Virginia National Guard Soldiers assigned to the Powhatan-based 180th Engineer Company, 276th Engineer Battalion, 91st Troop Command clear debris to open a blocked road in Essex County, Virginia. In February 2016, a severe storm brought high winds, hail, and heavy rain to the area. (Photo by Cotton Puryear, Virginia National Guard Public Affairs)
The maintenance bay at McEntire Joint National Guard Base in South Carolina was an addition/alteration project. The project was completed in 2016.
Welcome to the 2018 issue of Foundations of Readiness, the Journal of the Army National Guard Installations and Environment (ARNG I&E) directorate.

Last year’s merger of the Installations and Environment divisions into one directorate was a big undertaking. It was a positive move. By working together, we are a stronger organization. The reorganization functionally aligned our organizational structure with that of the Army, specifically the Office of Assistant Chief of Staff for Installation Management (OACSIM). The way we manage our Installations and Environment portfolios is now very similar to how OACSIM manages its portfolios. In this journal you will find articles about projects in our Installations and Environment portfolios, and see how those projects often overlap.

Our Military Construction (MILCON) Total Obligation Authority (TOA) is increasing in the future years. Previously, there was no process in place. A Resource Management Decision (RMD) required the Army to look at how it distributes the MILCON funding across the Army, the Army Reserve, and the ARNG. Historically, we have been allotted 12 to 16 percent of the Army’s total MILCON funding. In 2020, our percentage of the Army’s MILCON funding is 16.3 percent. In 2023, that figure increases to 33.7 percent. In dollars, that translates to $180 million in 2020, and $380 million in 2023.

Our focus is on two types of facilities—Readiness Centers and Maintenance Facilities. If you look at the quality and functionality of the Readiness Centers and Maintenance Facilities in our inventory, you will find that out of a total 2,312 Readiness Centers, 1,078 (46 percent) have a poor or failing quality rating and 1,642 (70 percent) have a poor or failing functionality rating, with some of these facilities failing in both categories. We have a deficit in our authorized space requirement at our Readiness Centers of 43 million square feet. Of our total 814 Maintenance Facilities, 273 (33 percent) have a poor or failing quality rating and 298 (37 percent) have a poor or failing functionality rating. For Maintenance Facilities, we have a space deficit of 13 million square feet. In dollars, we have a $20 billion deficit to build out. The increase in MILCON TOA is not going to get us to the point where we need to be in terms of quality, functionality, and space, but it does get us further down the road.

Over the last 40 years, the ARNG has transitioned from a strategic reserve to an operational force. Our training requirements continue to increase to meet the new readiness requirements that are a direct result of global threats. For ARNG I&E, that means new ranges to meet training requirements and new facilities for storage and maintenance of weapons and vehicles. On page 4, you can read about how the Idaho National Guard’s Orchard Combat Training Center is expanding its capacity to meet the new training requirements, and on page 10 you can read about the aviation support provided by Theater Aviation Sustainment Maintenance Groups.

On pages 12, 22, and 34 you will find three articles that describe the ARNG’s work to remediate contamination caused by past processes. We are committed to this work. We are redirecting program funding that would have supported the sustainment, restoration, and modernization of our facilities to support these efforts instead. Going in to next year, we have prioritized close to $300 million in funding for these projects, which include abatement, continued testing, the expansion of service contracts, and the education of personnel.

Several states were hard-hit by natural disasters this year. At ARNG I&E, we provide support to the States throughout the rebuilding process, from their initial rough order of magnitude estimates to the final planning programming documents. On page 40 you can read about the ARNG’s work to help those affected by devastating storms during the 2017 hurricane season, and on page 36 you can read about the ARNG’s ongoing work to ensure readiness in times of disaster.

Thank you and Essayons!

Colonel Erik Gordon
Chief, Army National Guard Installations & Environment
The Orchard Combat Training Center (OCTC), located south of Boise, Idaho, is one of the Nation’s premier facilities for training Soldiers, Marines, and Airmen. The area, which has been used by the Idaho National Guard and the Army Reserve since 1953, started out as a small range for training local units. Over the years the OCTC’s capabilities grew, and the training center started receiving units from across the country. Today, members of all Services train at the OCTC.

“The main purpose of the OCTC is to provide lands and facilities to support the Idaho National Guard and Reserve Forces training requirements,” said LTC Kevin Hickey, Chief of the OCTC. “That said, our high-desert training center has such a large expanse of land it can support the training requirements of our training aligned units and allow rehabilitation efforts to take place at the same time,” he said. The OCTC covers 143,000 acres. Of that, 53,500 acres is impact area and 99,500 acres is maneuver area. “We have a large amount of land that can be used to conduct maneuver training with our tracked vehicles. With this heavy maneuver land and our ranges, the OCTC is a great place to come,” LTC Hickey said. What started out as a small, local range is now a large, generally self-contained area. The OCTC has its own wastewater plant, well, and generator backup. “The OCTC is kind of our own city,” LTC Hickey said.

The OCTC has 30 ranges, including the largest Multi-Platform Range Complex-Heavy in the Army. It has an Urban Assault Course, a Combined Arms Collective Training Facility (CACTF), a Multi-Purpose Machine Gun Range, and a Live Fire Shoot House. “We conduct tank, Bradley, Paladin, and Apache gunnery at the OCTC along with many other platforms and that capability is why units choose this training area,” LTC Hickey said.

The OCTC boasts a 35-kilometer Counter Improvised Explosives Device (CIED) lane comprised of four villages. The Urban Assault Course features a three-story building with a basement, tunnels, and rappel points, as well as a Live-Fire Breach Facility with steel or concrete doors, windows, and walls. The CACTF consists of 11 different structures—including a police station with a jail, a municipal building, three residences, a three-story hotel, a three-story business building, a service station, tunnels, and hidden rooms—that simulate an urban environment. In the CACTF, Service members train to engage the enemy under numerous scenarios.

Every year, thousands of Service members train at OCTC, but the training center is not at full capacity, yet. “Our heavy times are usually from April to September when the Army National Guard (ARNG) does most of its training. The other months are open to other components of the military. We have units coming here year-round to train. The changing of the seasons offers units the experience to train in the different weather conditions they may face when deployed,” LTC Hickey said.

Enhancing the OCTC

More than 30 years ago, the Idaho ARNG started enhancing the OCTC’s capabilities. That effort is still ongoing. “Within the last five years, we have built a new Organization Readiness Training Complex (ORTC) and had multiple range and cantonment area improvements. The ORTC gave us much needed life support capacity. A new railhead enables units—and their equipment—to arrive via rail, which has made us a lot more attractive to our customers,” LTC Hickey said. The railhead has four rail spurs, three for vehicle and one for container loading, and tracks that stretch 4.7 miles, allowing visiting units to transport their equipment from the commercial railroad connection point to the front steps of the OCTC Headquarters.

Under Expansion

SOLDIERS, MARINES, AND AIRMEN COME TO TRAIN AT THE IDAHO NATIONAL GUARD’S ORCHARD COMBAT TRAINING CENTER. THE TRAINING CENTER IS EXPANDING ITS CAPACITY TO HOST EVEN MORE UNITS.
The OCTC is expanding its capability to train units, but perhaps more importantly, the training center is expanding its role within the National Guard. “Going into the future, the National Guard is looking at possibly making us the premier heavy maneuver training center, where the ARNG’s five Armored Brigade Combat Teams (ABCT) and two Stryker Brigade Combat Teams (SBCT) may come to train, due to the large expansive training area that we have,” LTC Hickey said. The ABCTs are the Army’s primary armored force. An ABCT consists of seven battalions and contains both M1 Abrams tanks and M2 Bradley infantry fighting vehicles (IFVs), M109A6 Paladin self-propelled artillery systems, and armored personnel carriers, which operate in a supporting role.

While being the premier training center for ABCT will raise the OCTC’s profile, what will really transform its role within the National Guard is the possibility of becoming a mobilization site. “We are exploring the possibilities of becoming a primary mobilization site for ARNG units,” LTC Hickey said. “The ARNG has two relatively large historical mobilization sites, Camp Atterbury in Indiana and Camp Shelby in Mississippi. Camp Atterbury and Camp Shelby are secondary mobilization sites, whereas we are a contingent mobilization site. We do not currently possess the same facilities and the infrastructure that primary and secondary mobilization sites have.”

To support units coming for training and mobilization, the OCTC will need to expand its infrastructure. “We are looking at Fort Irwin National Training Center in California for examples of how to support rotational training units. They have a large infrastructure to support rotational training units—barracks, mess pads, laundry facilities, and so on. What sets us apart is the ranges and the maneuver land that we have. The ABCTs need a lot of land to be able to maneuver their tanks and complete the required training,” LTC Hickey said.

“For the next couple years, we are looking at hosting two brigades per year, which is something we have done at various times in the past,” LTC Hickey continued. Each brigade is around 4,000 people. Depending on what type of rotation the brigade is doing, and the number of support elements, a brigade could bring 4,000 to 6,000 people to the OCTC for 30 to 90 days. “Where bed space really comes into play is with mobilizations and training support personnel, since training units typically lodge under austere conditions. If we will be doing mobilizations from the OCTC, we will need the infrastructure to support that mission.” With the added billeting, the OCTC’s total bed space is now 880.

Improving readiness and providing support to the nation is the OCTC’s mission, and LTC Hickey understands the importance of that mission. “The National Guard is increasing its readiness so that it can respond more rapidly to conflict. Our expansion supports the new timeline and the new readiness level of the National Guard,” LTC Hickey said.

Financial and environmental impacts of expansion

A military installation is an economic driver. While an installation expansion is sometimes met with resistance from the surrounding communities, more often it is greeted with support, because of the positive effect such an expansion will have on the local economy. The OCTC is 20 miles south of the city of Boise, which has a population of 218,000. “A share of the local population does not even know we exist, or the extent of what we do, because we have very minimal impact on the main population centers,” LTC Hickey said. “What people of Boise will notice, however, is the impact the OCTC’s expansion will have on the local economy. We are looking at possibly making us the premier heavy maneuver training center, where the ARNG’s five Armored Brigade Combat Teams (ABCT) and two Stryker Brigade Combat Teams (SBCT) may come to train, due to the large expansive training area that we have,” LTC Hickey said.

Increasing the ability to train units in the eight training areas is critical to our ability to support the readiness of our ABCTs. “The National Guard is increasing its readiness so that it can respond more rapidly to conflict. Our expansion supports the new timeline and the new readiness level of the National Guard,” LTC Hickey said.
Foundations of Readiness: How big is your team, and what are the roles of the different team members?

CPT Hartley: The INARNG is currently authorized 22 Environmental Professionals as defined by AR 200-1. We have 20 professionals committed to sustaining our training mission, training lands, and resources. The roles they serve cover multiple disciplines, but all 20 professionals ultimately provide direct management of resources and perform advisory and assistance roles to Modification Table of Organization and Equipment (MTOE) and Table of Distribution and Allowances (TDA) elements to ensure they maintain compliance with applicable regulations.

The ARNG publishes a manning model authorizing Environmental Program strength for each state and territory. This strength ensures the organization’s compliance with the law. Foundations of Readiness: What is your team’s recent projects, and the balance between environmental and readiness requirements.

The EPM integrates environmental stewardship and regulatory compliance. Included in the authorization is the state’s conservation shops, and training centers. They not only help the units fix compliance issues, but they also take the time to educate and inform our Soldiers on the importance of stewardship. I will argue that compliance is a non-negotiable aspect of environmental stewardship at our Readiness Centers, Maintenance Shops, and Training Centers. We just surveyed hundreds of acres of training lands for invasive species growth. The invasive species growth had made the land unusable as a functional maneuver space. Through mechanical felling, mowing, and spot application of herbicides, ITAM and Environmental staff reverted thousands of acres back to functional training land. In subsequent years, we have increased our surveillance for undesirable species and use prescribed fire to retard the re-establishment of invasive species. This project has been largely successful due to effective communication and clearly defined goals and objectives. Included in this project was the enhancement of Indiana bat habitat. The Indiana bat is a federally endangered species and perennial inhabitant of Camp Atterbury. It was a win-win-win scenario.

Foundations of Readiness: How does your work fit into the overall mission of the ARNG?

