership in Energy and Environmental Design



Reduced BOS Funding Brings out the Best in Area I DPW O&M Division

by Patrick Hannigan and Marshall Downs

USAG Red Cloud and Area I is located in the northern most area of South Korea. It is bordered to the north by the Demilitarized Zone (DMZ), to the south by the Capital City of Seoul, to the east by the East Sea, and to the west by the Yellow Sea. Area I is an area of approximately 700 square miles of mostly mountainous terrain. Located within those 700 square miles are USAG Red Cloud installations and facilities.

USAG Red Cloud and Area I's operational area of responsibility (AOR) consists of approximately 14,000 acres of Status of Forces Agreement (SOFA) granted land, 9 non-enduring camps, 7 enduring remote sites, 33 enduring live fire ranges, and more than 2,000 temporary and semi-permanent buildings and facilities, consisting of over 10 million square feet of covered space. All this adds up to a lot of work for the Area I DPW Operations & Maintenance (O&M) Division.

Prior to 2010, USAG Red Cloud and Area I managed millions of dollars worth of service contracts performing services such as Tank Tightness Testing (TTT), Backflow Preventer Assembly Testing (BFAT), Inspection Test & Maintenance (ITM) of Fire Alarm Detection Suppression Systems (FADSS), Automatic Transfer Switch (ATS) testing, and numerous Ground Maintenance contracts for grass cutting and tree trimming. In mid 2010, the overall Army-wide reduction in funding for Base Operations Support (BOS) had a significantly impact on the affordability of Area I's service contracts. The solution was to obtain



Automatic Transfer Switch (ATS)

training for the in-house labor force, and to begin utilizing trained and qualified Korean National employees from within the division. During FY 11 and FY

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the ITDSA will prevent an estimated 200,000 gallons of storm water from entering waterways every year. The LiveRoof® also reduces the urban heat island effect. Whereas traditional roofs can heat to a temperature of 175 degrees in the height of summer, the LiveRoof® can retain the roof temperature at the ambient air temperature. The plants create a habitat for wildlife such as birds and pollinators. In addition, the succulents provide fire protection and noise reduction by reducing interior sound by as much as 40 decibels.

The LiveRoof® also contributes to Leadership in Energy and Environmental Design (LEED) success. Developed by the United States Green Building Council, LEED is a rating system which recognizes sustainable design and construction that benefits human and environmental health.

The ITDSA is certifiable as a LEED Silver facility and meets Army LEED construction standards.


Vegetated roofs are associated with health advantages, too. Plants are scientifically proven to lower blood pressure, reduce heart rate, enhance mood, create an increased sense of productivity and instill a desire for physical activity and social interaction. Since the roof is visible from the second story of the ITDSA, the occupants of the facility will be able to enjoy the garden and reap its therapeutic benefits.

The LiveRoof® is financially sound as well. The vegetation extends the life of the roof structure by reducing photodegradation and protecting the membrane from mechanical damage or from natural expansion and contraction, resulting in a potential 200 to 300 percent extension of roof membrane life expectancy. The plants cool the entire

structure through an evaporative process and lower interior temperature by 6 to 8 degrees in the summer. Leff estimated that the plants should reduce air conditioning costs in the facility by 25 to 50 percent and should provide nominal insulation during winter months.

“We are very proud of this green roof project,” said Ekaterina Dones of the United States Army Corps of Engineers. “This project is proof that Fort Bragg isn't afraid to do something different in order to achieve additional energy and environmental benefits.” For more information on LiveRoof®, visit www.liveroof.com

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12, testing performed by the in-house labor saved the Garrison \$702,000 dollars.

The DPW in-house labor force also has the responsibility to develop and implement the Backflow Preventer Assembly Testing (BFPAT) program to protect the Garrison's water supply from contamination. Backflow is defined as the undesirable reversal of flow of water or mixtures of water and other liquids, gases, or other substances into the distribution pipes of the potable supply of water from a source or sources. During FY 11 and FY 12, testing performed by the in-house labor saved the Garrison \$642,000 dollars.

The objective of Inspection Test & Maintenance (ITM) for fixed fire alarms and fire protection systems is to ensure that the systems will function on demand. The procedure of ITM is to periodically test

all fire protection systems to identify any defects responsible for system malfunction and to take corrective action prior to a fire. All fire protection features installed in DOD facilities must be maintained in accordance with the Uniform Fire Code (UFC) 3-601-02 of the National Fire Protection Association (NFPA). During FY 11 and FY 12, testing performed by in-house labor saved the Garrison \$250,000 dollars.

The testing process for the Automatic Transfer Switch (ATS) generally does not require maintenance, but does require regular care and testing to ensure these systems operate properly. In the event of a power failure, the generator should start automatically and reliably transfer power to the alternate power source. Emergency power systems are required to be tested on a regular basis, and the transfer switch is required to be tested at least once a month


Acronyms and Abbreviations	
AOR	Area of Responsibility
ATS	Automatic Transfer Switch
BFAT	Backflow Preventer Assembly Testing
BOS	Base Operations Support
DMZ	Demilitarized Zone
DPW	Directorate of Public Works
FADSS	Fire Alarm Detection Suppression Systems
FY	Fiscal Year
ITM	Inspection Test & Maintenance
NFPA	National Fire Protection Association
O&M	Operations and Maintenance
SOFA	Status of Forces Agreement
TTT	Tank Tightness Testing
UFC	Uniform Fire Code
USAG	U.S. Army Garrison

per NFPA 110. During FY 11 and FY 12, testing performed by in-house labor force saved the Garrison \$250,000 dollars.

The overall Army-wide reduction in funding for Base Operations Support (BOS) also had a significant impact on Area I's numerous ground maintenance contracts for grass cutting, tree trimming, sweeping and blowing, and raking leaves. With an area of operation of approximately 14,000 acres, the division purchased enough ground maintenance equipment to perform by in-house labor and developed a program to train Soldiers on the proper use of this equipment. During FY 11 and FY 12, ground maintenance performed by in-house labor saved the Garrison 1 million dollars.

In conclusion, the Army-wide reduction in BOS funding has changed the way business is conducted in Area I DPW O&M Division, and, in the process, has saved the Army about 3 million dollars during FY 11 and FY 12.

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Patrick Hannigan is a real property accountable officer at the Directorate of Public Works, USAG Red Cloud and Area. 

Tank Tightness Test Operations



PRESSURE SENSOR OPERATION



MICROPHONE & WATER SENSOR SETTING



PRODUCT LINE TESTING



WATER SENSOR CALIBRATION

Methods used for Tank Tightness Testing



Support for Army GIS Activities

By IGI&S Support COP

While IMCOM installations may lose some Geographic Information Systems (GIS) support in the current fiscally constrained environment, access to a number of GIS resources remains available. There continue to be a number of GIS resources capable of providing common levels of support to installations, GIS visualization and software support and in some cases geospatial analysis to installations. Descriptions of GIS resources and services below are open to the Army at no additional cost to installations.

IMCOM-HQ DPW GIS Assistance

Ryan, Daniel P, daniel.p.ryan36.civ@mail.mil (210) 466-0565

IGI&S Support Center

POC is Nicchitta, Vincent H, Vincent.h.nicchitta2.civ@mail.mil (571) 256-8160

The mission of the IGI&S Support Center is to provide geospatial analysis, data development, compliance service, and technical support to ensure a standard capability exists at all Army installations and to create efficiencies through standardization and centralized support.

