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Magazine



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ARMY ENGINEER MAGAZINE

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PUBLICATION:

Army Engineer Magazine is published four times a year. Its primary distribution to its member is digital to a preferred email address. Scott's Printing Company in Rolla, MO prints the magazine and provides production assistance. All rights reserved. No part of this publication may be reproduced without prior permission of the Army Engineer Association

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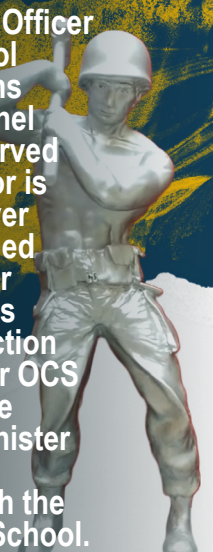
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MG Bryan G. Watson, USA, Retired President, AEA



To the Members of the Engineer Regiment,

I hope this edition of Army Engineer Magazine finds you excited about the prospects of the New Year and opportunities to continue serving our Nation surrounded by the amazing team that is our Engineer Regiment. I personally look forward to continuing to serve each of you and cheer you on as you answer the maneuver commander's call to tackle the Army toughest battlefield challenges...and win!

I want to provide you with an important update on a few key Army Engineer Association initiatives that are a direct result of your feedback to us during our town halls and professional conferences. We listened! Here is where we are at in making some changes that will take effect in 2023.

Virtual-Live Professional Development. In Fall 2022, we initiated a live-virtual professional development forum called Engineer Rally Point. This for junior and mid-career leaders...given by junior and mid-career leaders...on topics of interest to junior and mid-career leaders. They are conducted in the evening via Zoom per your request and remain available on our website for viewing later. You can find upcoming topics and registration on our website.

Magazine in Hardcopy. We have brought back the paper magazine publication in hard copy with distribution to Battalion/Brigade sized units. We have also opened a registration link for individual members who wish to start an annual subscription to receive quarterly magazines in 2023.

New Website and AEA Member Portal. Our website is undergoing major reconstruction and integrating new capabilities that, frankly, are long overdue. Most importantly, the AEA Member Portal will enable you to execute most member activities directly on-line vice filling out forms and emailing them. You will be able to sign up or renew your membership, update your mailing address, order your hard copy of the Army Engineer Magazine, and update payment information. Our integrated membership database will be directly linked to the Regimental Store and help us ship your merchandise in shorter time.

Regimental Store. We are making more and more of the Regimental Store merchandise available for on-line purchase and exploring ways that we can ship it directly from the vendor. The Regimental Store manager is modernizing the inventory...particularly in clothing items...to reflect the changing styles and preferences of our younger Regimental members. We are always open to your suggestions; send them!

Awards Submission. The AEA Member Portal will also provide an improved website interface that makes award submission far easier...and faster...using the integrated membership database. Award submissions will be done completely on-line. The process will pre-confirm membership status, authenticate approval authorities, or forward approval to the necessary level, process on-line payments, and verify shipping details. This will vastly reduce the processing time for most Steel and Bronze De Fleury Award submissions. For Bronze and Silver Awards outside the members approval authority, approval will be automatically forwarded to the right authority for action.

Membership Expansion. We are very excited to expand membership to the newest members of our Engineer Regiment...first term Enlisted, USACE Civilians, Warrant Officers, and Officers. New members of the Engineer Regiment can register on-line and receive a three-year initial membership so they can be part of the professional dialogue. The other membership categories are roughly the same with the multiple year options that can be completed online. We have added a second tier in our lifetime membership for lower rates to older members.

Keep your feedback coming and we will keep listening. Your Army Engineer Board of Directors are committed to exploring ways to better serve you, the Engineer Soldier and Unit.

Lead to Serve,

Bryan G. Watson
Major General, Army (Retired)
President, Army Engineer Association

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**LINDA S. MITCHELL, EDITOR
ARMY ENGINEER MAGAZINE**



Hello. This time of year seems to be a time of reflection and thinking about the past and looking towards the future. We have all of those covered in this issue of the Army Engineer Magazine. To that end, AEA is looking forward to enhancing our operations and programs to provide the best experiences and resources to our members.

I would like to take this opportunity to thank you for your engagement, membership, and support. I wish you and your family a New Year filled with happiness, health, and good fortune.