CPT Hartley: To me, our work is an integral part to the ARNG decision-making processes. Our work ensures that we not only have a ready trained operational force today, but also a sustainable ability to train an operational force for generations to come. It is no secret that military training is intense, not only for our Soldiers, but also for our lands and the resources entrusted to us. Improperly managed, training lands can quickly become useless, too costly to maintain or repair, or even a threat to our neighbors. What the Environmental Program does is bring a staff of highly trained and educated professionals to the table to help the ARNG make informed decisions to ensure we are still an operational force well into the future. This process is not limited to land management, but also Military Construction, building maintenance, acquisition of material, and even training events themselves. Everything we do in our private and public lives touches our environment, and the environment touches everything we do.

Foundations of Readiness: Can you give some examples of environmental projects in your state that have positively impacted the ARNG’s readiness?

CPT Hartley: I think everything the Environmental Program does has a positive impact on readiness. A great example that may not be obvious is the annual effort by our Environmental Performance Assessment System team. These folks travel all over the state throughout the year to assess various aspects of environmental stewardship at our Readiness Centers, Maintenance Shops, and Training Centers. They not only help the units fix compliance issues, but they also take the time to educate and inform our Soldiers on the importance of stewardship. I will argue that compliance is a non-negotiable aspect of environmental stewardship at our Readiness Centers, Maintenance Shops, and Training Centers. A great example that may not be obvious is the annual effort by our Environmental Performance Assessment System team. These folks travel all over the state throughout the year to assess various aspects of environmental stewardship at our Readiness Centers, Maintenance Shops, and Training Centers. They not only help the units fix compliance issues, but they also take the time to educate and inform our Soldiers on the importance of stewardship. I will argue that compliance is a non-negotiable aspect of environmental stewardship at our Readiness Centers, Maintenance Shops, and Training Centers.

Our focus is to truly sustain the mission through application of sound science and regulatory compliance.

Foundations of Readiness: Can you describe some recent projects your team has carried out?

CPT Hartley: We just surveyed hundreds of acres of training lands for archaeological resources that had not yet been inventoried. We coordinate with our Directorate of Plans, Training, Mobilization and Security (DPTS) and Integrated Training Area Management (ITAM) staff to prioritize our natural and cultural resource management efforts. This process focuses our efforts where the mission need is or is anticipated to be. With this knowledge, we can support the proposed actions of our sister directorates through planning advice. That is, this area is clear for tracked vehicle operations, or this area is a protected resource that will only accommodate light dismounted maneuver. Not only does this information help them plan and even execute training area maintenance, it also helps them manage the use of our training areas by controlling how intensely an area is used given its environmental sensitivity.

Another example is our use of prescribed fire to achieve ecological goals that complement the training mission. Our natural resource managers plan to burn approximately 2,500 acres of training areas every year to control the spread of invasive species. A review of training mission requirements with the DPTMS and ITAM staff identified a greater need. Since 2014, we have prescribed burned approximately 2,500 acres a year to meet both conservation goals and training mission needs.

Over the previous decade, training areas in the un-glaciated areas of Camp Atterbury had become overgrown with undesirable, invasive species. The density of the invasive species growth had made the land unusable as functional maneuver space. Through mechanical felling, mowing, and spot application of herbicides, ITAM and Environmental staff reverted thousands of acres back to functional training land. In subsequent years, we have increased our surveillance for undesirable species and use prescribed fire to retard the re-establishment of invasive species. This project has been largely successful due to effective communication and clearly defined goals and objectives. Included in this project was the enhancement of Indiana bat habitat. The Indiana bat is a federally endangered species and perennial inhabitant of Camp Atterbury. It was a win-win-win scenario.

Foundations of Readiness: Can you describe some of the challenges in balancing environmental and readiness requirements?

CPT Hartley: Well, at times the two can seem to be in conflict with each other. On the one hand, we are trying both to protect our facilities and to meet our readiness goals. Our readiness shops and training centers must be able to operate in a wide variety of conditions. Our training areas are not always ideal. We must be able to adapt to the environment and make adjustments accordingly. This can be challenging when we are dealing with highly sensitive ecosystems that require strict protection. On the other hand, the training mission is also vital for the readiness of our units. We must be able to train our soldiers in a variety of conditions to ensure they are prepared for any situation that may arise. This can be difficult when we must modify our training areas to protect sensitive environments.

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CORROSION CONTROL

The Mississippi Army National Guard (ARNG), those aircraft are serviced and maintained by Army Aviation Support Facilities (AASF) across the country. Those facilities, in turn, are support-ed by Theater Aviation Support Maintenance Groups (TASMG), which provide the ARNG with the highest level of aviation maintenance support. The National Guard has four TASMGs, located in Fresno, California (1106th), Springfield, Missouri (1107th), Gulfport, Mississippi (1108th), and Gorton, Connecticut (1109th). “The support we provide evolves as the mission requirements and the types of aircraft evolve,” said COL Glen Flow-ers, Commander at the Mississippi ARNG’s (MSARNG) 1108th TASMG, which sits on 27 acres of land outside Gulfport. The 1108th TASMG provides major airframe repair, aircraft painting, and repair of components, and works with the Aviation and Missile Command (AMCOM) for National Maintenance Program (NMP) repairs. “Our certifications and compliance with International Organizational Standards (ISO), as well as Aerospace Standards (ASO), allows us to conduct repairs within the NMP. TASMGs coordinate with AMCOM on various NMP components that they deem should be serviced,” COL Flowers said. The Gulfport facility supports 23 AASFs in Alabama, Florida, Georgia, Louisiana, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. It provides the AASF’s with aviation sustainment maintenance, back-up field maintenance, aircraft painting, and shop back training for ARNG Aviation Soldiers. The 1108th TASMG supports the UH-60A/L (commonly referred to as “Alpha Lima”) and UH-60M (“Mike”) Black Hawk helicopters, the AH-64A/D Apache helicopter, and the CH-47/DF Chinook (“Delta”) helicopter, which is now transitioning to the newer “Fistrot” model (CH-47F). “It varies from year to year, as units turn in and pick up aircraft, but we support 292 aircraft throughout the nine states and two territories,” COL Flowers said. “TASMGs are also starting to assist our customers with their UH-72 Lakota aircraft, which is an off-the-shelf commercial aircraft that the ARNG procured. As with other aircraft, TASMGs are working to provide scheduled maintenance support to the ARNG Lakota community.” TASMGs conduct a cycle maintenance inspection on UH-60A/L aircraft with the On-Condition Maintenance (OCM) program. “Through the OCM program, we confirm and improve each aircraft’s integrity and the serviceability of its components, and extend the aircraft service life. When UH-60A/L aircraft throughout our region reach a certain number of flight hours, or they meet other established criteria, they are recommended for induction into the OCM line. Within the OCM line, we complete the needed inspections, repairs, and modifications. That includes heavy sheet metal work, paint blasting, and new paint on the aircraft, as part of the corrosion control program. OCM is a great cost savings for the ARNG, as it delays the requirement for purchasing new aircraft. Plus, they are not making new Alpha Lima Black Hawks. The OCM program is a way to extend the service life of each aircraft and it allows our customers throughout the nine-state, two-territory region to continue to support both their stateside and overseas missions,” COL Flowers said. The 1108th ARNG has already organized and classified aviation receipts and aircraft work and storage. The 1108th ARNG is conducting a cycle maintenance program on UH-60A/L aircraft. “The support we provide evolves as the mission requirements and the types of aircraft evolve,” said COL Glen Flow-ers, Commander at the Mississippi ARNG’s (MSARNG) 1108th TASMG, which sits on 27 acres of land outside Gulfport. The 1108th TASMG was first organized in 1971 in Biloxi, Mississippi as the Mississippi ARNG’s Transportation Aircraft and Repair Shop (TARS) Number One. It moved to its current location in Gulfport two years later, and in 1992 the TARS was designated as an Army Aviation Classification Repair Depot (AVCRAD). In 1991, the unit became the 1108th AVCRAD, and 20 years later, in 2011, the AVCRAD was re-designated as a TASMG. Today, the 1108th TASMG occupies close to 170,000 square feet of industrial space. The main hangar is approximately 80,000 square feet, and various back shops cover another 40,000 square feet. A new 60,000-square-foot corrosion control paint hangar is under construction. “Once that project is completed, we will build a separate, 30,000-square-foot follow-on hangar that will house some of our back shops. The new paint hangar will provide capability to provide additional paint support throughout the region. One improvement with the new paint hangar is that we can put a CH-47 Chinook in our paint bay without removing the aft pylon, which saves a great deal of man hours. Another big upgrade is improved climate control capability. Our current paint hangar is not as climate-controlled as we would like, and it is quite humid in south Mississippi. The improvement in climate control will reduce the paint cure times and provide opportunity to paint additional helicopters for the region,” COL Flowers said. The 1108th TASMG has 463 Modification Table of Organization and Equipment (MTOE) Authorized personnel. It has 248 fulltime employees, of which 173 are Soldiers and 75 are state employees. The TASMGs are deployable units. Eighty Soldiers from the 1108th will deploy to Kuwait in December 2017. While the unit will be based in Kuwait, it will have maintenance teams located in multiple locations throughout the theater of operations. “The deployable unit has 463 Soldiers. Of those, 80 will be deployed. Obviously, that’s a pretty significant number. There’s an impact to the stateside regional support, but it is manageable. When we build the deployed manning document to fill the 80, we do not select full-time civilian employees, we select Soldiers. If they deploy, then it’s not full-time civilian employees,” said COL Flowers. “The deployment has no impact on the TASMG’s Monday-through-Friday operations. As for the full-time employ- ees, we make sure we select a group that allows us to fulfill our deployed mission, while minimizing the impact on the weekly regional support mission at the TASMG,” COL Flowers said. The 1108th TASMG has previously deployed personnel to Kuwait during four deployment cy-cles in (2003-2004, 2005-2006, 2007-2008 and 2015), and to Afghanistan during one deployment cycle (2011-2012). When asked if the 1108th can perform the same functions in theater as in Gulfport, COL Flowers responded, “If all required tooling is in place overseas, TASMGs can perform at the same level while deployed.” Providing the highest level of ARNG aviation maintenance support, the TASMGs fulfill their mission, at home and overseas. The 1108th ARNG has already organized and classified aviation receipts and aircraft work and storage.
T he Army National Guard (ARNG) is currently undertaking a large lead abatement project that includes all facilities in its inventory that have or have had an indoor firing range. According to State-reported real property data, that adds up to 1,257 indoor firing ranges. After reports of elevated lead levels at several facilities, all facilities with indoor firing ranges were tested for lead in fiscal year 2016 by the Army National Guard’s Industrial Hygiene (ARNG-I&ES). The analysis of the lead dust tests has been shared with the States. The air sample results showed no airborne lead in Readiness Centers, except in an active indoor firing range during firing. The ARNG-I&ES team is also working to increase awareness of lead, and to improve housekeeping throughout all ARNG facilities. That includes educating personnel on how to safely and effectively clean exposed areas to contain the dust and to avoid contamination in other areas of the facilities. The team is asking personnel to take such simple steps as to wash their hands after handling weapons and ammunition, working on vehicles and aircraft, or moving items from storage, and to change their clothes after a day at the firing range. “We are training our Soldiers about proper hygiene techniques after they use and handle weapons. We are also developing procedures to assist with cleaning weapons at the outdoor ranges instead of back in the Readiness Centers,” said Ken Forsythe, Chief, ARNG-I&ES. His team will continue to collect samples every year to monitor the effort’s progress. It will also continue its educational efforts through classes and by posting guidelines for ARNG Soldiers and employees on the ‘Guard Your Health’ website. “Soldiers can find an assortment of information about health and fitness on this website and ask any questions they may have through the ‘Ask the Experts’ section (www.guardyourhealth.com/ask-the-experts/health-conditions/lead-exposure),” Mr. Forsythe said. The air and water quality impacts related to the lead dust at the firing ranges are the most common source of lead contamination in other areas of the facilities. The team is asking personnel to coveralls, masks, and respirators. Rags, gloves, and wash water should be treated as hazardous waste. At sev- eral ARNG Readiness Centers, those procedures were not followed, allowing lead dust to linger at the indoor firing ranges, and spreading from the ranges to other parts of the facilities. Soldiers swept up lead dust, sending it airborne, and ventilation systems spread the lead dust to public areas and offices. Soldiers also tracked dust outside the ranges by foot, spreading as far as locker rooms and cafeterias. As a result, ARNG Readiness Centers that have or have had an indoor firing range could potentially have exposed Soldiers, their families, and community members to elevated lead levels. In response to such concerns, all ARNG indoor firing ranges were ordered closed by the Director of the ARNG, LTG Timothy Kadavy, in December 2016. Deteriorating lead paint and the use of leaded fuel can also result in elevated levels, but in the ARNG’s opinion, the ranges are the most common source of lead contamination. Even after the abatement efforts conclude, the indoor firing ranges will not reopen. “The ARNG directed all indoor firing ranges, either within or attached to Readiness Centers, to be closed and the indoor firing rang- es/contaminated areas be re- mediated and be repurposed for another authorized use. Indoor firing ranges are no longer autho- rized as a functional area within Readiness Centers,” said Mr. Raymond Barnard, Supervisory Realty Specialist in the ARNG Installations and Environment’s (ARNG-I&ES) Requirements and Analysis Division.