IGI&S SUPPORT CENTER GOALS

- Perform geospatial analysis and onsite GPS/data collection for supported installations upon request.
- Provide technical assistance to installations that utilize IGI&S program services.
- Provide data loading services into Army Mapper for installation vector and raster data.
- Provide data request services for installations requesting data from Army Mapper.
- Develop installation geospatial data to ensure that data conforms to SDSFIE, Army IGI&S Metadata, and QAP compliance.
- Create and maintain Common Installation Picture (CIP) map layers for

supported installations

- Create standardized and professional cartographic products for supported installations upon request.

IGI&S SUPPORT CENTER SERVICES

- Army Mapper Data Loading
- GIS Technical Support
- Army Mapper Data Request Support
- IGI&S Army Mapper documentation
- Geospatial Analysis Map Production
- Geospatial Data Development & Maintenance

- Real Property Reconciliation

Army Mapper

POC is Colby, Pamela A, Pamela.a.colby.civ@mail.mil (210) 466-0063

Army Mapper Help Desk – usarmy.jbsa.imcom-hq.list.army-mapper-help-desk@mail.mil

Army Mapper Phone:
1-877-MAPPER9 (627-7379)

Army Mapper is an enterprise solution initiated and implemented by the IGI&S program. Army Mapper supports the Army Installation, Energy, and Environment (IE&E) domain by facilitating access to geospatial data that is stored, managed, and maintained centrally. Army Mapper's suite of features and capabilities are tools for informed decision making at any level of Army leadership.

ARMY MAPPER COMPONENTS:

- Data Repository

Army Mapper is the authoritative record keeping source for the Army's installation geospatial data. Army Mapper's data is a secure repository, structured for full lifecycle geospatial data capture, maintenance, analysis, and archiving. The data repository supports the Army's installation management of geospatial data for locally driven requirements and satisfies requirements generated by Congress, the

Acronyms and Abbreviations	
CAC	Common Access Card
CADD	Computer Aided Drafting and Design
CGDCE	Centralized Geospatial Data Collection Effort
CIP	Common Installation Picture
COP	Community of Practice
ECM	Encroachment Condition Module
EITF	Energy Initiatives Task Force
ERDAS	Earth Resources Data Analysis System
ESRI	Earth Systems Research Institute
GI&S	Geospatial information and Services
GIS	Geospatial Information System
GPS	Global Positioning System
IE&E	Army Installation, Energy, and Environment
IGI&S	Installation Geospatial Information and Services
IMCOM	Installation Management Command
IMCOM-HQ DPW	IMCOM Headquarters Department of Public Works
LUCs	land use controls
QAP	Quality Assurance Plan
SDSFIE	Spatial Data Standards for Facilities Infrastructure and Environment
SMEs	Subject Matter Experts

Office of the Secretary of Defense, and agencies of the U.S. Government

- Web Map Viewer

Army Mapper's Web Map Viewer is available to all Common Access Card (CAC) holders. Army Mapper's web-based interactive map geo-enables functional decision makers with access to the data repository without a need for specialized software or advanced geospatial training

- Desktop Tools

Army Mapper's Desktop Tools is an internet accessible suite of advanced GIS, CADD, and drawing software applications available to geospatial analysts and power users from any computer or location. Desktop Tools uses Citrix technology to enable the software applications to function just as if they were installed on the user's own computer – without the problems of software updates and





Maintenance and Operations Efforts Along the Texas Coast

By Sandra Arnold

Attracting millions of tourists to the coastline annually, the Texas Gulf Coast is more than a vacation destination. It is a complex and vulnerable system that is home to three of the top 10 ports in the nation that generates 22 percent of the nation's waterborne commerce, creates millions of jobs and pumps billions of dollars each year into the nation's economy. With the historic economic transformation associated with shale oil and gas exploration and the expansion of the Panama Canal, the success of these enterprises hinges heavily on the successful maintenance of these vital waterways.

"The U.S. Army Corps of Engineers Galveston District's Operations Division is responsible for managing a robust operations and maintenance program to ensure the continued safe navigation along our waterways as well implementing measures to mitigate flood risks," said Joe Hrametz, chief of the USACE Galveston District's Operations Division. "As we work to maintain these waterways, we're constantly seeking to improve our processes to ensure the continued success of our nation's vital industries."

Tasked with the mission of providing vital engineering services to strengthen the nation's security, energize the economy and reduce risks from disaster, the USACE Galveston District staff works with its federal, state and local partners to maintain



1st photo - The spill barge "Shamrock" places material to construct an underwater levee that is part of a Beneficial Use Site to provide a shallow water sea grass habitat along the south side of the new channel. Photo by Kenneth (Chip) Worley.

1,000 miles of deep and shallow draft channels and have developed three new policies and processes to help streamline these efforts.

The Labor Workbook was developed to effectively manage labor funds

down to the activity level for planning studies and milestone for dredging and construction contracts. The workbook is prepared prior to the beginning of each fiscal year and is fully automated to extract financial information

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costs for individual licenses. Users have personal storage, shared storage for their work group, and access to repository data as needed. Applications currently available are ESRI ArcGIS suite, Bentley MicroStation products, Intergraph GeoMedia products, and ERDAS Imagine.


USAEC GI&S Team

The U.S. Army Environmental Command's Geospatial Information and

Services (GI&S) Team of Subject Matter Experts (SMEs) assists stakeholders in environmental programs accomplish the Army's mission by providing detailed, precise geospatial information and analysis of environmental activities on Army installations the team of environmental GIS professionals with a large body of GIS experience is available to assist installations with their geospatial data collection, modeling and analysis needs. The GI&S Team of SMEs provides a wide array of geospatial data

collection, modeling, and analysis assistance all levels of the Army's environmental program. For examples, please contact the POCs listed in the article.

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The IGI&S COP contains members from each of the teams listed in the article and focuses on how GIS can better serve the Army's installations. Jared Bledsoe is a geographer with the US Army Environmental Command. 



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from the Corps of Engineers Financial Management System (CEFMS) and populate the labor workbook each pay period thereby eliminating the need to manually extract the information, while providing the operations manager total oversight regarding who is charging to his or her project and if milestones are being accomplish on schedule and within budget.

The Gulf Intracoastal Waterway Setback Policy was updated in 2013 to ensure safe navigation for 423 miles of waterway and will regulate the distance that marine structures can be constructed in the vicinity of the GIWW. Working with federal and state partner agencies as well as the commercial towing industry, the district identified five areas of navigation concern to include bends, bridges,

mooring facilities, waterfront structural congestion/ encroachment areas and land encroachments. Being able to visually depict the channel in readily available formats for the public provides the Corps the ability to depict the setback of the channel in relation to the proposed private structures and provides a greater layer of transparency to the district's regulatory permitting policy along the GIWW.

Additionally, the district's GIS technology will be used to add visibility of the setback by creating a downloadable overlay on the district's website that will show where the setbacks are located with respect to the authorized channel along the GIWW and is expected to be available by summer 2013. The policy will also give the Corps the ability to analyze known navigational hazardous locations along the


Acronyms and Abbreviations	
CEFMS	Corps of Engineers Financial Management System
GIS	Geographic Information Systems
GIWW	Gulf Intracoastal Waterway
USACE	U.S. Army Corps of Engineers

GIWW in order to maintain navigation safety.