Best,

Linda

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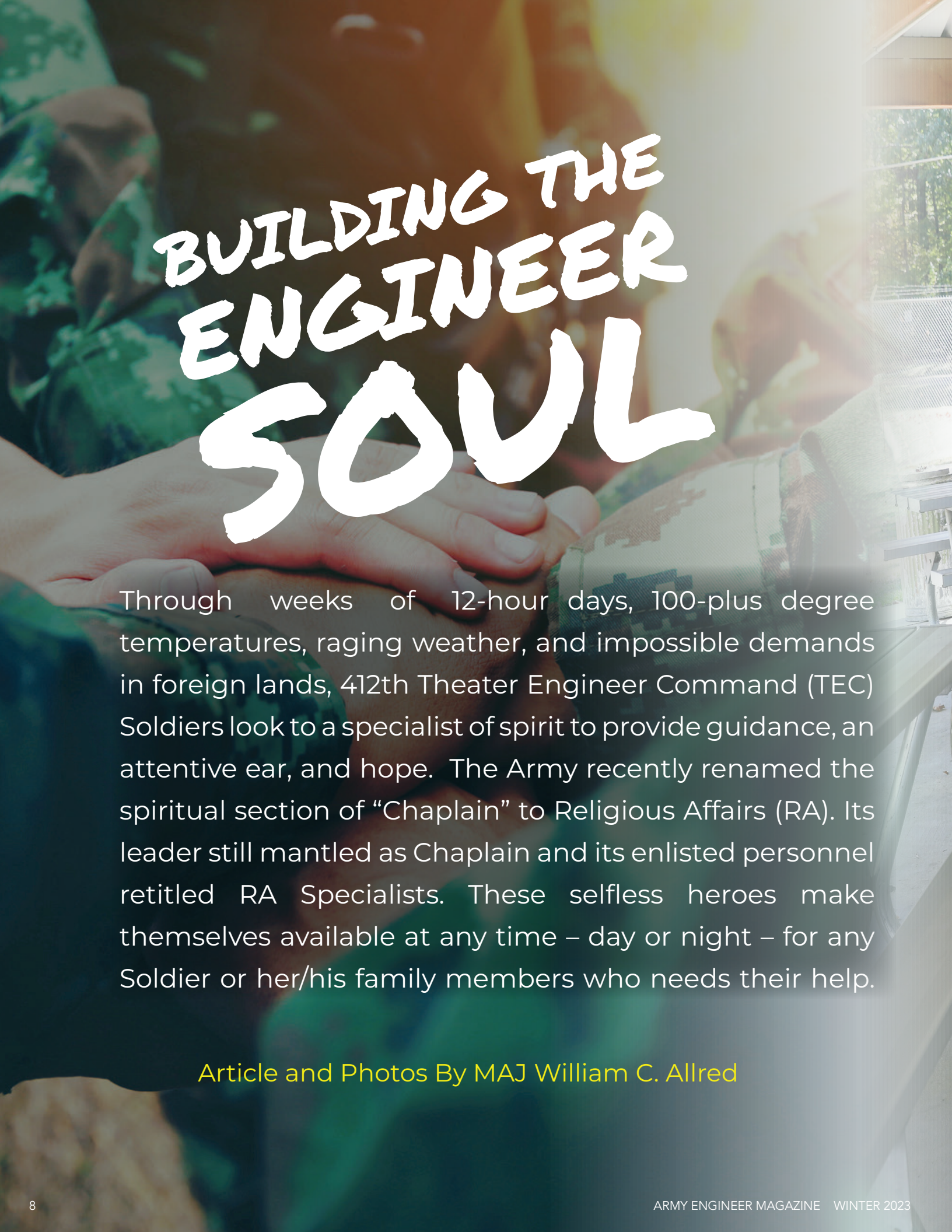