Lead is a natural metal element found in the air, soil, and water that can be toxic to humans. When combined with other metals, it can produce alloys. Lead and lead alloys are often used to make batteries, ammunition, and other metal products. If not addressed, lead dust can cause stomach pain, nausea, headaches, and loss of concentration. How high the lead levels are allowed to be depends on who is breathing the air. If it is an adult, the permissible lead level is 200 parts per microgram; if it is a child, the level is 40 parts per microgram. Prior to a September 2015 memorandum from the ARNG Chief of Staff, COL Mark Strong, concerning possible lead dust in ARNG Readiness Centers, the ARNG’s acceptable lead standard met the industry standard of 200 parts per microgram. Because ARNG Readiness Centers are open to the public, and sometimes rented out for community events where children are present, the facilities must now meet the lower threshold. Testing and remediation efforts are costly. “The lead remedia- tion costs were estimated as high as $306 million at 1,257 locations over a five-year timeline (from fiscal year 2018 through fiscal year 2022). The ARNG was able to identify and distribute $40 million in fiscal year 2017 funding to support 152 projects in 32 states,” Mr. Barnard said. To fund the remediation efforts, the ARNG I&ES has realigned program funding that would have supported the sus- tainment, restoration, and modernization of its facilities to support these efforts instead. “Going in to next year, we have prioritized close to $300 million in funding for these projects. We are commit- ted to this work,” said COL Erik Gordon, Chief, ARNG I&ES. As long as target practice is conducted with traditional am- munition, there will be lead residue. Moving the practice outside moves the problem away from the facilities and the general public, but it does not solve the problem. In 2015, Camp Edwards in Mas- sachusetts became the first ARNG installation to offer training with 5.56mm copper ammunition. “Both the Department of Army (DA) and the ARNG place a great emphasis on sustainability and are continuously looking to improve sustainability practices while meet- ing mission requirements. The 5.56mm copper round is now in the inventory for all Army units and is expected to completely replace the traditional lead round as the legacy stockpiles are used. The DA is fielding a similar round for the 7.62mm weapons,” said Steven Mechels, Senior Training Land Manager for the ARNG’s Training Support Branch. Several States use ammunition that does not contain traditional training, a practice Mr. Mechels thinks can supple- ment, but not fully replace, traditional live firing. “Although virtual reality simulators can be valuable training tools, simulators cannot compare with an actual, live experience. This is true not only with weapon simulators, but also with any other simulator. While the ARNG is increasingly using simulators for familiarization and other training drills, it is doubtful that simulators will ever replace live weapons firing entirely,” he said. Using lead-free bullets or virtual reality simulators may prevent the same concern in the future, but at the moment, the ARNG’s full attention is on addressing the elevated lead levels at the affected facilities to minimize Soldiers’ and employees’ exposure to the metal and to ensure their safety at all ARNG facilities. “Our Soldiers are safe in their Readiness Centers. When facilities are maintained to comply with published standards, lead dust poses very minimal risk to adults. We are actively working with each state to clean the Readiness Centers, institute regular housekeeping procedures, and inspect each facility annually,” Mr. Forsythe concluded.

“Going in to next year, we have prioritized close to $300 million in funding for these projects. We are committed to this work.”

COL Erik Gordon
Chief, ARNG Installations and Environment

VIRTUAL REALITY

SPC Cody Leosar, Headquarters Company, 35th Engineer Brigade, uses a virtual training simulator at Fort Leonard Wood, Missouri. (Photo by PFC Samantha Whitehead)

PRACTICE

OUTDOOR PRACTICE

SFC Julian Bolt, a team leader with Troop K, 1st Squadron, 201st Cavalry, Nevada ARNG, engages a target at Fort Benning, Georgia. As a result of the ARNG’s lead abatement efforts, all target practice has moved outdoors. (Photo by Sgt. Derrick Sizemore)

Lead Dust Abatement at Readiness Centers

AFTER SEVERAL OF ITS READINESS CENTERS TESTED POSITIVE FOR ELEVATED LEVELS OF LEAD, THE ARMY NATIONAL GUARD IS CARRYING OUT AN EXTENSIVE LEAD TESTING AND ABATEMENT EFFORT

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ARMY NATIONAL GUARD INSTALLATIONS & ENVIRONMENT 13
Building Out BUILDER

THE ARMY NATIONAL GUARD’S FACILITY INVENTORY INCLUDES MILLIONS OF ASSETS THAT MUST BE ASSESSED. TO CONFORM TO A STANDARD INSPECTION METHODOLOGY USED BY ALL MILITARY BRANCHES, THE ARMY NATIONAL GUARD IS IMPLEMENTING THE U.S. ARMY CORPS OF ENGINEERS’ SUSTAINMENT MANAGEMENT SYSTEM.

The Army National Guard’s (ARNG) facility inventory includes millions of assets. To assess the quality, functionality and mission capacity of those assets the ARNG uses a system called the Installation Status Report (ISR). By collecting and analyzing data in ISR on the quality and functionality of its facilities, the ARNG is able to create a macro view of installation readiness and funding requirements. The Active Army and the Army Reserve also use ISR to track their facility assets, while the other Services use a system called the Sustainment Management System (SMS), a set of software tools developed by the U.S. Army Corps of Engineers. In the 2012 National Defense Authorization Act, Congress expressed concerns that the Services—the Army, Marine Corps, Navy, Air Force and Coast Guard—were using inconsistent methods to calculate the quality—referred to as the Facility Condition Index (FCI) in SMS and the Q rating in ISR—of Department of Defense (DoD) facilities. To address this issue, the Under Secretary of Defense issued a memorandum in September 2013, requiring all Services to use the SMS. The SMS will enable the Services to conduct inspections in a consistent manner, validate the real property inventory, and uniformly compute FCI scores.

All DoD facilities operated and/or maintained by federal funds are required to transition to the SMS inspection methodologies by the end of the 2021 fiscal year. In early 2017, the Army leadership issued guidance to the Army components—the Active Army, Army Reserve, and the ARNG—to begin implementation of the SMS. In May 2017, ARNG Installations and Environment (ARNG I&E) leadership sent SMS implementation guidance to the 50 States, three Territories and the District of Columbia that make up the ARNG. The ARNG I&E’s goal is to inspect 20 percent of all facilities each year for the next five years, completing all inspections by the end of the 2021 fiscal year. Realizing that with the delay in guidance the States may not be able to achieve the requirement for fiscal year 2017, the ARNG I&E leadership asked that the States at least formulate a plan by the end of fiscal year 2017 for how they will accomplish the inspections.

Initially conceived by the Department of the Army to track the quality, quantity and mission impact of the facility inventory Army-wide, the ISR has several different components. “On the infrastructure side, we physically inspect each of our 50,000 ARNG facilities and compute ratings for each facility—a quality rating and a function rating. The quality rating shows a facility’s condition, and the function rating shows how well the facility supports the mission or the tenant of that facility,” said Arun Pankaj, ISR Program Manager for the ARNG at the national level. “To give an example, a vehicle maintenance facility in good condition might have a Q1 rating, which is the highest quality rating. But if those vehicle maintenance bays are only eight feet wide because the facility was built 50 years ago when vehicles were smaller, and the vehicles they are servicing are 10 feet wide, the function rating could be an F4—the lowest rating—because although the bays are in excellent working condition, they cannot service the vehicles and the facility is not supporting the function.”

Buildings represent the most numerous and complex real property assets which must be inspected and evaluated using the SMS. For these assessments, SMS uses a program called BUILDER. Unfortunately, it is not as easy as migrating the data that already exists in ISR to BUILDER. Instead, BUILDER requires new site visits for each structure in the ARNG facility inventory. In ISR, a layer—often the tenant of the building—can do an inspection, but in BUILDER a licensed engineer must do the inspection, which runs up the cost. When asked if he thought an engineer-based inspection would result in a more thorough inspection, Mr. Pankaj said, “Yes, the idea is that you inspect the building once, and then, based on various industry standards, the software will calculate when repairs or a follow-up inspection are needed.”

For the foreseeable future, BUILDER and ISR will run concurrently. Inspection data collected will be uploaded to BUILDER, and the resulting FCI will be transferred to ISR. Asked how well the two systems work together, Mr. Pankaj said, “We have to come up with some software patches so that BUILDER data can be accepted into ISR. That’s what we’re working through right now.” Mr. Pankaj will remain as the ISR Program Manager and MAJ Laristema Allen will be the Program Manager for BUILDER. At the state level, many of the state ISR managers are also being tapped to be the BUILDER implementation managers. “The biggest challenges have been learning and understanding BUILDER, and packaging the statement of work and the implementation guidance so that the States can secure contracting firms to perform inspections,” MAJ Allen said.

The ARNG will continue to use ISR to assess assets not covered under SMS, and to assess function and mission capacity. “BUILDER will supply the Q (or FCI) rating for all buildings, but ISR will continue to supply the F rating for all buildings. We will also continue to use ISR for all non-building assets, such as parking lots, transformers, or ranges, for both the Q and F ratings,” Mr. Pankaj said.

The ARNG has less than five years to implement BUILDER. “It’s going to be a challenge to implement the system within the timeframe. Funding is another issue. We are estimating it will cost $75 million to implement BUILDER. The Army has to come up with that funding,” Mr. Pankaj said. So far, the ARNG has been taking funds from various initiatives to fund BUILDER. “It’s fairly expensive to do the BUILDER inspections, and we’re already at a funding deficit. That said, BUILDER is a priority for the National Guard Bureau. We have taken $15 million this year from our budget to fund BUILDER. We are moving forward with BUILDER,” he said.

The SMS has several different tools aside from BUILDER, such as ROOFER, which evaluates roofs, and PAVER, which evaluates roads. “DoD has not mandated our use of those tools, but it is possible that in the future, we will adopt some of those tools as well, which would increase the number of assets that are being evaluated using SMS,” MAJ Allen said. “BUILDER and ISR complement each other. BUILDER provides a more accurate picture by identifying building components and those components’ key life-cycle attributes, such as age, material, and capacity. Additionally, the BUILDER program can save the ARNG money, because it directs resources to the components that are most mission-critical. This prevents costly repair penalty costs, and manages risks of failure,” she continued.

It’s a big undertaking, but once implemented, the SMS will supply Congress with facility scores that are easy to compare across the Services. With these scores, decision makers will be able to make informed investment decisions that support the Nation’s readiness.

“BUILDER is a priority for the National Guard Bureau. We have taken $15 million this year from our budget to fund BUILDER. We are moving forward with BUILDER.”

Mr. Arun Pankaj ISR Program Manager

“The BUILDER program can save the Army National Guard money, because it directs resources to the components that are most mission-critical. This prevents costly repair penalty costs, and manages risks of failure.”

MAJ Laristema Allen BUILDER Program Manager
ACROSS THE COUNTRY, THE ARMY NATIONAL GUARD FACES THE CHALLENGE OF MODERNIZING ITS HISTORIC FACILITIES, WHILE COMPLYING WITH FEDERAL GUIDELINES FOR HISTORIC PRESERVATION, ENERGY CONSERVATION, AND SECURITY

The Restoration of Historic Armories

The Illinois Army National Guard has 27 Armories that date back to the middle of the last century. Most are red brick structures of post-modern design.

Across the country, the Army National Guard (ARNG) has many historic facilities still in operation. Most are from the mid-20th century, while some are much older, dating back to the last decade of the 19th century. Now, the ARNG faces the challenge of modernizing these historic facilities to meet the needs of a modern force.