Lastly, the district updated its outgrants and non-federal use of dredge material disposal facilities policies. An outgrant is a written, legal document that authorizes the right to use real property managed by the USACE and establishes the timeframe, consideration, conditions and restrictions of its use. In 2013, staff identified areas in the Outgrant Program that if streamlined, could potentially save thousands of federal dollars each year, and began developing a new funding model that addresses the prioritization of outgrants, establishes fair-market value of property managed by the district and categorizes/standardizes permit application fees. The updated policy regarding the non-federal use of dredge material disposal facilities enables the district to charge for the usage of these sites and keep the fees instead of returning the funds back to the U.S. Treasury, which benefits the entire Corps.

“The Texas economy relies heavily on the Gulf Coast,” said Hrametz. “We’re developing new initiatives and policies to improve the district’s Operations and Maintenance Program that will allow us to continue our mission of providing safe, reliable, efficient and environmentally sustainable waterborne transportation systems for movement of commerce, national security needs and recreation, and in the process we’re setting a new standard for the way we do business.”

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Sandra Arnold is the chief of Public Affairs in the Galveston District, U.S. Army Corps of Engineers. 



Heavy equipment operators construct dewatering ditches at the San Jacinto Placement Area as part of \$1,382,700 contract to provide outflow of excess water to increase the placement area's capacity to hold more dredge material.



Huntsville Center's Operation and Maintenance Engineering Enhancement Program

by Mike Hunter

You may recall some of the news stories and images from last year's Hurricane Sandy. One news account documented an emergency, floor-by-floor evacuation of nearly 300 patients from New York University Medical Center after the loss of facility electrical power. The news story described exhausted rescuers and hospital staff who made 10 to 15 trips down darkened stairwells, transporting the youngest and sickest first, and completing the patient evacuations some 15 hours later. Among the first out were 20 babies in neonatal intensive care, some on battery-powered respirators. Hospital officials had assured city leadership they had working back-up power; however, this premier hospital lost generator power at the height of super storm Sandy.

Inadequate maintenance of medical facility systems and real property installed equipment can have dire consequences, jeopardizing the welfare of patients often already weakened and more susceptible to infection or other medical complications. The Operation and Maintenance Engineering Enhancement program, administered by the Corps of Engineers, U.S. Army Engineering and Support Center in Huntsville, Ala., provides a simplified process to respond to the growing operation and maintenance needs of Department of Defense medical facilities. The OMEE program applies a systematic approach to the operation and maintenance of medical facilities to make sure these facilities serve their intended function efficiently and safely, and to ensure medical facility components reach or exceed their life expectancy. Other benefits derived from OMEE services are improved patient comfort and care, better working environment for the health care providers, easier compliance with codes and standards, reduced life safety violations, increased reliability of systems and equipment, and better long-range planning. OMEE has two



Other OMEE examples include mechanical room industrial boilers and generators.

suites of Indefinite Delivery/Indefinite Quantity service contracts that use low-cost, quick-response task orders to execute maintenance requirements for DoD installations worldwide. These contracts can provide scheduled maintenance, corrective maintenance, pest management, aseptic management, grounds maintenance, biomedical equipment maintenance and repair/replacement services in support of medical facilities. Medical facility systems maintained include all mechanical, electrical, architectural, utility, and site systems, equipment and components. The OMEE program contractors were selected for their experience and ability to perform in medical facilities and their knowledge of The Joint Commission and Accreditation Association for Ambulatory Health Care requirements along with other medical codes and standards. Relevant medical

facility accreditation bodies, such as TJC, evaluate DoD healthcare facilities at least once every three years. Failure of any DoD medical facility to qualify under any or all of these standards may result in short- or long-term loss of DoD capacity to medically serve its patient population.

DoD medical facilities the OMEE program serves include: hospitals, clinics, pharmacies, veterinary facilities, dental treatment facilities, medical training and research facilities, utility and energy plants supporting medical facilities, labs and medical storage facilities. The OMEE program provides for medical O&M services over a facility footprint of nearly 22 million square feet at more than 60 DoD installations, ensuring the sustainment of safe, reliable facilities to support the growing medical needs



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of our war fighters, their families, and retirees. Demands on the OMEE program have continued to grow, with contract obligations increasing approximately 20 percent per year in each of the past four years. All indications are that this trend of ever-increasing medical facility sustainment requirements will continue in the near future. The TRICARE 2012 Military Health System Stakeholder's Report describes a DoD patient population of greater than 9.7 million comprised of active duty military, reserve military personnel, military dependents, military retirees and others. TRICARE beneficiaries have increased by 500,000 in just the past five years. The cumulative effects of 10 years of war continue to place a significant demand upon the DoD health care system and facilities. For example, behavioral

health appointments among active duty and their dependents rose steadily from approximately 3 million in 2006 to 5.7 million in 2011. Increased in and outpatient numbers within the DoD health care system have translated into greater demands for the types of medical facility O&M services which the OMEE program can provide.

The scope of OMEE services is performance based (instead of the detailed descriptive statement of work) which results in the government and contractor working as a team to provide enhanced efficiency, cost savings, clear work requirements, superior performance and improved customer satisfaction. Task order awards are not solely based on low bids, but are the result of numerous selection and award factors. Since these ID/IQ contracts have numerous qualified contractors


Acronyms and Abbreviations	
AAHC	Accreditation Association for Ambulatory Health Care
Ala.	Alabama
DoD	Department of Defense
ID/IQ	Indefinite Delivery/Indefinite Quantity
OMEE	Operation and Maintenance Engineering Enhancement
O&M	Operation and maintenance
TJC	The Joint Commission
TRICARE	Military Health Care System

available to provide these services, the selected contractor has a vested interest to provide superior services that will ensure repeat task orders in the following years.

In addition to providing O&M services for DoD medical treatment facilities, the OMEE program also supports medical training and research facilities that help our troops be better prepared for combat. OMEE provides for facility O&M services at complex, one-of-a kind laboratories and test facilities, developing ways to prepare Soldiers for combat in all environmental conditions, or improving the protection of our troops from chemical and biological agents in the field.

The concept of "flexibility" underlies every aspect of the OMEE Program's innovative methodology in contracting to provide O&M services. Whether it is one-stop shopping, improved responsiveness, increased partnering or the contract's yearly "option to renew," the enhanced customer service is an integral part of the OMEE process. This process can and has opened new options for government facility managers.

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Mike Hunter is the Operations and Maintenance Engineering Enhancement program manager at the Corps of Engineers, U.S. Army Engineering and Support Center in Huntsville, Alabama. 



This is an example of pumps found in a mechanical room in a hospital. The OMEE program maintains the facility and performs preventative maintenance and repairs to these type systems.