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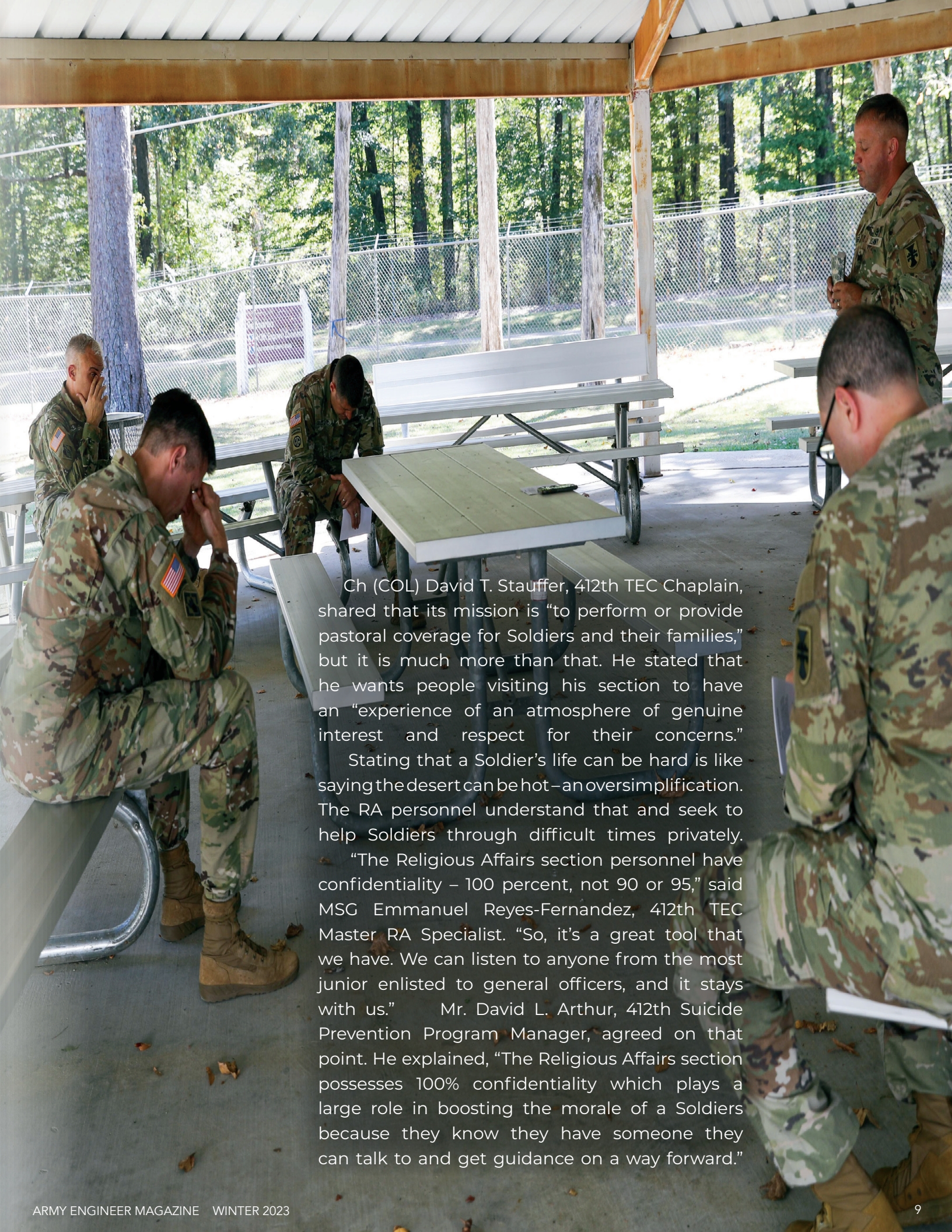