Any restoration and modernization project of a historic facility must meet federal guidelines for historic preservation. The modernized facilities must meet federal energy conservation and sustainability guidelines and the Army’s own sustainability policy. They must meet modern security standards and standards for accessibility. Most importantly, the facilities must meet the ARNG’s modern mission, which is very different than it was when the facilities were built up to a century ago. It is a tall order, but across the country, ARNG offices manage to fulfill all requirements.

The Illinois Army National Guard has several Armories that were built by the Works Progress Administration (WPA), such as the Urbana Armory, built in 1938 (top). The Illinois ARNG modernized the Urbana Armory and restored the building’s exterior to its original look. With the exception of the Armories built by the WPA, most of the Illinois ARNG’s historic Armories are red brick structures of post-modern design, such as the Ulftield Armory (bottom).

The District of Columbia’s only Readiness Center, the 76-year old D.C. Armory, has long been in need of restoration. The 588,000-square foot facility is currently undergoing a comprehensive, multi-million dollar restoration and modernization project. “In 2001 to 2002, the District of Columbia ARNG (DCARN) tried to obtain $86 million to complete the renovation of the D.C. Armory. However, that request was not approved,” said the DCARN’s Construction Facilities Management Officer (CFMO), COL Anthony Jackson. “In 2012, the CFMO staff and I set out to complete the renovation in phases. We are now 80 percent complete. We took on this project in order to address a number of failed or failing systems and life, health, and safety deficiencies. The restoration project will take place over multiple years and will renovate a large portion of the building, including the electrical, mechanical, plumbing, and heating, ventilation, and air conditioning (HVAC) systems, the building envelope, and the loading dock area. We will also perform asbestos abatement and lead remediation. The current total running cost is $42.5 million, half of the projected cost,” he said. The immediate concerns were the antiquated electrical and mechanical systems. “The previous electrical system was failing and broke down frequently. Two of the three high-voltage transformers were not in operation due to antiquated network protectors that were not available for replacement. One of the two boilers was not in operation. Our current hot water system performs poorly, and does not distribute hot water evenly across the large D.C. Armory. Plumbing fixtures do not have shut-off valves, resulting in large-scale system shut-down when something needs to be repaired,” COL Jackson said.

As part of the restoration, all exterior windows are being replaced with new, energy-efficient windows. Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The replacement windows are historically accurate, approved by the D.C. State Historic Preservation Office and National Capital Planning Commission. “We took a step forward and invited State Historic Preservation Office representatives to the Armory for a site visit. Their main

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HISTORIC ROOMS
The District of Columbia Army National Guard is restoring the low center and the commanding general conference room at the D.C. Armory.

CDL Jackson said. Retracing a historic facility to meet current energy goals, while at the same time preserving the historical character, is costly. “Replacing all the windows cost over $3.4 million, with approximately 120 additional windows still to be replaced,” CDL Jackson said.

Seven hundred miles away, the Illinois ARNG’s (ILARNG) CFMO, COL Craig Holan, and his team work closely with the Illinois State Historic Preservation Agency. None of the ILARNG’s historic Armories are listed on the National Register of Historic Places, which is the federal government’s official list of districts, sites, buildings, structures, and objects deemed worthy of preservation. Even so, the ILARNG still coordinates with the State Historic Preservation Agency. “We have a memorandum of understanding as to how we are going to treat our potentially historic buildings. By ‘potentially’ I mean our Armories that are over 50 years old. We have agreed with the State Historic Preservation Agency to treat our Armories that are over 50 years old as if they were on the National Register of Historic Places. We submit our plans and come to an agreement on what we are going to do to the exteriors of the buildings. We try to accommodate what they are asking for in the best way that we can,” CDL Holan said.

The Illinois State Historic Preservation Agency is most likely concerned with the exterior of the buildings, and the ILARNG has a lot more leeway with the interior. “I do not know that we have ever had anything denied us on the interior. We have agreed with the State Historic Preservation Agency to treat our Armories that are over 50 years old as if they were on the National Register of Historic Places. We submit our plans and come to an agreement on what we are going to do to the exteriors of the buildings. We try to accommodate what they are asking for in the best way that we can,” CDL Holan said.

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A PIECE OF HISTORY IN THE NATION’S CAPITAL
TOP: An aerial view of the D.C. Armory. Built in 1941, the D.C. Armory is the District of Columbia’s only Readiness Center. RIGHT: The monuments on the Armory grounds were of particular interest to the District of Columbia State Historic Preservation Office.

CDL Anthony Jackson
CFMO for the District of Columbia ARNG

Concerns are the exterior of the Armory, the roof, the four major lobbies, the commanding general conference room, and the monuments on the Armory grounds.

State Historic Preservation Agency. We generally do not have too many problems with doing that. We just put an elevator in the Northwest Armory in Chicago. Oftentimes, ADA compliance is more of a concern indoors. Our bathrooms are generally too small and not handicap accessible. As a result, we have to replace the plumbing and expand the size of the bathrooms, which can be difficult and costly,” he said.

Historic Armories must also meet federal energy conservation guidelines, which can be difficult. “One of the problems with many of our historic Armories contain asbestos, most commonly in the floor tiles, and sometimes in the ceiling tiles. “It has actually gotten fairly reasonably priced to mitigate asbestos. Lead paint we treat by encapsulating it or removing it,” he said.

The ILARNG has 27 Armories that date back to the middle of the last century. With the exception of the WPA buildings, which are white concrete, most are red brick structures of post-modern design. Over the years, the ILARNG has modernized those Armories to meet energy targets. “We have a lot of 1950s Armories that had single pane windows. We have replaced most of those with energy-efficient windows. The tricky part is they have to meet the energy guidelines, the Anti-Terrorism Force Protection (ATFP) standards, and match the historic profile of the originals. This makes for a very expensive window. Under ATFP standards, meeting even a low level of protection (based on explosive weight and standoff distance) requires a laminated glass of some kind, and meeting higher levels of protection requires further modifications. This can make the cost of these windows as much as three times the cost of regular windows. In most of our 1950s Armories, the drill hall is raised.

Sometimes we have worked with the Historic Preservation Agency to be able to use one piece of glass with four Mullions. It is not exactly correct, but from the ground it looks pretty good. Another façade issue is roofs. When we replace the roofs, we generally put on reflective, membrane-type roofs. When we can, we do double or triple the insulation under the roofs. Since they are all hidden by the parapets of these buildings, we can generally do that without too much problem. It is a little more difficult to insulate the exterior walls, but we have added insulation to interior walls in some instances.”

During the 20th century, Armories were often located in the middle of communities. Situated in the southeast quadrant of Washington, D.C., roughly two miles east of the U.S. Capitol, the D.C. Armory is surrounded by development. When asked what you can do to secure historic downtown Armories, COL Jackson said, “We have installed a security fence and cameras around the D.C. Armory and we are employing a 24-hour security force. We currently do not have any other facilities than the D.C. Armory, but we are seeking to obtain another Readiness Center in southeast Washington D.C., with the security being the highest priority for that new facility.”

Insufficient parking and storage space are common concerns when retrofitting a historic Armory to fit the modern mission. The D.C. Armory supports training, administrative, and logistical requirements for the DCARNG. When asked about the biggest challenges for modernizing a historic building to meet the current mission, COL Jackson said, “The biggest challenges for the D.C. Armory is parking and storage. Changes in unit and mission, and storing and maintenance of new, oversized military vehicles pose a challenge. We currently keep all Modification Table of Equipment and Equipment (MTOE) vehicles at Joint Base Anacostia–Bolling in Southwest Washington, D.C. We only have approximately 150 parking spaces at the D.C. Armory.” COL Holan echoed his concern, “Our historic buildings are not on big lots, so they do not support modern military vehicle requirements. We have many locations that have remote lots, which is not a good thing. That is a problem with retrofitting—if we cannot fix the parking problem, we still have a problem. In addition, the vaults of these Armories are too small. Either we have to add a second vault or enlarge the vault, which is expensive. With the exception of the large Chicago locations, almost every one of these older Armories are anywhere from 5,000 to 15,000 square feet too small, not even counting the lack of parking.”

In the District of Columbia and in Illinois, the ARNG CFMO offices work to modernize their facilities to meet the requirements of a modern force, while complying with current guidelines and regulations. Despite the challenges posed by funding, location, and facility size, they are meeting the requirements, while preserving a piece of the Armory’s history.

“We have agreed with the Illinois State Historic Preservation Agency to treat our Armories that are over 50 years old as if they were on the National Register of Historic Places. We submit our plans and come to an agreement on what we are going to do to the exteriors of the buildings.”

CDL Craig Holan
CFMO for the Illinois ARNG
Army and ARNG installations face two main threats to their ability to test, train, and operate on their lands. Communities spring up around formerly remote installations, slowly creeping closer to the installation until they are right against the fence line. Then incompatible land uses may arise. There may be community complaints and concerns about potential accidents, noise, dust and smoke. Sometimes the installation has to restrict night vision training because of ambient light from the surrounding communities, and sometimes, in the interest of improving the military’s ability to conduct realistic live-fire training, weapons systems testing, and essential operations is vital to preparing Soldiers for real-life combat. There is a direct relationship between realistic training and preparing Soldiers for real-life combat. There is a direct relationship between realistic training and preparing Soldiers for real-life combat.

Over the last two decades, the Army and the ARNG have become increasingly concerned about encroachment. Specifically, Army and ARNG installations face two main threats to their ability to test and train—incompatible development outside the installation boundary and environmental restrictions within the installation. A Department of Defense (DoD) Government Accountability Office report identified eight different types of encroachment: endangered species and designation of critical habitat, noise abatement, air quality, air space restrictions, frequency management, environmental legislations, and population growth with its resulting development,” said Ms. Alisa Dickson, Team Leader within the ARNG Installations and Environment (ARNG I&E) Conserva- tion Branch. “The impact of various types of encroachment is reduced flexibility in soldier training. That, in turn, impacts both the federal and state missions of the ARNG,” she said.

To prevent and mitigate increasing encroachment pressures, Congress enacted Section 2684a of Title 10, United States Code in 2002. This provision authorizes the DoD to engage in long-term and cooperative strategies to ensure military mission sustainabil-

ity by limiting incompatible development around installations and ranges. Pursuant to this authority, the DoD and the Services fund cost-sharing agreements with state and local governments and conservation organizations to promote compatible land uses and preserve habitats adjacent to or near military installations and ranges. These efforts are implemented through the Army Compatible Use Buffer (ACUB) program and DoD’s Readiness and Environmental Protection Integration (REPI) program.

The ARNG ACUB program includes 14 ARNG installations. Ms. Dickson, who also serves as the ARNG I&E’s ACUB Program Manager, walks interested installations through the ACUB proposal process, and helps them develop partnership agreements. Most importantly, however, she secures the funding for each project through REPI, ARNG Environmental funding, end-of-year funds, or partner contributions. “I have an unfunded program, so I really have to market the program and find the best partner cost-share in order to secure matching funds for each project. We secured close to 55 million dollars in 2017. The majority of that came from end of year building funds. DoD REPI funded approximately 9.5 million,” Ms. Dickson said.

While the ACUB program isn’t available to every Army National Guard installation, it is available to installations that can demonstrate a compelling case for using limited funds to support mission. Camp Blanding Joint Training Center, a 7,300-acre military training installation that can accommodate 3,000 personnel located in northeast Florida, was the first ARNG installation to enter the ACUB program in 2003. “In order to enter the program, the installation needs to have a training driver; it must support the training mission. There are certainly installations that want to enter the program, but are unable to show a direct link to how the ACUB tool would benefit the military training mission,” Ms. Dickson said as the primary training mission base for the Florida National Guard. Camp Blanding also provides live-fire and maneuver training for Active and Reserve forces from around the country. It is vital to both the Florida National Guard’s training mission, and that of the Army as a whole.