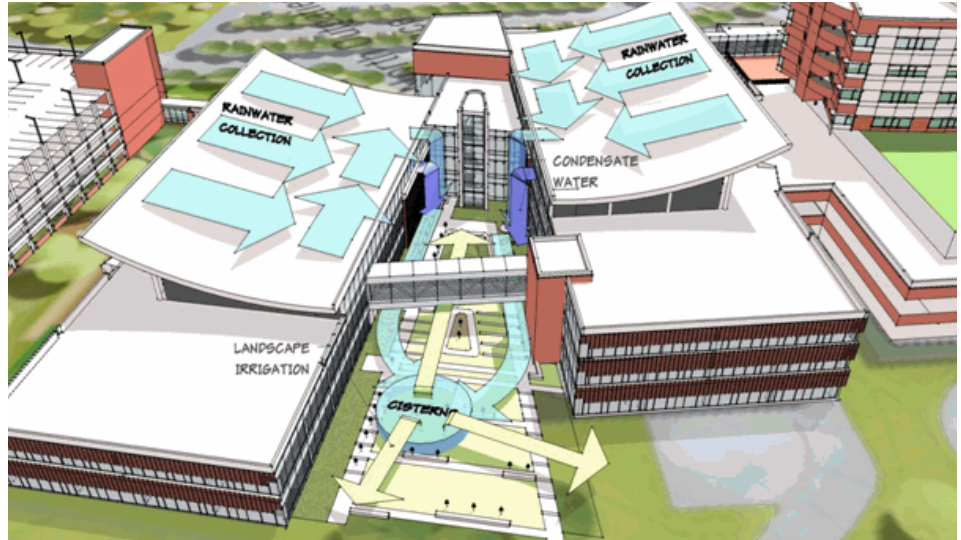


Tools to Assist Installations with Stormwater Management

by Patricia Donohue

USACE would like to share with the DPW community the “Hydrology and Low Impact Development” web page. It is intended to be a collaborative environment to share low impact development (LID) questions/concerns/lessons learned with the community and to address latest successes, review and interpret new mandates or address shared challenges in LID. The newly established web page will act as the Army’s central repository for LID policy, guidance and technical information, best management practices, and examples of projects that successfully meet LID requirements. The site already has the following Army documents posted for your use: draft implementing guidance titled, Army Stormwater Management Using Low Impact Development; Army Low Impact Development Technical User Guide and the Army LID Planning Tool. The Technical User Guide provides practical planning and design examples on how to construct successful LID best management practices (BMPs). The site is located at the following link: <https://mrsi.usace.army.mil/sustain/SitePages/CX/Hydrology%20LID.aspx>

A team of Subject Matter experts will provide content to include guidance documents, case studies, best management practices and tools to assist the user in designing construction projects that



Rainwater Harvesting from Sloped Roofs at Fort Belvoir, Virginia

conserve water and reduce the impact of the constructed environment on the surrounding natural resources. Careful planning and development can strategically create a stormwater management system that mimics the natural hydrology of a site while reducing the volume of post-development stormwater runoff from a site. Additional documents posted on the site include: DOD policy guidance dated 19 Jan 2010, Section 438 of the Energy Independence and Security Act (EISA), EPA Technical Guidance on Implementing the Stormwater Runoff for Federal Projects Under Section 438 of the Energy Independence and Security Act, and UFC 3-210-10. Please follow this website, as information, references and resources will continually be added to include such things as a cost estimating tool, training materials, and examples of LID BMPs implemented on military installations.

LID is a rapidly growing concept in stormwater management to address runoff issues associated with new residential, commercial, and industrial suburban development

to protect natural resources. LID presents a paradigm shift from treating stormwater as something to be moved quickly from the site to managing stormwater as a valuable resource on a site. Investing in and properly implementing LID BMPs will provide the Army with increased sustainable solutions and help the Army achieve Leadership in Energy and Environmental Design (LEED) excellence.

Hydrology is an organizing principle that is integrated into site planning and installation level planning. Development increases impervious areas and impacts natural hydrology, causing erosion, sedimentation, habitat loss, and water quality degradation. Managing stormwater through the use of integrated small scale LID BMPs provides for infiltration, filtration, evaporation, detention and storage to control stormwater runoff discharge, volume, frequency; maintain water temperatures; and provide pollution prevention opportunities. The primary goal of LID is to mimic a site’s pre-development hydrology by managing stormwater runoff close to its source. LID integrated across a project site, and especially into installation level planning, brings about a decentralized and holistic approach to the management of



Permeable Pavers at Fort Lee, Virginia



Ms. Suzanne M. Harrison is OACSIM Army Housing Division Chief

by Zeli King

After many years of dedicated service to the Army Housing Program, in January 2013, Ms. Suzanne Harrison was selected as chief, Army Housing Division, Office of the Assistant Chief of Staff for Installation Management (OACSIM), Headquarters Department of the Army (HQDA). With Ms. Harrison's selection she will lead the Army's Housing program through the 2020 transformation.

Ms. Harrison also experienced the full range of civilian corps work opportunities as she worked her way through the ranks at various installations across the Army footprint. Ms. Harrison has been a federal employee for the Army for 26 years and started her career in a temporary GS-3 position. She has worked in numerous locations and held a variety of career building positions at Presidio of Monterey and Fort Ord, CA; Forts Greely and Wainwright, AK; Headquarters, US Army Europe, Heidelberg, Germany; 100th Area Support Group, Grafenwoehr, Germany; and at OACSIM.

Ms. Harrison has been a member of the OACSIM housing team since January 2000 serving in several challenging

positions such as strategic planner, branch chief, Unaccompanied Housing; deputy division chief, Army Housing, and most recently, acting division chief, Army Housing.

As Chief, Army Housing, Ms. Harrison is responsible for the development and management of Army Housing policy world-wide and focused on providing residential communities of excellence to our Soldiers, Civilians, and their Families. Her personal actions reflect Housing's five "A's" of customer service (Attitude, Attention, Action, Accountability, Alignment). She intends to enhance programs such as the Family Housing Services, Unaccompanied Housing, Lodging, and Housing Management, through personnel development at the Army Housing Academy through its curriculum and course offerings. The establishment of AHA aligns with Ms. Harrison's roll as Career Program 27 (Housing Management) functional chief representative. In this capacity, she provides leadership, guidance and career



Ms. Suzanne Harrison

program management to the over 700 worldwide housing careerist and has set the conditions for CP27 to lead the way in the Army's civilian workforce transformation. She has re-energizing the restructuring of the Army Civilian Training, Education and Development System program in the areas of training, experience and knowledge, skills and abilities for all contributing job series in the Housing program and Housing Career Intern program.

Through her years of dedicated service her efforts have contributed to what makes the Army Housing program the premier standard amongst our sister military service housing programs, who have often adopted Army initiatives as their own.

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Zeli R. King is the division integrator for the Installation Services Housing, OACSIM

Acronyms and Abbreviations	
AHA	Army Housing Academy
CP27	Career Program 27
OACSIM	Office of the Assistant Chief of Staff for Installation Management

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stormwater runoff.

Incorporation of LID BMPs into the Army's construction program is the methodology used to meet requirements of Section 438 of EISA; American Society of Heating, Refrigerating and Air-Conditioning Engineers Section 189.1; and Department of Defense and Army policy regarding stormwater management. The design objective of LID is to maintain or restore the predevelopment (pre-project) hydrology of the property with regard to the

temperature, rate, volume, and duration of flow.

Visit the site for further information about the Army LID program. It provides photographs diagrams, calculation and tables to assist your planning.

POC is Patricia Donohue, 347-735-4580, patricia.donohue@usace.army.mil

Patricia Donohue, P.E., PMP, CEM, is a program manager at the Regional Sustainable Engineering Center and the LID Technical Center Program Manager.