BUILDING THE ENGINEER SOUL

Through weeks of 12-hour days, 100-plus degree temperatures, raging weather, and impossible demands in foreign lands, 412th Theater Engineer Command (TEC) Soldiers look to a specialist of spirit to provide guidance, an attentive ear, and hope. The Army recently renamed the spiritual section of “Chaplain” to Religious Affairs (RA). Its leader still mantled as Chaplain and its enlisted personnel retitled RA Specialists. These selfless heroes make themselves available at any time – day or night – for any Soldier or her/his family members who needs their help.

Article and Photos By MAJ William C. Allred



Ch (COL) David T. Stauffer, 412th TEC Chaplain, shared that its mission is “to perform or provide pastoral coverage for Soldiers and their families,” but it is much more than that. He stated that he wants people visiting his section to have an “experience of an atmosphere of genuine interest and respect for their concerns.”

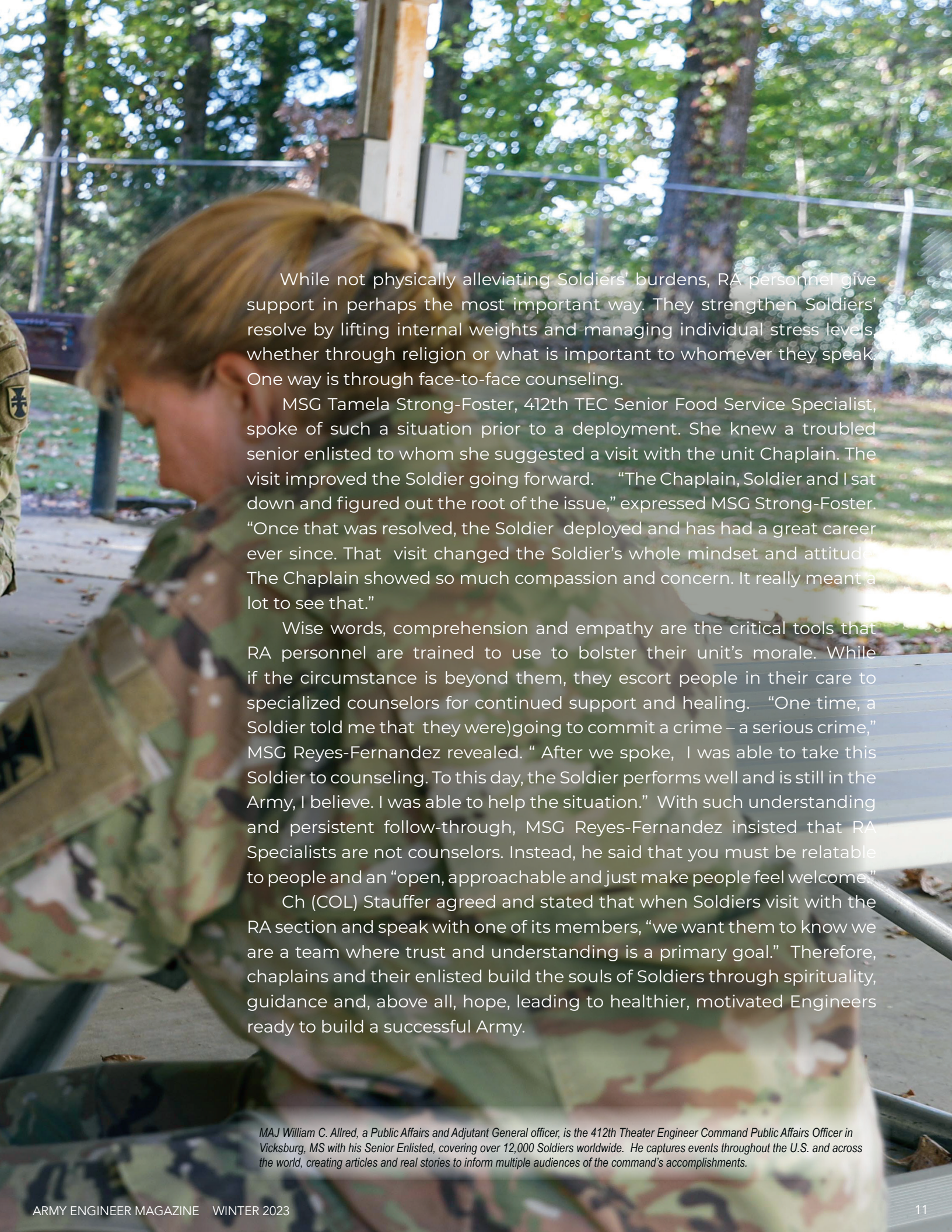
Stating that a Soldier’s life can be hard is like saying the desert can be hot—an oversimplification. The RA personnel understand that and seek to help Soldiers through difficult times privately.

“The Religious Affairs section personnel have confidentiality – 100 percent, not 90 or 95,” said MSG Emmanuel Reyes-Fernandez, 412th TEC Master RA Specialist. “So, it’s a great tool that we have. We can listen to anyone from the most junior enlisted to general officers, and it stays with us.”

Mr. David L. Arthur, 412th Suicide Prevention Program Manager, agreed on that point. He explained, “The Religious Affairs section possesses 100% confidentiality which plays a large role in boosting the morale of a Soldiers because they know they have someone they can talk to and get guidance on a way forward.”

412th Theater Engineer Command Ch (COL) David T. Stauffer hosts religious services at the Vicksburg Reserve Center on 15 October 2022.





While not physically alleviating Soldiers' burdens, RA personnel give support in perhaps the most important way. They strengthen Soldiers' resolve by lifting internal weights and managing individual stress levels, whether through religion or what is important to whomever they speak. One way is through face-to-face counseling.