Camp Blanding’s vast lands are also home to 40 federal- and state-listed animal and plant species. The importance of this habi-
tat enabled the installation to establish its first ACUB partnership to acquire conservation lands and easements primarily through the state’s Florida Forever program. As a result of the easements and land conservation efforts, Camp Blanding has been able to lift training restrictions on post put in place in response to prior noise complaints. The installation is also part of the Camp Blanding-Osceola Greenway initiative, which aims to preserve 153,000 acres between Camp Blanding and Osceola National Forest. These efforts, which include the long-term goal of restoring longleaf pine habitats, will help sustain species that could potentially cause severe restric-
tions to be placed on Camp Blanding’s training lands. A shortage of available land, changes in force structure, and reductions in funding for operations, maintenance, military construction, and acquisitions means protecting existing installation and range as-
sets and capabilities is more important than ever. “We’re not increasing the size of our military training lands, so we need to maximize the acreage that we already have for training,” Ms. Dickson said.

The relationships and the goodwill fostered by the REPI and ACUB partnerships will enable installations to continue to operate with the flexibility they require, while the communities will enjoy more recreational space and less noise and dust. In the end, everybody wins.
Cleaning the Water on Cape Cod

THE MASSACHUSETTS ARMY NATIONAL GUARD IS UNDERTAKING A LARGE-SCALE, LONG-TERM PROJECT TO ADDRESS CONTAMINATION IN THE DRINKING WATER ON CAPE COD

n the largest tract of undeveloped land on Cape Cod sits Camp Edwards, the Massachusetts Army National Guard’s (MAARNG) major training site for military personnel. Located on state-owned land on Joint Base Cape Cod (JBCC), Camp Edwards makes up approximately 10 percent of Cape Cod’s total area. Camp Edwards is integral to the MAARNG’s mission, and an important staging ground for civilian first responders and law enforcement agencies in the Northeast. Unfortunately, Camp Edwards and JBCC have a legacy of contamination issues that affect the sole source of drinking water for Cape Cod.

The environmental restoration work at Camp Edwards incorporates new technologies, streamlined processes, alternative energy use, and resource conservation.

**ALKALINE HYDROLYSIS**: One method used by the Impact Area Groundwater Study Program (IAGWSP) to treat contaminated soil is an alkaline hydrolysis method. This method uses lime and water to raise the pH levels in the contaminated soil, which destroys explosive particulates. The method is energy-efficient, produces no waste or emissions stream, and takes advantage of natural rainfall to help restore natural soil pH levels following treatment. In a matter of weeks, the soil is clean and can be reused in range restoration. Since the method allows the installation to treat and reuse the soil on site, it eliminates a waste stream and its associated disposal costs, and avoids the need to purchase new soil for backfill.

**ENERGY EFFICIENCY AND ALTERNATIVE FUELS**: Low-energy pumps have been installed for all groundwater wells and remediation systems at Camp Edwards, reducing the systems’ electric requirements by 50 percent. The IAGWSP team has conducted energy audits for all treatment facilities. In response to these audits, lighting fixtures have been upgraded for fluorescent bulbs, and extra windows have been added to reduce the need for artificial lighting. The team is currently renovating Camp Edwards’ treatment plants to take advantage of the groundwater that constantly flows through the plants. Together with upgraded insulation, the groundwater flow will provide constant, year-round interior temperature control at approximately 55 degrees at the treatment facilities.

**RESOURCE EFFICIENCY**: Reusable modular treatment units are regularly employed at water treatment plants at Camp Edwards. This allows the program to keep construction costs under the Military Construction (MILCON) threshold of $750,000. The units are constructed in repurposed shipping containers and can treat 125 gallons of water per minute. The approach avoids construction of permanent treatment plants, and as each site is closed, the mobile units can be relocated to other places on post, providing great flexibility.

The environmental restoration efforts at Camp Edwards are integral to the Army National Guard’s mission.

Train on Previously Unusable Land

The restoration effort has expanded usable training lands at Camp Edwards. The installation is completing the clearance process of several hundred acres of previously unusable range. The Echo Range, pictured on the left, is a Military Pistol Qualification Course. The Sierra Range, on the right, is a Modified Record Fire Range.

Camp Edwards is located over the Sagamore Lens, one of the largest aquifers in the country and a source of public drinking water for Cape Cod. The sandy soil allows contaminants to quickly leach into the groundwater, which migrates at a rate of one to two feet per day, potentially threatening the area’s public and private drinking water wells. To mitigate this threat and to protect public health and the environment, the Army National Guard’s (ARNG) Impact Area Groundwater Study Program (IAGWSP) has implemented an aggressive, long-term environmental restoration and remediation effort at Camp Edwards. By doing so, the IAGWSP complies with three Administrative Orders issued by the Environmental Protection Agency’s Region 1 under the Safe Drinking Water Act against the Department of the Army, the National Guard Bureau, and the Massachusetts National Guard.

The IAGWSP has identified 14 sites on a total 15,000 acres, including burial and burn pits used for munitions, propellant, or explosives disposal; areas used for fireworks disposal or displays; areas used for training with high explosives; and areas used for disposal of raw explosives and perchorlate. The IAGWSP has focused on implementing and validating new treatment technologies, and treating the target areas. The program has also made a concerted effort to reduce the use of new materials, prevent the destruction of natural habitat, and limit emissions from vehicles, pumps, and equipment.

The program has installed 1,200 monitoring wells in over 600 locations and has collected and analyzed over 100,000 soil and groundwater samples. Sixteen treatment systems have been constructed for seven groundwater plumes and remedies are in place for all sites. Groundwater treatment systems are cleaning more than 4.1 million gallons of groundwater per day and over 8.5 billion gallons of groundwater have been treated to date. More than 120,000 tons of soil have been excavated and treated or shipped off-site.

The restoration of Camp Edwards is a large-scale, long-term project. Since its start, substantial progress has been made and the IAGWSP has achieved several important remediation milestones. Treatment systems have come online, and source removal is nearly complete. Unsequenced ordnance (UXO) removal processes have been refined to protect natural resources and habitats in the impact area.

Several ranges have been cleared for fast-track investigation and cleanup, expanding the MAARNG’s training capabilities. The people of Cape Cod are continuously updated on the project’s progress. “The MAARNG and the IAGWSP work together to ensure the public is kept informed of the project, as well as on the training of our Soldiers through multiple community groups, regular briefings to local officials, and open houses,” said COL Robert Dwan, Construction Facilities Management Officer for the MAARNG.

Typically, funding for large-scale environmental projects comes from the Defense Environmental Restoration Account, but because Camp Edwards is an operational range, the ARNG is funding 100 percent of the IAGWSP. Much of the metal debris recovered during UXO removal actions is recycled as scrap metal; approximately 500 tons of scrap has been recycled over the past two years. The proceeds of recycling offset costs associated with the project, and recycling eliminates an additional project waste stream. Utility costs have also been minimized by efforts made in overall energy efficiency. The total budget for the program is $500 million. “We expect all final cleanup decisions to be made by the end of 2018. At that time, the 14 groundwater treatment systems will be running efficiently,” said Mr. Shawn Cody, Program Manager for the ARNG.

Though cleanup continues throughout the installation, the IAGWSP has been able to clear parcels of land each year to resume activities. All gun and mortar positions have been cleared, and the installation is completing the clearance process of several hundred acres of previously unusable range. The restoration effort has expanded usable training lands at Camp Edwards and JBCC by hundreds of acres. The restoration staff works closely with trainers and range control to prioritize cleanup activities in areas that are most urgently needed for training. “New ranges being built, old ranges coming back online, and more acreage being made available for maneuvers and training will significantly increase training opportunities and allow Soldiers to train locally to the Army standard,” said Camp Edwards’ Commander, COL Patrick Keefe. In 2015, Camp Edwards became the first ARNG installation to offer training with the new 5.56 copper round. The MAARNG has also worked with State and Federal regulators to authorize the use of several new artillery simulators. “We hope Camp Edwards will be the premier training site in the Northeast and a model for other Army installations,” COL Keefe said.

The environmental restoration efforts at Camp Edwards JBCC are integral to the ARNG’s mission. Without those efforts, Camp Edwards would likely have ceased to exist as a training site. Instead, as the cleanup continues, the IAGWSP is regularly completing and closing out sites throughout the installation, effectively reopening those areas for training or other uses.

The restoration efforts at Camp Edwards are integral to the Army National Guard’s mission.
he National Guard, and the Army National Guard (ARNG), traces its roots back to 1636, to the colonial militias that became State militias upon the United States' independence. As long as the organization has existed, there has been a need for a place for its members to gather. “The early militias gathered in open spaces and public locations, such as taverns,” said COL Scott Ayres, Construction Facilities Management Officer (CFMO) for the Iowa ARNG (IAARNG). “Eventually the need for permanent facilities was recognized. Local buildings were chosen as meeting places and as places to store arms, and called ‘Armories.’ As the National Guard’s role as a reserve force formalized in the first few decades of the 20th century, the responsibility of its Armories remained with the States. The lack of a standard and the lack of federal funding resulted in a wide range of diverse facilities,” he said. This changed in the years after World War II, when federal funding to construct and support ARNG facilities was made available. A large number of standardized Armories were built as a result.

With time, the ARNG’s role changed, as the organization transformed from a strategic reserve to an operational force. ‘Armories’ were renamed ‘Readiness Centers’ to signify the change. “The name change coincided with an increase of size authorization that nearly doubled the actual size of the legacy Armories. The demand for building capabilities also changed. A Readiness Center now needed fiber for Internet access, larger storage areas for equipment, and recognition of contemporary social and cultural needs conducive for training, such as workout facilities, recruiting offices, family support functions, and latrine facilities for both male and females,” COL Ayres said.

The federal funding that was made available in the years after World War II resulted in a wave of new Armories—facilities that are now old, undersized, and inadequate to the mission. Changes in force structure, demographics, and the financial burden of keeping up these aging facilities have made it necessary for the ARNG to divest excess facilities that cannot meet the organization’s mission. In some southern States, State law once mandated an Armory in every county. “We have some counties that had as many as three Armories, or more. Slowly over the years, we have returned some of these legacy Armories to the communities,” said the Mississippi ARNG’s (MSARNG) CFMO, COL Paul McDonald. “When I first started working in the MSARNG’s Construction Facilities Management Office in 2005, we were at 96 Readiness Centers. Now we are down to 77,” he said.

Most of the MSARNG’s Readiness Centers are from the 1950s and 1960s. The 19 facilities that the MSARNG has divested over the last 20 years were from that time period; small, simple brick buildings with spaces for offices and classrooms, a supply room, a vault, a big drill hall, latrines, and a kitchen. When those facilities were built Mississippi was more rural than it is today and people did not have the same means to travel. “Young people are much more willing to travel today. The average travel distance for a Soldier to get to drill is now around 60 miles,” COL McDonald said. The force structure has also changed since most of the MSARNG’s Readiness Centers were built. In the 1960s, the MSARNG had over 12,000 Soldiers. Now it is down to 9,600 Soldiers. “Our ideal number of Readiness Centers is somewhere between 50 and 55. How we arrived at the number is based on force structure and stationing.”

The MSARNG has 12 more Readiness Centers it is looking to divest. “We have many company-size units that are split between the company headquarters and the detachment. When you have the company headquarters in one town, and the company’s platoons 100 miles away, it makes it very

LEGACY ARMORIES FIND NEW USES CLOCKWISE FROM TOP, LEFT: The City of Shelton, Washington purchased the Shelton Armory from the Washington ARNG and converted it into a transit community center; The Washington ARNG’s 100-year old Tacoma Armory was sold to an investor who leases it out for sports events and roller derby tournaments; The Washington ARNG’s facility in Pullman was purchased by a private investor who turned it into condominiums, with a hot yoga studio on the ground floor; The Mars Hill Church purchased the Washington ARNG’s Everett Armory in late 2012 for $1.28 million and converted the facility into a church.

AS A RESULT OF CHANGES IN DEMOGRAPHICS, TRAINING, AND FORCE STRUCTURE, THE ARMY NATIONAL GUARD HAS READINESS CENTERS IN ITS INVENTORY THAT NO LONGER SUPPORT THE ORGANIZATION’S MISSION. WHEN POSSIBLE, THE ARMY NATIONAL GUARD IS RETURNING THOSE FACILITIES TO THE COMMUNITIES.
The old model of a single-unit Readiness Center is not economically feasible anymore. Newer buildings are just more expensive to run. LTC Rick Burtt, Deputy CFMO for the Colorado ARNG, added, “We are trying to consolidate. The old model of a single-unit Readiness Center is not economically feasible anymore. Newer buildings are just more expensive to run.” COL Jones agreed, “We are trying to consolidate. The old model of a single-unit Readiness Center is not economically feasible anymore. Newer buildings are just more expensive to run.”