Team Provides Training, Support for EISA Compliance

by Stephen Tallman, Nicholas Josefik, Kelsey Johnson, and Tapan Patel

Headquarters, Installation Management Command has assembled a Comprehensive Energy and Water Evaluations Core team to train installation Directorates of Public Works on methods to achieve compliance with requirements of the 2007 Energy Independence and Security Act. The team comprises experts from HQ IMCOM, U.S. Army Engineer Research and Development Center - Construction Engineering Research Laboratory and U.S. Department of Energy - Pacific Northwest National Laboratory.

The CEWE Core team will travel to selected installations to provide DPWs with classroom and hands-on training on all three aspects of CEWE: performing audits; conducting analyses; and completing EISA compliant reports. Training also covers development of projects to submit for funding. At the completion of the CEWE training process, installation personnel will be fully capable and positioned to carry on the CEWE process, with ongoing support from the Core team, to fulfill EISA requirements.

The CEWE training and support process helps IMCOM installations identify opportunities for energy, water, and cost savings as they work to comply with Section 432 of EISA. CEWE evaluations are required for covered facilities, made up



Members of the HQ IMCOM team conducted CEWE audits at Fort Hamilton, Brooklyn, N.Y., during May 2013.

of the top 75 percent of an installation's total facility energy use. Each covered facility must be evaluated at least once every four years. The CEWE facility audit is a high-level walk-through audit to identify potential energy conservation measures and re/retro-commissioning opportunities, and is comparable to a Level 1 American Society for Heating, Refrigeration, and Air-conditioning Engineers energy audit. The CEWE data will be analyzed to justify the viability of projects based on potential energy and water savings, return on investment, and other factors. The resulting projects will be entered into IMCOM's Project Prioritization System for funding and implementation, and will provide annual input to the Department of Energy's Compliance Tracking System as required by EISA.

The team successfully piloted the CEWE process at Fort Hamilton, N.Y., during May 2013. Installation personnel were trained in the CEWE process as some 500,000 square feet of facilities were audited during the week of training.

Additional IMCOM installations are being sought to participate in the program. Installations interested in receiving CEWE training and support should contact IMCOM for more information (see point of contact below). Selected installations will receive the following CEWE training and support:

Pre-site visit

Prior to the onsite training, the Core team will coordinate with the installation trainees via a series of teleconferences and web meetings to develop an audit execution plan in accordance with EISA requirements

Site visit

Auditing: The installation team will participate in a series of classroom and hands-on training sessions to become proficient in the CEWE audit process to be fully capable of performing CEWE audits.

Analysis and Reporting: Upon completion of audit training, the installation team will participate in a series of training sessions focused on turning ➤

Acronyms and Abbreviations	
CEWE	Comprehensive Energy and Water Evaluation
CTS	Compliance Tracking System
DPW	Directorate of Public Works
ECM	Energy Conservation Measure
EISA	Energy Independence and Security Act
ERDC	CERL – Engineering Research and Development Center – Construction Engineering Research Laboratory
HQ IMCOM	Headquarters Installation Management Command
PPS	Project Priority System
N.Y.	New York



Environmental Performance Assessment System (EPAS)

by Martin Roberts

Since its inception in 1991, the U.S. Army Environmental Command's (USAEC) EPAS program has had different names and has been executed in slightly different ways. The purpose, however, is to help the Army take a proactive stance toward environmental compliance, maintaining consistently compliant operations and enabling a greater focus on mission execution.

The requirement for environmental assessments stems from the Department of Defense Instruction (DoDI) 4751.5 & .6. To accommodate unique characteristics, the Army's program is split into 3 parts – Active Army, Army National Guard, and Army Reserves. Common Army EPAS policy is disseminated by the Assistant Chief of Staff for Installation Management (ACSIM). Army Regulation (AR) 200-1, Environmental Protection and Enhancement, requires an annual internal

Acronyms and Abbreviations	
ACSIM	Assistant Chief of Staff for Installation Management
AR	Army Regulations
DoDI	Department of Defense Instruction
EPAS	Environmental Performance Assessment System
USAEC	U.S. Army Environmental Command

environmental performance assessment and an external assessment every 3 years.

No one on any installation wants an external team getting in their business, but EPAS discovers and fixes problems before the Environmental Protection Agency and/or other regulatory agencies discover the problem and apply financial and/or operational penalties as some regulators have the ability to shut down certain installation operations if they are found out of compliance with laws and permits. Another benefit of EPAS is that it provides a fresh set of eyes to examine

your environmental programs; helping to clarify incorrect/incomplete understanding of regulations and to identify related knowledge gaps and accidentally overlooked discrepancies. For Active Army installations, USAEC has mechanisms in place for helping to correct problems – from staff assistance visits to project funding justification.

If you work at an installation and are proficient in an environmental subject area USAEC welcomes you to be an external assessor. USAEC pays all travel costs and you get to cross-fertilize and exchange ideas with other installation-level personnel. As an added benefit, participating as an assessor at other installations will help you better prepare your installation for its next EPAS.

In these times of varying budgets, environmental assessments become more important because installations may

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the raw audit data into justified ECMs ready for implementation. Finally, the installation team will develop EISA compliant reports, projects to be entered into PPS for funding, and annual inputs for CTS, meeting all EISA reporting requirements.

Post Site Visit

After completing the onsite training, the installation team will receive ongoing support from the Core team via web meetings and teleconferences. The Core Team will provide quality assurance and monitor the installation team's progress toward completion of the current year's audit execution plan.

Point of contact: Qaiser Toor, 210-466-0604, Qaiser.z.toor.civ@mail.mil

Stephen Tallman is in the Energy and Utilities Branch at HQ IMCOM. Nicholas Josefik, Kelsey Johnson, and Tapan Patel are all researchers at ERDC-CERL in Champaign, Ill.



IS YOUR INSTALLATION LOOKING IN THE RIGHT PLACES?

Top EPAS findings over the last 3 years.

• Air Emissions

Army activities are required to eliminate their dependency on Ozone Depleting Substances (ODS). To know where your installation stands an ODS inventory or an ODS Elimination/Management Plan is necessary. Additionally, refrigeration units containing more than 50 lbs of ODS have specific record-keeping and servicing requirements.

• Hazardous Waste

If a waste is potentially hazardous it has specific storage and disposal requirements. If you're not sure it needs to be figured out soon.

Containers at a Satellite Accumulation Point have specific requirements for labeling, capacity/quantity, and location.

• Petroleum, Oil, & Lubricants (POL) Tanks

Bulk oil storage containers must have adequate secondary containment and containment must be properly maintained and operated. Additionally, monitoring devices must be operable.

Tanks must be on an impervious surface which is in good condition, i.e. lacking excessive cracks, joints sealed.

• Solid Waste

Dumpsters and containers for solid waste and recyclables should be in good condition.

Army installations are required to have an accurate and up-to-date Integrated Solid Waste Management Plan.

• Wastewater (includes stormwater)

Non-compliance with discharge permits, e.g. exceeding permitted limits & not implementing required Best Management Practices, is the most common cause of wastewater and stormwater findings.

• Water Quality (drinking water)

The majority of findings involve inadequate or incomplete flushing plan and backflow prevention. These requirements are enforced at the State and Army levels.