MSG Tamela Strong-Foster, 412th TEC Senior Food Service Specialist, spoke of such a situation prior to a deployment. She knew a troubled senior enlisted to whom she suggested a visit with the unit Chaplain. The visit improved the Soldier going forward. "The Chaplain, Soldier and I sat down and figured out the root of the issue," expressed MSG Strong-Foster. "Once that was resolved, the Soldier deployed and has had a great career ever since. That visit changed the Soldier's whole mindset and attitude. The Chaplain showed so much compassion and concern. It really meant a lot to see that."

Wise words, comprehension and empathy are the critical tools that RA personnel are trained to use to bolster their unit's morale. While if the circumstance is beyond them, they escort people in their care to specialized counselors for continued support and healing. "One time, a Soldier told me that they were going to commit a crime – a serious crime," MSG Reyes-Fernandez revealed. "After we spoke, I was able to take this Soldier to counseling. To this day, the Soldier performs well and is still in the Army, I believe. I was able to help the situation." With such understanding and persistent follow-through, MSG Reyes-Fernandez insisted that RA Specialists are not counselors. Instead, he said that you must be relatable to people and an "open, approachable and just make people feel welcome."

Ch (COL) Stauffer agreed and stated that when Soldiers visit with the RA section and speak with one of its members, "we want them to know we are a team where trust and understanding is a primary goal." Therefore, chaplains and their enlisted build the souls of Soldiers through spirituality, guidance and, above all, hope, leading to healthier, motivated Engineers ready to build a successful Army.

MAJ William C. Allred, a Public Affairs and Adjutant General officer, is the 412th Theater Engineer Command Public Affairs Officer in Vicksburg, MS with his Senior Enlisted, covering over 12,000 Soldiers worldwide. He captures events throughout the U.S. and across the world, creating articles and real stories to inform multiple audiences of the command's accomplishments.

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EN Rally Point Seminars

Geospatial at the Tactical Edge

"What you need to know"