The process of divestiture

How a Readiness Center is divested depends on how it was funded in the first place. If the land was purchased with federal funds, it must return to the federal government. If it was purchased with state funds, it may return to the community. Some States are allowed to sell excess facility inventory, while others are not allowed to profit from a sale. Some States can sell a facility for a nominal sum, while others cannot accept an offer under the facility’s appraised value. By law, the MSARNG is not allowed to sell its excess properties. COL McDonald said, “Most of our armories are on long-term, 99-year leases, with a reversionary clause in the lease that the land and all improvements revert to the original lessee at the expiration of the lease. In the majority of cases in Mississippi, the land originally belonged to either the city or the county. In one case, in Grenada, the land belonged to an association. The original lease had a reversionary clause that said should the National Guard no longer need the land and the facility, it should be donated to the adjacent public high school, which had been funded by the association. The school was very, very happy to receive the Readiness Center. The building was in good shape. It was just excess to our requirements. In a couple of instances, in Prentiss for example, the State did own the property. In lieu of selling it, the State Legislature voted to deed that property to the City of Prentiss. It is now the town’s police department. The former Collins Readiness Center is now part of the local fire academy. The local Emergency Management Agency serves as administrative space for the county and city. The MSARNG was not allowed to sell the facility, because the land originally belonged to either the city or the county. In one case, in Grenada, the land belonged to an association. The original lease had a reversionary clause that said should the National Guard no longer need the land and the facility, it should be donated to the adjacent public high school, which had been funded by the association. The school was very, very happy to receive the Readiness Center. The building was in good shape. It was just excess to our requirements. In a couple of instances, in Prentiss for example, the State did own the property. In lieu of selling it, the State Legislature voted to deed that property to the City of Prentiss. It is now the town’s police department. The former Collins Readiness Center is now part of the local fire academy. The local Emergency Management Agency serves as administrative space for the county and city. The MSARNG was not allowed to sell the facility, because the land originally belonged to either the city or the county. In one case, in Grenada, the land belonged to an association. The original lease had a reversionary clause that said should the National Guard no longer need the land and the facility, it should be donated to the adjacent public high school, which had been funded by the association. The school was very, very happy to receive the Readiness Center. The building was in good shape. It was just excess to our requirements. In a couple of instances, in Prentiss for example, the State did own the property. In lieu of selling it, the State Legislature voted to deed that property to the City of Prentiss. It is now the town’s police department. The former Collins Readiness Center is now part of the local fire academy. The local Emergency Management Agency serves as administrative space for the county and city.

The change in demographics within our State is what is driving our divestitures.

“The Readiness Center Transformation Master Plan is critical to us obtaining the operational environment that we need in order to provide our Soldiers with modern facilities.” LTC Adam Iwaszuk, CFMO for the Washington ARNG, said.

A NEW PURPOSE

The Readiness Center in Boulder is the first to be divested, but it is not the last. The Colorado ARNG said the Readiness Center in Boulder for just over $1 million—funds the organization will use to acquire new sites for future builds without additional funds from the State. BOTTOM: The Colorado ARNG’s former Readiness Center in Durango (left) now serves as administrative space for the county sheriff, and the organization’s former facility in Grand Junction (right) is now a veterans’ one-stop shop for Colorado’s Western Slope.
The state decided to transfer ownership of one of our facilities to a Boys & Girls Club instead of allowing us to sell the facility and use the money to buy land for a new construction. The State has that ability to do that because the Readiness Centers are state-owned facilities on state-owned land,” LTC Iwaszuk said.

The facilities LTC Iwaszuk and his team have been allowed to sell have sold relatively quickly, depending on where the facility is located we get a lot of interest. Some densely populated areas are very attractive. One large facility, the 100-year-old Tacoma Armory was sold to an individual for about $1.28 million, just over the appraised value. Our facility in Pullman was purchased by a private investor who turned it into condominiums, with a yoga studio on the ground floor,” he said.

At one point, the WAARNG had an average of 10 square feet. Now it has a space deficit. “We have a 429,000-square-foot deficit of Readiness Center space. Our model has been to divest one of two old, degraded facilities as we build a new one. In some cases, a new facility, such as a Joint Forces Headquarters, may replace multiple buildings, but all Readiness Centers are uni-oriented and typically replace one or two facilities. At this point, we do not have a lot of facilities to divest, because we have already gotten down to the bone. We have a facility that does not fit with our master plan. We will most likely sell the proceeds from that sale and purchase land in another part of the State where we see growth potential and opportunity, and where we do not already have presence,” LTC Iwaszuk said.

When asked what happens if a facility does not sell, the ARNG’s COL Ayres said, “So far we have been lucky. I believe out of the 15 that we’ve determined were in Failing condition by fiscal year 2027. At present, the ARNG has Readiness Centers in 2,312 locations. The RCTMP set the optimal number of locations at 1,589—which of most already have an ARNG presence. The TWG report shows that the high school in Carthage in Leake County the city council voted to give us 20 acres of land for future development. We still have a small, land-locked 1950s Readiness Center in the same town. We don’t yet have the funding to build a new Readiness Center, but we have the land agreement. When we do receive funding we will return our current Readiness Center to the community. It fits perfectly with the RCTMP,” COL McDonald said. “Similarly, the town of McComb in Pike County voted to give us 24 acres of land, and it’s right off the interstate. It is a tremendous opportunity for future growth when new MILCON funding becomes available. I think it is very important to get the buy-in and the community involved in the process. We understand the overall plan, the better for all.”

Most of the Readiness Centers the MSARNG is returning to the communities are valued between $2 and $3 million—a significant investment for many small, rural towns. “Just because something is valued at $3 million does not mean it would set the same price. In most of these rural communities, there are no buyers. The buildings would sit on the market for years. If the community owns the land, they can put these buildings to use as community centers or city offices, that means a lot of political goodwill in those communities. The reason they did not have enough classroom space at the high school in Carthage in Leake County their city council voted to give us 20 acres of land for future development. We still have a small, land-locked 1950s Readiness Center in the same town. We don’t yet have the funding to build a new Readiness Center, but we have the land agreement. When we do receive funding we will return our current Readiness Center to the community. It fits perfectly with the RCTMP,” COL McDonald said. “Similarly, the town of McComb in Pike County voted to give us 24 acres of land, and it’s right off the interstate. It is a tremendous opportunity for future growth when new MILCON funding becomes available. I think it is very important to get the buy-in and the community involved in the process. We understand the overall plan, the better for all.”

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over the past year, several Army National Guard (ARNG) offices around the country were recognized by government agencies for their work to increase energy efficiency, reduce cost, and preserve natural resources. The ARNG received several awards in the areas of energy effectiveness, water conservation, and recycling. The ARNG Installations and Environment Directorate (ARNG I&E) also presented its own awards to ARNG programs that excel in the areas of facilities management and environmental stewardship.

The Secretary of the Army recognizes energy effectiveness and water management projects in Mississippi and Virginia. In recognition of her efforts to cut costs by conserving energy, the Mississippi ARNG’s (MSARNG) Ms. Madison Thomas received the Secretary of the Army Energy Award for Energy Program Effectiveness (Individual Category). As the MSARNG’s Energy Manager, Ms. Thomas re-energized the MSARNG’s Command Energy Council, found billing errors that saved the MSARNG $350,000 in 2016, and developed a utility conservation program that saved the MSARNG a total $190,000 that same year. The Secretary of the Army also selected the Virginia ARNG (VARANG) to receive the Secretary of the Army Energy and Water Management Award for Renewables and Alternatives (Installation Category). The VARANG installed two solar arrays at Fort Pickett in fiscal year 2015, with a projected annual saving of $212,000 in electricity costs.


The Environmental Protection Agency (EPA) recognizes the Texas Army National Guard (TXARNG) as a national winner in the Federal Green Challenge, which encourages federal facilities to reduce the government’s environmental impact. The TXARNG nearly doubled the amount of waste diverted for recycling at construction projects across Texas, from 1,763 tons in 2014 to 3,506 tons in 2015, saving over $157,000 in waste disposal fees. The TXARNG shows that reducing environmental impact is a win-win, saving taxpayer money by wasting fewer resources, said EPA Regional Administrator Ron Curry as he presented the award to the TXARNG at the EPA’s Federal Facilities Training Symposium in August 2016. “They set a great example for other federal agencies to follow.”

Later that same year, EPA recognized the Maine ARNG (MEARNG) as a 2016 Energy Star Combined Heat and Power (CHP) Award Winner. The MEARNG’s Bangor Army Aviation Support Facility’s CHP system, designed by Innovative Construction and Design Solutions, includes a natural gas-fired energy storage internal combustion engine generator that produces up to 75 kW of electricity. Heat from the engine—which would otherwise be wasted—is recovered and used to produce hot water to radiantly heat the facility’s hangar, maintaining the operational readiness of the aircraft in a region where facilities need to be heated for most of the year. With an efficiency of 73 percent, the system requires approximately 32 percent less fuel than would be used in the conventional production of electricity and hot water. With this system, an estimated 100 tons of carbon dioxide emissions are avoided annually. For Conversion, the generator’s annual emissions would result in roughly the same amount of emissions. A 40 kW photovoltaic panel further reduces energy costs and carbon emissions.

The Virginia ARNG receives the Fred Aron Award for Excellence in Facilities Programs. Each year, the ARNG I&E recognizes the best-performing facilities program in the nation. After evaluating the performances of the 50 states, three territories, and the District of Columbia in eight different areas—Military Construction (MILCON) Program Execution, Financial Management, Budget Estimate, Real Property Management, Construction Facilities Management Officer (CFMO) Certification, Environmental Program Management, ESS Program, and Installations Status Report submission—it presents the Fred Aron Award for Excellence in Facilities Programs to the program with the highest score. In fiscal year 2016, that recognition went to the VARANG.

Through their work to increase energy efficiency, preserve natural resources, and exceed environmental standards the ARNG Environmental and Facilities Management award recipients also manage to reduce waste, creating a win-win for all parties. By encouraging sustainable practices, the ARNG will sustain its future mission.***
ALARNG managed. This effort was the result of combined integration to examine African American history in relation to the properties the ARNG states. The meetings are rotated among the participating states, and in- cludes two days of consultation. Command staff, including General McClellan Army National Guard Training Center. “Buffalo Soldier” training camp; and anomalies in unmarked African American graves at the New Mount Sellers Cemetery on the Fort McClellan Army National Guard Training Center. The Hawaii ARNG (HIARNG) has taken a creative approach to clearing its rugged terrain of shrubbery. Using a herd of 194 goats, the HIARNG regularly clears 46 acres of rugged training area that would be difficult for machines to access. By using animals instead of machines, the HIARNG has also eradicated herbicide use. The approach has eliminated the need for contract labor, which has re- sulted in cost savings of 90 percent. The HIARNG also diverted over 46 tons of paper and 42 tons of cardboard from landfills through its recycling vendor, Secure Solutions (Goodwill Contract Services), and recycled 13 tons of batteries in 2015, generating around $5,000 for the Qualified Recycling Program. The HIARNG has seen recy- cling become a habit, which is great. Now I’d like to see if we can reduce the waste generated. For example, rather than printing docu- ments and recycling the paper, it would be great if we did not print at all. Digital signatures have helped with this initiative. However, like all change, behavioral changes take time to implement,” said Ms. Les- lie Chau, Environmental Program Specialist for the HIARNG. The HIARNG won the Sustainability (Non-Industrial Installation) category in the 2016 Secretary of the Army Environmental Awards for its cre- ative use of animals and its successful recycling program. The performance improvements were expanded to all 52 ARNGs from live fire activities, utility poles and other treated wood material, and scrap military tires,” said the PAARNG’s Environmental Manager, Ms. Dreama O’Neal. Next, the PAARNG is targeting the recycling of more construction and de- moliition waste, more composting, and possibly glass recycling. The team also replaced 90 percent of its heating oil tanks with natural gas tanks. Natural gas is a cleaner, more affordable fuel source with a reduced spill risk. The natural gas tanks minimize the need for permits, live fire activities, and repairs. The PAARNG also diverted close to 704 tons of bio solids in 2015, resulting in just over $41,000 in disposal cost savings. The different efforts earned the PAARNG recognition in the Sustainability (Team) category.