USACE Design Chief Handles Heavy Workload in Europe

by Vince Little

Colleagues and customers alike regard David Muellerleile as a stalwart ally when it comes to meeting the needs of garrisons and bases across Europe. The Project Design Section chief for U.S. Army Corps of Engineers Europe District's Installation Support Branch guides a team of 22 U.S. and German liaison project managers, engineers, architects and technicians that supports Installation Management Command-Europe by developing and awarding design and construction ventures unique to each garrison's Directorate of Public Works and their tenants within the theater. In fiscal year 2012, the section executed more than 200 projects totaling in excess of \$90 million. It managed another 314 contract actions covering modifications for ongoing jobs.

In early June, Muellerleile was selected by USACE headquarters as the 2013 Installation Support Professional of the Year.

District officials said he has effectively partnered with IMCOM communities to "deliver and maintain enduring installations," which embodies a significant objective in the USACE Campaign Plan.


Acronyms and Abbreviations

DPW	Directorate of Public Works
IMCOM	Installation Management Command
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAG	U.S. Army Garrison

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not have the resources to fully manage their programs. In this way we are all working together for a more ready Army.

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Martin Roberts is part of the EPAS Program Management Team, US Army Environmental Command. 



David Muellerleile tours a conference room March 26 inside a building at McCully Barracks in Wackernheim, Germany. Photo by Vince Little, USACE.

The work included installation of playgrounds, access control point equipment, energy-efficient lighting and communications systems. Muellerleile's team also tackled hangar, general office and housing renovations; electrical system upgrades; road and training range repairs; roof replacements; heating and ventilation systems; and various demolition projects.


Muellerleile said the Project Design Section is set up to scope, design, estimate, negotiate, and manage multiple repair and construction projects for military units, organizations and agencies in Germany, Italy, Belgium and Turkey. Critical projects in the past year included support of the Army's move from Heidelberg to Wiesbaden and Mannheim to Sembach. Muellerleile also managed renovations of several buildings at McCully Barracks in Wackernheim ahead of unit shifts from Mannheim to Wiesbaden.

Bill Holz, the DPW director at U.S. Army Garrison Kaiserslautern, praised Muellerleile's value to the command

mission, saying he's driven by results and not afraid to be innovative. The USACE team assisted the garrison with work at the regional medical center and restoration and modernization of Sembach Kaserne, transferred from Air Force control to Army in 2010. It also helped move the Fire Alarm Control Center from USAG-Baden-Württemberg to Kaiserslautern, which was among the installation's most vital projects.

Muellerleile has spent almost 20 years with USACE, including 11 at Europe District. He's on his fourth Germany tour – two came with Army garrison DPWs. From November 2009 to May 2010, Muellerleile was deployed to Afghanistan, serving as area engineer at Bagram Airfield.

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



Lessons from Low-Water Crossings

by Heidi R. Howard and Niels Svendsen

A Corps of Engineers Public Works Technical Bulletin presents a summarized study assessing a range of low-water crossing (LWC) types and materials for stabilizing and hardening stream crossings on military lands. PWTB 200-1-115, “Low-Water Crossings – Lessons Learned,” is available for download at http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_115.pdf

Proper LWC design and construction techniques can maximize and enhance rangeland accessibility while minimizing construction and repair costs as well as reducing environmental degradation. PWTB 200-1-115 reports a comprehensive review of the current state of LWCs on Army and National Guard

installations. Integrated Training Area Management (ITAM) Coordinators and Land Rehabilitation Area Management (LRAM) Coordinators were asked how LWCs types, materials and site locations were selected, as well as lessons learned. Results were used to determine where potential issues may result from LWCs.

The U.S. Army Engineer Research and Development Center performed a comprehensive review of the current state of knowledge on LWCs. Within the past 10 years, the consideration and selection of appropriate designs for these sensitive areas have become more commonplace. Also during this time, new technologies and materials have become available in the market to facilitate easy low-water ford installation. However, early designs failed to consider and stress the importance of site selection, soil type, and topography, and stream ecosystem preservation. Common issues with LWCs are discussed as are successful and unsuccessful LWCs at installations. PWTB 200-1-115 discusses criteria for



A Public Works Technical Bulletin helps installation DPWs assess environmental conditions and commercially available materials to ensure safe, efficient low-water crossings. Photo by Heidi Howard

site design, function objectives and site considerations that a land manager should ask before site selection and design.

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Heidi Howard is an agronomist and Niels Svendsen is an agricultural engineer at ERDC's Construction Engineering Research Laboratory, Champaign, Ill. 

Acronyms and Abbreviations

ERDC	Engineer Research and Development Center
ITAM	Integrated Training Area Management
LRAM	Land Rehabilitation Area Management
LWC	Low-water crossing
PWTB	Public Works Technical Bulletin

Bulletin Offers Guide for PCBs in Unexpected Places – Caulk and Paint

by Stephen Cospers

In 1979, the U.S. Environmental Protection Agency banned use of liquid polychlorinated biphenyls, which were most commonly used in transformers, capacitors, heat exchangers, and hydraulic equipment. However, significant quantities of PCBs were used in non-liquid products such as caulks and paints. PCBs have been found in paints at Army industrial sites.

The U.S. Army Corps of Engineers issued a new Public Works Technical Bulletin to provide guidance to Directorates of Public Works for situations in which PCBs are potentially present in paint and caulk. Examples might include demolition of painted structures or

stripping floor finishes. PWTB 200-1-126, “PCBs in Caulk and Paint,” is available on the internet at http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_126.pdf

Waste products from manufactured materials containing non-liquid PCBs at levels higher than 50 parts per million must be disposed of following federal regulations. This fits the description of PCBs in construction-finish products. Note that the regulation applies only to disposal of these products – material in place is not regulated.



PCBs have been found in paint such as this red coating on pipes in a military industrial complex. Photo courtesy of ERDC-CERL



Pre-Germination Techniques and Approaches for Successful Revegetation

by Heidi R. Howard and Timothy J. Cary

A Corps of Engineers Public Works Technical Bulletin presents study results for a novel method of reseeding remote training areas without tillage. PWTB 200-1-109, "Pre-Germination to Enhance Seeding Success and Establishment of Vegetation," is available for download at http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_109.pdf

Quick, rapid and successful establishment of vegetation is critical for military land management. Establishing vegetation after disturbance is highly desirable for preventing erosion, facilitating training use, and sustaining land resources. Establishment of vegetation can be difficult with multiple attempts resulting in an increase need for manpower, equipment and seed. Utilization of common pre-germination practices in the turf industry and forestry could lead to quick establishment of vegetation in areas of high risk, i.e., steep slopes, critical habitat, sites adjacent to water. Such pre-germination can lend itself to use by the Army in problematic areas where rapid establishment of vegetation is critical.

The U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory and Cold Regions Research and Engineering Laboratory conducted a series of growth chamber evaluations were conducted to investigate optimization of varietal selection and pre-germination techniques. Three

common native grass species were used and included; big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and switchgrass (*Panicum virgatum*). The varietals for these species were selected that exhibited similar dormancy rates. Seeds from the varietals selected were subject to a series of pre-germination treatments which included: cold, gibberellic acid (GA), potassium nitrate (KNO₃) and a combination of GA and KNO₃, under controlled conditions to determine optimal treatments and to evaluate under field conditions at Fort Drum, N.Y.