Finally, the Virginia ARNGs (VAARNG) Camp Pendleton won the Cultural Resources Management (Small Installation) category for successfully incorporating sustainability updates on buildings listed in the National Register of Historic Places (NRHP) while preserving their historic significance. Asked to describe the unique qualities of Camp Pendleton that merited the inclusion on the NRHP, Ms. Susan Smead, Cultural Resources Program Manager for the VAARNG, said, “Primar- ily it is Camp Pendleton’s long history as a military installation, from the establish- ment in 1912 by the State of Virginia as State Rifle Range. In addition to the current rifle range, which dates back to the late 1920s, the installation also has a collection of World War II-era, dive- ing halls, and associated buildings with a good amount of integrity. Camp Pendle- ton also includes a secondary residence on Orange County, used by Virginia’s governors after World War II, which adds another dimension to Camp Pendleton’s historic military importance.”

The Sustainability and Cultural Resource Management staffs collaborated on upgrading Camp Pendleton’s World War II-era buildings while still maintaining their historic integrity. The immedi- ate concern when upgrading a historic property is to assess the building envelope and address any heating and cooling loss while being mindful of impacts to the historic fabric. The building is typi- cally outfitted with new systems (HVAC, plumbing, and electrical, including IT support). The main challenge is to incorporate energy efficiency, which typically requires the introduction of new materials and system components, without impacting the historic character- istics of the building,” said Ms. Smead. According to Mr. Jim Ruf, VAARNG Sustainability Branch Chief, the upgrades have resulted in about $160,000 a year in savings, projected to increase to nearly $300,000 in annual saving by 2036. By protecting the ARNG’s lands through conservation and sus- tainable practices, ARNG Environmental staff ensure the availability of training lands for future generations. Under the stewardship of these award recipients, the ARNG is preserving its natural resources and cultural legacy.
In 1980, Congress passed the Comprehensive Environmental Re-

vention in 1975 under the Installation Restoration Program (IRP). At any given time, we are working at least 50-75 sites all over the coun-

try. At this snapshot in time, I would say there are more munitions projects than anything else, but it runs the gamut," he said. One high-profile project is at Camp Ravenna in Ohio, the for-

mer site of an Army ammunitions plant. Some of the processes that were used in the past caused contamination at several sites within the Camp’s footprint. The Missile Defense Agency (MDA) is cur-

rently considering Camp Ravenna as one of three potential sites for building a new facility. “There are a number of areas of concern at Camp Ravenna that we are cleaning up through the CERCLA process in conjunction with the Ohio EPA. We do not want the cleanup effort to be a deterrent for the MDA coming to Ravenna,” Mr. Leeper said.

Together with the Ohio EPA, Mr. Leeper’s team came up with a plan to put the sites in the footprint at the top of the review list to secure funding for the cleanup. “Both the ARNG I&E and the Ohio EPA are putting all their efforts and cooperation into getting these sites moved through the system quickly, while still protecting human health and the environment,” Mr. Leeper said. The team consists of ARNG I&E, the Army Corps of Engineers, the Ohio EPA, public stakeholders, and contractors, who do the field work. When asked to describe the work in the field, Mr. Leeper said, “It depends on what the contaminant is. For the most part, we fo-

focus on Poly-Aromatic Hydrocarbons (PAHs) and metals in the soil. Depending on the amount that we have to remove, we sometimes use a special machine called a Vapor Energy Generator, or VEG. That allows us to remediate the soil and keep it onsite. That way, we do not have to pay to send the soil to a landfill and everything gets reused onsite. We try to use that technology for all of our soil remedial jobs. If the proj-

dct does not warrant the use of the VEG we have to dig up the soil and send it to a landfill. Most of the MDA sites fall into that category, where there are enough contaminants to trigger a response, but not high enough concentra-

tion to warrant the use of the VEG. Typically, if the amount of soil that needs to be removed is under 3,000 cubic yards we do not use the VEG because of the cost of bringing the machinery onsite. Any proj-

ect above 3,000 cubic yards is a lot of money by using the VEG.” The project started in February 2016, and a number of sites that are within the footprint have already been cleaned up. “We likely have everything wrapped up, or at least have a Record of Decision, by the end of fiscal year 2018,” Mr. Leeper said.

The VEG has helped Mr. Leeper’s team save both time and money. Another time-and-cost-saver is a method called High Res-

olution Site Characterization (HRISC). “HRISC entails using a mo-

bile lab onsite. It allows us to be very specific in our data collection, and we can get lab results within 20 to 30 minutes. If you are look-

ing at a groundwater plume it allows you to track that plume from real-time data. In the past, we would put in four or five wells, collect the data, review it, and have to go out again. What the mobile lab does is it allows us to be out in the field for a short amount of time, collect data in real time, and put wells in areas that we can see based on what we have just submitted. HRISC is taking advantage of all of the new technologies that we have today that we did not have 20 years ago. We use HRISC whenever possible, as it provides us with a better conceptual site model and also looks more sustainable and less impacted compared to traditional investigative methods,” Mr. Leeper said.

The most common concerns the ARNG I&E’s Cleanup and Restoration team encounters are contamination caused by munitions. The team is currently doing a munitions project at Camp Withycombe, outside Portland, Oregon. “It is a time-critical removal action munitions project that dates back to the 1920s. Soldiers used to do munitions training at the base of a hill at Camp Withycombe. They would set up the targets and shoot, and as a result there is small arms munitions in the footprint of the hill. Then, during World War II, they did different types of training with .37mm guns. There is also a possibility that rockets were fired into the mountainside. Now the land has been transferred to us; the main issue is being sure that we don’t do anything that makes the munitions cleaned up,” Mr. Leeper said. The team uses different types of geophysical equipment to identify anything that might be underground. “In this case we have a field team of four people collecting data and a number of safety personnel present just in case the team finds something hazardous. If they do find something that is considered dangerous, they actually blow that round, or rounds, in a prescribed manner to eliminate the hazard,” Mr. Leeper said.

As the ARNG I&E’s Cleanup and Restoration team cleans up contamination caused by past practices, the ARNG’s commitment to sustainability deepens. Today, the organization goes to great lengths to ensure that its operations will not burden future genera-

tions. “I think we’ve learned a lot from our past mistakes. Today’s mission is conducted in a much more sustainable way and we take all the necessary precautions to ensure that we are not making those same mistakes.”

Mr. Mark Leeper

Restoration/Cleanup Program Manager for the ARNG I&E

“Today’s mission is conducted in a much more sustainable way and we take all the necessary precautions to ensure that we are not making those same mistakes.”
The National Guard has a unique dual mission, with both federal and state responsibilities. The president of the United States can activate the National Guard to participate in federal missions. In a state emergency, the governor can call the National Guard into action. When disaster strikes, National Guard units stand ready to assist residents affected by hurricanes, tornados, floods, and fires.

To maintain preparedness, Army National Guard (ARNG) units around the country perform continuous disaster response training and build and maintain good relationships with local authorities and other first responders. For the Minnesota ARNG (MNARNG), that training was put to the test one evening in September 2016.

On September 7, 2016 around 10:30 in the evening a tornado struck Camp Ripley Training Center, the MNARNG’s premier training center located in central Minnesota, near the city of Little Falls. The F1 tornado stayed on the ground for several miles, leaving behind a narrow path of destruction. “The tornado crossed our boundary, went through one of our military vehicle parking lots, over our airfield, through a billeting area, and finally through our local utility’s 10 megawatt solar field. The distance across post was about two and a half miles, but thankfully about two miles of that was nothing but runway and forest. The swath of damage on our installation was only about 50 meters wide,” said the MNARNG’s Construction Facilities Management Officer (CFMO), LTC Sol Sukut.

There was no warning and the installation’s sirens did not go off. “The initial response came from post security, and Soldiers and State Highway Patrol members who were staying in the billeting area, including the officer quarters, which lost its roof. Fortunately, no one was on the second floor at the time. We were lucky that it happened on a weeknight. Just a couple days later and all the beds of those buildings would have been occupied,” LTC Sukut said. “Together, they cleared the two damaged billeting structures and gained a 100 percent accountability check. In the end, only one civilian from the State Highway Patrol had a minor injury from glass.”

Within 30 minutes, Minnesota Department of Public Works (DPW) personnel arrived and began shutting down power, gas, and water in the affected buildings. Over the next 48 hours, the DPW team, along with MNARNG architects and engineers, completed the majority of the work to secure the buildings. Four buildings were total losses, and over 60 buildings were damaged. The major damage was to the roofs of three structures. The roof of a 160-person transient company headquarters building was torn off and a part of the roof landed in the road. Another part punctured the exterior concrete masonry unit wall of a company supply building across the street. A 40-room transient officer quarters nearby also lost its roof. Both of these buildings suffered significant water damage from fire suppression lines that ruptured when the roofs came off. The roof from a company maintenance building landed in Camp Ripley’s system of photovoltaic panels, about 200 meters away. Owned by Minnesota Power, the solar field was near completion when the tornado hit Camp Ripley and a ribbon-cutting ceremony was scheduled nine days later. The solar field sustained $2.5 million in damages and the completion was delayed by 30 days. “The DPW team put temporary covers on the roofs and replaced or put temporary covers on the broken windows. Meanwhile, the architects and engineers did building assessments and took pictures to help us document the damage and prepare reconstruction reports,” LTC Sukut said.

To prepare for disasters, the ARNG emphasizes continuous disaster training and good relationships with local authorities and other first responders.

**Acts of Nature and Domestic Response**

To prepare for disasters, the Army National Guard emphasizes continuous disaster training and good relationships with local authorities and other first responders.
For the last couple years, we have done a natural disaster response training scenario at Camp Ripley to rehearse this type of event. I believe that made the response and coordination on the ground a lot easier on everyone. Everyone knew what to do.

LTG Sol Sukut
CFMO for the Minnesota ARNG

The NGBR20s, so that we could submit for Act of Nature (AoN) funding,” LTC Sukut said, referring to the paperwork that ARNG offices submit to the National Guard Bureau (NGB) for funding assistance in disasters. The tornado struck Camp Ripley in September, at the end of the federal fiscal year, which most funds had already been obligated. “Delays that the NGB immediately sent us some fiscal year 2016 AoN funding to get us started on material requests and purchase order repairs. It took some time to get the full damage assessment together and we submitted our cost estimates first thing in October, when the new funding became available,” LTC Sukut said.

The estimated replacement cost for the four buildings that were completely destroyed is about $30 million. “With NGB and Department of the Army/Army Staffs throughout the joint force, contributed to a successful ‘Operation Matthew,’” he said.

LTC Sukut said that the recently opened new operations and command center was a natural disaster response training scenario at Camp Ripley to rehearse this type of event. I believe that made the response and coordination on the ground a lot easier on everyone. Everyone knew what to do.

"Without continual training and cooperation with our civil authorities, we would not have been as well postured as we were. People come and go and it is really important to maintain disaster preparedness skills. We carry out annual hurricane exercises with other emergency responders to maintain the training and preparedness of our headquarters and staffs throughout the joint force, contributed to a successful ‘Operation Matthew’,” he said.

At the peak of the operational TEMPO, the FLNG had in excess of 3,200 Soldiers on state active duty performing a variety of missions. The FLNG forces provided military support to civil authorities, including security and high-water vehicle support, search and rescue/reconnaissance teams, aviation support, command and control support, traffic control, shelter manning, State Emergency Operations Center manning, point of distribution missions, logistics staging areas, and support to the State’s Department of Agriculture and Rural Development.

Due to the unpredictability of the storm’s track and the close proximity of the storm to the FLNG Joint Force Headquarters in St. Augustine, which was squarely in the impact zone, Florida’s Adjutant General, MS Michael Calhoun, and the Director of Military Support (DOMS) decided to carry out the Continuity of Operations Plan and relocate the Emergency Operations Center from St. Augustine to the Camp Ripley Emergency Operation Center in St. Johns County. The peak strength of the hurricane was felt by Haiti and Cuba, where the storm made landfall as a Category 4 storm. The storm did not landfall the Florida coast; it parallelized the Florida coast as a Category 1 storm.

The northeastern counties of Flagler, St. Johns, and Duval Counties experienced the largest storm surge. The scope and cost of damage of ARNG facilities as a result of Hurricane Matthew was minimal. The most significant damages were assessed to be in St. Johns County, to the FLNG Headquarters.

“Without continual training and cooperation with our civil authorities, we would not have been as well postured as we were. People come and go and it is really important to maintain disaster preparedness skills.”
n the evening of August 25, 2017, Hurricane Harvey made landfall as a Category 4 storm near Rockport on the Texas coast. Its slow movement caused catastrophic flooding throughout the southeast portion of the state, forcing thousands of residents from their homes.

Over the course of three days, Texas Governor Greg Abbott activated approximately 12,000 Texas National Guard Soldiers and Airmen to assist in search and rescue efforts in the region. Other states quickly provided resources and troops through the Emergency Management Assistance Compact (EMAC). By August 31, the number of deployed from all States reached 24,000. Their operations were concentrated in the Houston and Beaumont areas where the heaviest flooding occurred.

The Texas National Guard has several Readiness Centers located in the affected areas, and was fortunate that nearly all facilities remained in usable condition after the storm. Soldiers and staff prepped the buildings prior to Harvey’s landfall, and were able to maintain the integrity of all utilities. As soon as was safely possible, the Texas National Guard began staging operations out of their facilities located in Bryan, Huntsville, Brenham, Corpus Christi, Northwest Houston, El Campo, Rosenberg, Camp Swift, Camp Bowie, and San Antonio. However, some of the facilities were not immediately reachable due to extreme flooding. This, coupled with the large number of deployed troops, meant the Texas Military Department had to reach out to local communities, private companies, and the Reserves to locate additional staging and housing areas. The public and private sector both provided an invaluable service to the relief efforts by giving the Texas National Guard areas to stage convoys, house Soldiers, provide showers and laundry, and to land aircraft.

Throughout a three-week period, the Texas National Guard conducted 1,585 storm response missions. They assisted in the rescue of more than 16,000 people and 1,200 animals. More than 340 rescues were conducted by hoist operation in aircraft.

Twelve days after Hurricane Harvey’s landfall in Texas, a devastating storm moved in on Florida. As it tracked across the Leeward Islands in the Caribbean, Hurricane Irma reached category 5 status with winds of up to 185 miles per hour. Irma made its first U.S. landfall on September 6 by crossing the Florida Keys as a Category 4 storm. It then made a second landfall at Florida’s Marco Island as a Category 3 storm, with recorded wind gusts up to 135 miles per hour.

Florida Governor Rick Scott activated upwards of 7,000 Florida National Guard Soldiers and Florida Air National Guard personnel to assist emergency authorities in dealing with the impacts and aftermath of the storm. Florida National Guard units executed numerous missions assigned by the State Emergency Response Center in Tallahassee. Those missions included search and rescue, evacuations using high-wheeled vehicles in flooded areas, establishment of logistic staging areas and points of distribution, security missions, and debris clearing. Due to the size of the storm and its track along Florida’s western coast, National Guard missions extended from Key West in the south to the Florida Panhandle in the north.

Twelve days after Irma, Hurricane Maria swept across Puerto Rico. The strongest storm in 80 years to hit Puerto Rico, it bisected the island with 155 mile-per-hour winds and dumped 30 inches of rain on the island. At the time of writing, Hurricane Maria’s full impact is yet to be determined, and the Puerto Rico National Guard’s response mission is still ongoing.

When disaster strikes, National Guard units stand ready to assist residents affected by storms, floods, and fires. As the National Guard takes on greater responsibilities in operations abroad, the organization’s domestic mission is never forgotten.
SOLIDARITY AMONG STATES
FAR LEFT: The New Jersey ARNG sent 130 Soldiers to support the Florida National Guard in anticipation of Hurricane Irma. (Photo by Mark Olsen)

LEFT: Virgin Islands National Guard members establish communications between islands using a satellite after Hurricane Irma affected traditional communications at the Joint Forces Headquarters in St. Croix. RIGHT: The Nebraska ARNG sent 100 Soldiers and four aircraft to Florida to take part in Hurricane Irma relief and recovery operations. (Photo by 1LT Edward Bosland)

RESCUE MISSIONS
LEFT: 1SG Ron Schroeder of the Nebraska ARNG’s Company G, 2-104th General Support Aviation Battalion, helps rescue a woman and her dogs in Orange, Texas. (Photo by SGT Anna Pongo) RIGHT: Staff of the North Carolina Joint Force Headquarters prepare to respond to Hurricane Irma. FAR RIGHT: Water and supplies are stored at a Texas ARNG Flight Facility in Austin before they are sent to recovery areas.

LEFT: Light medium tactical vehicles with the 253rd Transportation Company line up in the staging area prior to deployment to Florida. (Photo by Mark Olsen) RIGHT: Soldiers from Alpha Company, 1-124th Infantry Battalion interact with mobility impaired evacuees in Florida. (Photo by MAJ Coteen Krepstekies)
WASHINGTON

A NEW READINESS CENTER REPLACES THE 108-YEAR OLD TACOMA ARMORY

Opened in January 2017, the Washington Army National Guard’s 80,666-square-foot Pierce County Readiness Center replaced the outdated Tacoma Armory, built in 1909. The new $29 million facility, located on Camp Murray in Tacoma, Washington, is the new home to five units totaling 334 Soldiers. In addition to the Readiness Center, there is also a new 16,222-square-foot Vehicle Storage Building. The facility was built to Leadership in Energy and Environmental Design (LEED) Silver certification standards and includes on-site storm water disposal, use of local and regional building materials, insulating concrete form construction, LED interior and exterior lighting, daylighting and views for 90 percent of regularly occupied spaces, electric vehicle charging stations, and efficient mechanical systems.

NEW AND OLD
The Pierce County Readiness Center (large photo) replaced the outdated Tacoma Armory (small photo).

CONNECTICUT

A NEW COMBINED SUPPORT MAINTENANCE SHOP SUPPORTS THE CONNECTICUT ARMY NATIONAL GUARD’S SURFACE MAINTENANCE MISSION

In the fall of 2015, the Connecticut Army National Guard (CTARNG) held a ribbon-cutting ceremony to open its new Combined Support Maintenance Shop (CSMS). The 112,000-square-foot facility replaced a 23,000-square-foot CSMS and six other support buildings—all at least 50 years old, not sized for present-day equipment, and lacking modern safety or environmental designs. The new CSMS, built to Leadership in Energy and Environmental Design (LEED) Silver standards at a cost of $29 million, supports the CTARNG’s statewide surface maintenance mission. It also supports 3,500 Soldiers, about 1,500 pieces of rolling stock, and armament, optics, calibration, and Chemical, Biological, Radiological and Nuclear (CBRN) equipment. The facility has 12 Automotive work bays, nine Special Purpose work spaces, and a paint booth. There are two 15-ton cranes, two 7.5-ton cranes and six one-ton cranes in the facility.

NEW JERSEY

A NEW REGIONAL TRAINING INSTITUTE TRAINS SOLDIERS IN LEADERSHIP

Opened in June 2017, the New Jersey Army National Guard Regional Training Institute at the National Guard Training Center in Sea Girt, New Jersey provides the 254th Regiment (Combat Arms) with a modern, state-of-the-art instructional complex. Here, National Guard Soldiers are provided Military Occupational Specialty sustainment training and leadership training. The 86,000-square-foot facility includes an administration and classroom building with 10 classrooms, a library, an auditorium with seating for 225 personnel, and a student billeting building.

NEW AND OLD
The Pierce County Readiness Center (large photo) replaced the outdated Tacoma Armory (small photo).

PUERTO RICO

THE PUERTO RICO ARMY NATIONAL GUARD OPENS SIX NEW BUILDINGS ON FORT BUCHANAN

In July 2015, the Puerto Rico Army National Guard opened six new buildings on Fort Buchanan. The buildings include a Readiness Center, a classroom building, a unit storage building, a gym, a maintenance building, and a controlled waste handling facility. Totaling over 157,000 square feet, the facilities support elements of the Puerto Rico National Guard Joint Forces Headquarters (Personnel/HRO), Recruiting and Retention, the 1011th EN CO, 1014th EN CO, 225th MP CO, 92nd SIG CP, 840th MC, 1473rd QM CO, and the 22nd CST. The Readiness Center has 274 spaces available for the units to use. Authorized strength is approximately 1,100 Soldiers. Total cost of construction was $38.4 million for all six facilities. Built in accordance with Leadership in Energy and Environmental Design (LEED), the buildings received a Silver Certification by the U.S. Green Building Council. The Readiness Center consists of an assembly hall, administrative office areas, classrooms, a library, a learning center, a recruiting office, training aid storage, a kitchen, a break area, a vending area, toilets and showers, table and chair storage, and a family readiness office. “Green” features include digital light controls with occupancy sensors, DuPont Corian solid surfaces, no materials emitting Volatile Organic Compounds (VOC), water-efficient landscaping, and light pollution reduction.
Kirtland’s warbler (Setophaga kirtlandii) is one of the rarest members of the wood warbler family. It depends on the Jack Pine Ecosystem and has highly specific habitat needs; its nests are generally in mixed vegetation of grasses and shrubs below the living branches of five- to 20-year old jack pine. Kirtland’s warblers are found primarily in the northern Lower Peninsula of Michigan, and in lower densities in parts of the Upper Peninsula, Wisconsin, and in Canada. Due to population declines caused by habitat degradation and cowbird nest parasitism, the bird was listed as “endangered” by the U.S. Fish and Wildlife Service in 1967. In 1961 there were roughly 1,000 breeding pairs of Kirtland’s warblers documented during survey efforts. Thanks to conservation efforts, in particular by the Kirtland’s Warbler Recovery Team, the birds have been increasing in number for several years. In 2011, 1,828 breeding pairs were documented. Since then, the species has continued to rebound.

Jack pine stand are managed by logging, burning, seeding, and replanting on a rotational basis to provide approximately 38,000 acres of productive nesting habitat at all times. By carrying these stands to a 50 year rotational age, nesting habitat can be maintained with little sacrifice to the commercial harvest of jack pine. The Michigan Army National Guard (MIARNG) has played a crucial part in the Kirtland’s warbler’s comeback. A large part of the bird’s habitat is on the MIARNG’s Camp Grayling. As a result of the MIARNG’s successful land habitat management and similar efforts, there are now 5,000 Kirtland’s warblers, and the bird could come off the endangered species list within a few years.
On January 11, 2012, the Montana Army National Guard’s (MTARNG) Fort Harrison Transient Dining Facility P0303 was destroyed by fire as a result of an electrical problem with a bathroom heater. The MTARNG’s Construction Facilities Management Office (CFMO) Plans & Programming Branch submitted a request for Unspecified Minor Military Construction (UMMC) funding through the National Guard Bureau for a building replacement. UMMC projects correct life, health, or safety deficiencies and are limited to less than $3 million in construction cost. The CFMO Design & Project Management Branch was granted design authority in April 2015. Working with Montana-based Mosaic Architecture, the Design & Project Management Branch designed the entire project in three and a half months, including three full review submittals. The draft for the new facility’s kitchen layout was also reviewed by the Army Center of Excellence, Fort Lee Joint Culinary Center. The project was advertised for bid in September 2015 and the construction Notice to Proceed was issued to Golden Eagle Construction in October 2015. The $2.6 million facility was constructed with minimal change orders, resulting in a cost increase of less than one percent from the original construction contract. The new 2,602-square-foot Fort Harrison Dining Facility opened on November 16, 2016, and the dining facility was put to use in February 2017.

The new facility includes a large kitchen with separate preparation areas for meats, salads, and bakery food. The building provides warm, well-lit spaces with large windows to the south. Concrete flooring stores passively-gained heat. The facility includes a variety of dining options. Partially shaded outdoor seating areas on the south and east sides of the building extend the seating area during warm months of the year. The new facility is LEED Certified Gold. The building’s heating, ventilation, and air conditioning system includes an efficient non-refrigerant evaporative cooling system. Local beetle-killed blue pine wood was used for the dining room ceiling finish. The low maintenance landscaping requires no irrigation. Accessible parking (in compliance with the Americans with Disability Act) on the north side of the building is paved with pervious concrete, which reduces a potential parking area heat island effect (where the area has a higher average temperature than its surroundings) and storm water runoff.

On December 3, 2017 the new dining facility was dedicated to CSM Ronda Sue Scott as the Command Sergeant Major Ronda Sue Scott Memorial Dining Facility. CSM Scott was the MTARNG’s first female Command Sergeant Major and an Iraq veteran. She died of cancer in 2016.