Results from both the growth chamber and field evaluation are discussed in PWTB 200-1-09. Additionally, the PWTB discusses what pre-germination techniques are available and how to optimize varietal selection when producing seed mixes for revegetation. Results of the investigation showed that seed obtained from commercial sources can have high percent of viable or pure live seed, however, germination and dormancy can vary greatly between sources and varieties. Pre-germination treatments of cold, GA, and KNO₃ do enhance germination when treated with the correct timing and concentrations. A combination of pre-germination treatment and seasonal planting that is optimal for the seed variety can enhance germination and subsequent seed establishment

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Currently there is no requirement to sample in-place caulks and paints. However, in cases where there is a high chance of child contact (e.g., schools) or construction projects where these products would be disturbed, it would be a reasonable precaution to sample suspected PCB-containing materials.


The PWTB has four appendices

that provide guidance and resources for DPWs. Appendix A describes historic uses of PCBs and various field-sampling technologies that can identify PCBs in building products. Appendix B lists relevant references and Appendix C is a list of common acronyms. Appendix D contains a Material Safety Data Sheet on PCBs produced by the Monsanto Corporation, which was the largest U.S. PCB manufacturer.

Acronyms and Abbreviations

CERL	Construction Engineering Research Laboratory
CRREL	Cold Regions Research and Engineering Laboratory
ERDC	Engineer Research and Development Center
GA	Gibberellic acid
KNO ₃	Potassium nitrate
N.Y.	New York
PWTB	Public Works Technical Bulletin

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Heidi Howard is an agronomist at ERDC-CERL, Champaign, Ill., and Timothy Cary is an agronomist at ERDC-CRREL, Hanover, N.H. 

From the editor


Please note the due date for the next themed articles has been moved to August 30, 2013. This date has been changed to meet publication deadlines for the upcoming issues. If you are planning on submitting an article for consideration and cannot make the new deadline, please contact me directly to discuss. Thank you so much. editor.pwdigest@usace.army.mil

*Kathye Gerrity-Milibram
Managing Editor*

Acronyms and Abbreviations

PCBs	Polychlorinated biphenyls
PWTB	Public Works Technical Bulletin

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Stephen Cosper is a researcher at the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory in Champaign, Ill. 



Royal Engineers Learn from U.S. Army

by Brittany Bangert

As most engineers know, obtaining a Professional Engineer (P.E.) license is a daunting and difficult task. From hours of endless studying to maintaining an already demanding workload to ensuring enough time with one's family, passing the P.E. exam seems like a goal always out of one's reach. Now, imagine not only studying, working, and balancing a family, but also doing so in a foreign country. That's exactly what British Army Captains Matthew Fry and Ben Hancock are doing while at the U.S. Army Corps of Engineers, Baltimore District.

Fry, a civil engineer, and Hancock, a mechanical and electrical engineer, arrived from the United Kingdom in February and April 2012, respectively, filling the only two foreign officer slots in the entire Corps of Engineers as part of a 16-month training with industry. "It's a unique program that all British officers are required to participate in to obtain their professional engineering license," said Col. Trey Jordan, Baltimore District commander. "The Corps has a partnership with the Royal School of Military Engineering, and we here at the Baltimore District get to the unique opportunity to host two officers as they complete requirements of a Professionally Qualified Engineer (PQE) course."

The officers' training began with seven



Captain Ben Hancock, a Royal Engineer from the British Army working as part of the U.S. Army Corps of Engineers, talks to Reservoir High School Advanced Placement Calculus students about the engineering career field and how he uses math on the job. Photo by Brittany Bangert

months of intensive study in Chatham, Kent, the home of the Royal Engineers. During those seven months they studied masters-level contract law, structural analysis, drainage and road design, contract law, estimating and project management through a very fast-paced course. After completing the course, Fry and Hancock travelled to the U.S. for a 16-month assignment at the Baltimore District. The tour consists of 10 months at a field site and six months at the Baltimore District headquarters.

During the 16 months with the Corps of Engineers, the British Army requires Fry and Hancock to meet 15 developmental objectives as part of the PQE course, including identifying engineering problems and implementation solutions.

Not only is the Corps of Engineers benefiting from this opportunity, but Hancock and Fry continue to grow professionally. "This was my first time working on a construction site and first time in a foreign country so it's been quite a steep learning curve but after working with a diverse, civilian workforce with experts in their stream of engineering, it has allowed me to become a well-rounded engineer," Hancock said. "It's been quite an eye opening experience."

The eye-opening experiences continue beyond the construction sites and into U.S. culture.

Although many differences caught them off guard, some have been pleasant surprises.

"If I am walking to lunch or getting on the light rail, every day someone will say 'thank you' for your service, or they'll shake my hand or even buy my coffee," said Fry. "That is something we do not experience in the U.K. and that was quite a humbling experience." ➤



Capt. Ben Hancock works with a Fort Detrick contractor to test ducts at the USAMRIID project to ensure containment and that all specifications are met as part of the quality assurance process. Photo by Brittany Bangert

Acronyms and Abbreviations

P.E.	Professional Engineer
PQE	Professionally Qualified Engineer
U.K.	United Kingdom
U.S.	United States



IMCOM Academy, School of Public Works

by Mindy Rosito

What is the IMCOM Academy, School of Public Works?

The IMCOM Academy is an educational organization developed and implemented by IMCOM G4 in 2010. Our mission is to provide a free, world-class DPW education to all civilian and military personnel. The courses provided in this training teach necessary skill sets and knowledge to perform all competencies in DPW business and engineering practices.

What is the IMCOM Academy Vision?

Our vision for the IMCOM Academy, School of Public Works includes:

- Creating collaborative learning environments where DPW personnel can share best practices and learn from each other
- Using focused coaching by the instructors to address specific DPW needs
- Providing the most current guidance



DPW Basic Orientation Course Class. Photo taken: 12/7/2012, Fort Sam Houston, TX.

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This glimpse of respect and friendship is something that Fry and Hancock have become accustomed to while living in Baltimore but both expect their time here to benefit future relations between the U.S. and British Army on a larger scale. “By working with American engineers, we develop a better understand about how their projects run and how their agencies operate,” said



Mindy J Rosito, photo taken: 6/12/2013. Photo by Mr. Tom Uncles

and business rules to the students on IMCOM practices


- All installations world-wide will be trained on the same task creating a one team IMCOM DPW.

What classes are offered?

The following classes are currently offered: DPW Basic Orientation Course, DPW Business Operations and Integration Course, DPW Operations and Maintenance Course, DPW Engineering Course, DPW Construction Planning and Execution Course, DPW Business Systems Course, DPW Master Planning 101, DPW Environmental Fundamentals, DPW Work Classification, and DPW BASOPS Quality Assurance Course.

Fry. “If we were to find ourselves in operations in the future working with the U.S., we would be in a much better position because we already have that understanding of how the U.S. works.”

POC is Brittany Bangart, 410-962-7464, Brittany.m.bangart@usace.army.mil

Brittany Bangert, public affairs specialist, US Army Corps of Engineers Baltimore District. 

Acronyms and Abbreviations	
AKO	Army Knowledge Online
BASOPS	Base Operations
DPW	Directorate of Public Works
G4	Deputy Chief of Staff for Logistics/Engineering
IMCOM	Installation Management Command
TDY	Temporary Duty

Information on how to register for the courses, and dates offered is found on AKO at:

IMCOM ACADEMY <https://www.us.army.mil/suite/page/649494>

What materials are given to the students?

All students will receive a binder with all training material and a CD with all reference material for the course.


Challenges?

Prior to sequestration, all TDY and classroom costs for DPW employees were centrally funded by IMCOM. With sequestration, all travel for training was halted. Therefore, the contract was modified to allow the contractor to travel to several IMCOM installations and provide on-site training to many DPW personnel at each location. Outside organization personnel may request a class seat and will have to fund their TDY costs.

Successes.

There has been an overwhelming positive response from the personnel at the garrisons where this training is being offered onsite. The installations that volunteered to take this training on get focused attention to their program and they can maximize the number of personnel trained.

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Resilience Thinking on Army Installations

by Nicole Sikula

Today's national strategies to secure critical infrastructure and to enhance mental health of servicemembers and their families all employ the concept of resilience as a hallmark of health and security. To the Army, resilience is an emerging concept that encompasses individuals, systems, and communities.

Resilience, in the sense of the Ready and Resilient Campaign, focuses on enhancing a Soldier's capacity to function with a sense of core purpose, meaning, and forward momentum in the face of trauma. Current research indicates that personal resilience is far more widespread than previously thought and there are concrete things one can do to build and maintain personal resilience.

Similar to resilient minds, resilient systems have the capacity to maintain their core purpose and integrity in the face of dramatically changed circumstances. Resilient systems have the ability to

reorganize, scale up or scale down, and transform to meet customer demands without catastrophic delays. Resilient systems rapidly draw on reserves and/or redirect resources during and after major disruptions to effectively execute the mission.

"Making Army operations resilient will require evaluating mission-critical systems for specific resilience attributes and assessing how those systems interconnect and communicate with other systems," said Dr. James Mancillas, Environmental Technology Branch Chief, U.S. Army Environmental Command (USAEC). "At USAEC, we recently developed a matrix of attributes that best characterize resilient systems on Army installations," said Mancillas. Ten of the thirty identified attributes are highlighted in this article (refer to the side bar). "If the Army focused on improving these attributes, they could greatly enhance the resiliency of installation systems," said Mancillas.

The bridge between personal resilience and systems resilience can be found in the emerging science of community resilience, which involves assessing intangible (e.g., leadership, culture, community engagement) as well as the tangible (e.g. resources, reserves, contingency plans) elements of a community.

To date, the characteristics of a resilient community are less defined than those for personal or system resilience, but may include the following:

- Knowledgeable: the ability to assess, manage, and monitor its risks and build on past experiences
- Organized: the capacity to identify problems, establish priorities, and act
- Connected: having relationships with external partners who provide a wider supportive environment and supply of goods and services when needed
- Infrastructure and Services: having strong housing, transport, power, water, and sanitation systems, and the ability to

System Resilience Attributes

Diversity: a balanced variety of different system elements, such as supply sources, process options, or skills

Clustering: resources situated in close proximity to allow for knowledge sharing, innovation, and/or efficiency

Modularity: organized into self-contained units with tight interconnections and loose connections to the rest of the system

Interoperability: uncomplicated system components that are easily produced or exchanged

Reserves: ready supply sources during disruptions

Decoupling: able to disassociate from resources/inputs and operate independently

Openness: receiving and incorporating innovative ideas, technology, and processes

Response Management: having plans/procedures for responding to disruptions

Feedback Latency: responding quickly to feedback without delays

Polycentric Governance: organized into several centers of authority such that the decision to select adaptive actions is decentralized

maintain and renovate them

• Economic Opportunities: having a diverse range of employment, income, and financial services

• Natural Assets: valuing ecosystem services, and having the ability to protect, enhance, and maintain them

"Installation resiliency will come from considering the personal, system, and community aspects of the installation as one social-eco-logical system," said

Acronyms and Abbreviations

USAEC	U.S. Army Environmental Command
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Individual Resilience Attributes

Goal-orientation: the ability to make realistic plans and take steps to carry them out

Ego-control: the ability to delay gratification in service of future goals

Confidence: a positive view of oneself and confidence in one's strengths and abilities

Optimism: the belief that one can find a meaningful purpose in life

Self-discovery: the belief that positive and negative experiences will lead to learning and growth

Reframing: purposefully altering one's view such that a negative experience is viewed as irrelevant

Social: having a strong supportive network of friends and family



Students Learn About Science, Technology, Engineering and Math

by Shirley J. Smith

The Mississippi River Commission recently held its annual high-water inspection trip on the Mississippi River aboard the Motor Vessel Mississippi.

During this high water inspection trip, public meetings were held in selected towns along the river where commission members and Corps team members met with local residents to hear comments, concerns, ideas and issues.

Colonel Jeffrey R. Eckstein, Commander of the Corps' Vicksburg District, invited 24 teachers and high school students to join the team aboard the M/V Mississippi for the inspection trip. During the MV ride from Mayersville to Vicksburg, these students were briefed by Vicksburg District's Leadership Development Program (VLDP) team members who proudly explained the Corps' mission to



The media interviews students regarding their knowledge gained about the Corps

Acronyms and Abbreviations	
MV	Motor Vessel
STEM	Science, Technology, Engineering, and Math
VLDP	Vicksburg District's Leadership Development Program

the students. They also briefed the students on the fields of science, technology, engineering, and math (STEM). During the STEM discussion, the VLDP members explained their roles at the Corps as well as their paths to employment, and how they prepared themselves for their chosen career fields.

Members of VLDP making presentations to the students were Chad Bounds, Viviana Berrios-Williamson, and Keith Flowers. "I take every opportunity that I get to speak to these students to inform them of the roles that engineers play in society, the path that it takes to get there, and mainly to emphasize the importance of thinking about which career is right for them. The cost of education is following these students well into their late twenties and early thirties and so I feel like we are helping them prepare a plan that will save them time and money, Flowers stated.

Mr. Rickey Dale "R.D." James, who also briefed the students, is a member of the river commission, a civil engineer, and a self-employed farmer and manager of cotton gins and grain elevators for the A.C. Riley Company in New Madrid, Missouri. Mr. James discussed the importance of



Mr. James speaks to students about importance of STEM fields

STEM as well as the importance of having well-trained engineers for the future of the Corps and continuing to maintain the Mississippi River.

Not only did the students gain an understanding of the mission of the Corps as it relates to the river, but the presentations also enhanced the students' knowledge of STEM, and the job opportunities offered by the Corps.

The District's involvement with students is critical to the success of our educational systems and our success in Building Our Future Workforce.

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Mancillas. Resilience thinking provides a framework that views installation aspects as partial representations of an integrated, multi-scale reality. Resilience thinking also acknowledges that we live in disequilibrium and focuses efforts on how to manage change. "Redesigning installation operations toward resilience

necessitates a shift in Commanders' emphasis from assuring sustainable resources to assuring preparedness through strategic business, psychological, and community practices," said Mancillas.

In a time of fiscal uncertainty and rapidly changing political, economic, and climatic environments, resilience is more than a buzz word to Army installations and Soldiers. It is preparedness. By

not figuring out how to manage unforeseeable change, we leave ourselves very vulnerable to adverse events.

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