February 2023

Future of semi-autonomous construction

April 2023

Pre-fab modular structures

June 2023

The Meigs Chapter Luncheon March

Engineer Regimental Week 24-28 April

HON David Hobson Scholarship 30 April Submission Due

STEM Scholarship 30 April Submission Due

Educational Support Program 30 June Submission Due

AEA Industry Seminar 10 August

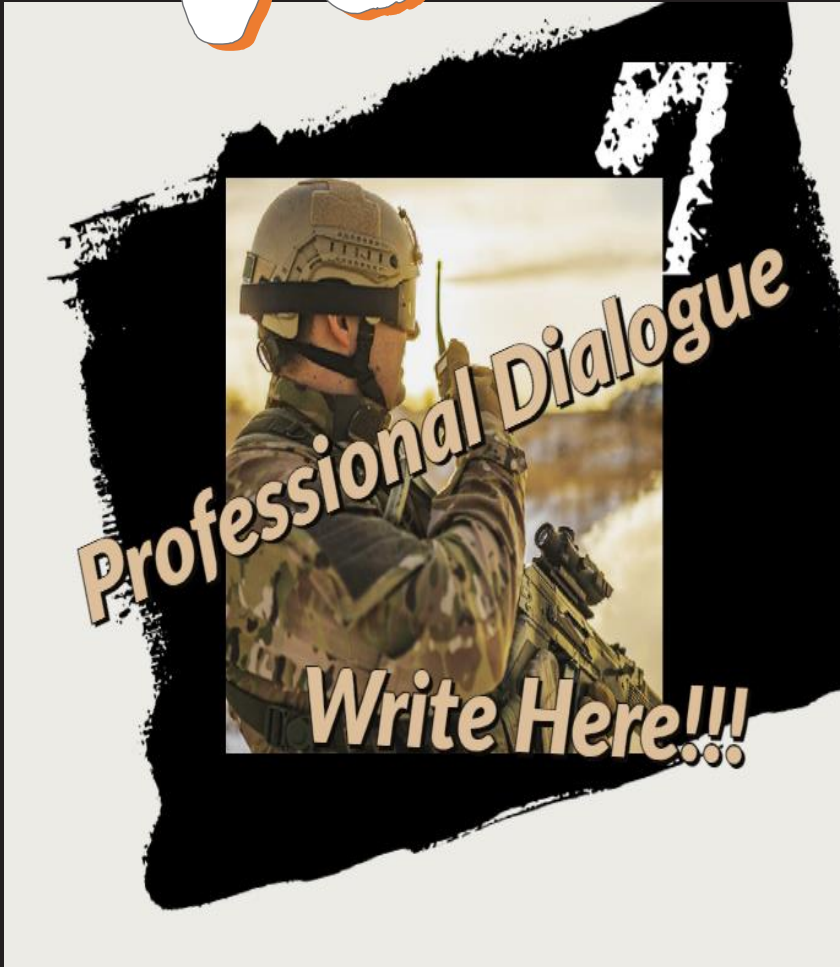
Annual Engineer Castle Ball 11 August



For more information www.armyengineer.com or xd@armyengineer.com

ARMY ENGINEER MAGAZINE WINTER 2023

VOTE



On Behalf of the Engineer Regiment the Army Engineer Association is proud to present the ESSAYONS CLUB submissions.

We want to encourage a thoughtful discussion on these topics and would like to capture your thoughts insights on these topics. We will consolidate comments and provide them for to Engineer School to expand the discussion using these insights.

Let us know your point of view.

Essayons Club



DEVELOPING THE ARMY OVER

TIME

By SPC Kristofer L. Smith

Since 1765, the United States has been no stranger to conflict. Early on, the United States Army adopted a guerrilla style tactical approach to combat the superior numbers of the British forces. As times changed and technology advanced, the Army adopted its tactics to the situation, creating a powerful combination between land, air, and sea. Specialists in each field of the combined arms have also created devastating results when our own forces and allies combined. Even early on, the Army utilized Medics on the ground to save wounded, tankers to handle both small and heavy arms targets, bombers to level military facility and positions, naval vessels to transport troops and armor, and battle ships to secure supply routes and to bombard other ships and coastal positions.

Through the combination of these arms, it has allowed the Army to be very flexible with its tactics. However, one universal thing that has always been critical to its successes - careful and precise planning in each operation. Developing plans of action, emergency responses, and having nearby units to assist to keep the mission successful. In World War II, the United States was tested on all fronts. At war at sea in the Pacific, troops island hopped to secure island after island. Air support was also critical for both our naval operations and in the western theater. Careful planning and decisive action from both leaders and soldiers made each mission a success.

Even more recently, the War on Terror since 2001, our tactics had to change once again. The enemy then did not wear a uniform, they wore civilian clothes, and blended in with any bystander on the side of the road. The Army had to develop tactics that would allow us to defend ourselves and still assume the offensive in the right conditions. Reconnaissance, although always an important asset, was essential for locating precisely where the threat was in a sea of people in a sea of people who blended in with the common man. With the growth of technology, we also developed the ability to perform night operations, raids, as well as quick and undefendable assaults from close range.

Throughout time, we have developed specialists, to excel at certain Waspects in the field of combat. Cyber warriors to defend and assault the growing world of technology all around us. Rangers who excel at navigation and acting in small groups with deadly accuracy from close range. Pilots who can operate different vehicles with different functions to provide multiple forms of support that we may need from the air. Captains who can guide a ship or even a fleet to victory over open waters. These experts also include the engineers.

The Role of The Engineer

Engineers have always played a crucial role on the battlefield. They are the in between for what can and cannot be possible during an operation. A road may be blocked off, preventing vehicles from passing. However, with an engineer unit, the obstacle may be cleared, and the desired route can be followed. If there are too many avenues of approach to a defensive position, Engineers can emplace obstacles for additional security. If we require more defendable fighting positions or need to remove enemy positions, Engineers can handle both. Future threats to our nation will likely come from threats who have well designed and organized militaries such as our own. They will have modern armor, planes, ships, tactics, equipment, and technology. Our Engineers will need the knowledge, skill, and equipment to handle whatever the job may ask for - both on the ground and at sea.

On offense, an Engineer is inclined to deal with extreme amounts of pressure. Bullets may be flying, bombs dropping, and Engineers could be either the target or in the middle of it all. Engineers will need countless hours of training at their task so that when this pressure hits them, they can still complete the desired task. Breaching anti vehicle ditches, wire, minefields, whatever the situation may be, they will need to be able to act quickly and decisively. They will need to breach these obstacles in different environments, whether it be dry and rocky, or raining and in the mud. It always pays to use the right tool for the job, but what happens





when that tool isn't available? Engineers should also be trained to improvise and become comfortable using different equipment for different tasks at hand.

On defense, many difficult factors and choices will be at play. What obstacles can the Engineer build? What fighting positions should be implemented? Where and how many do we need? Do we have the time to effectively build them all? When communicating what we can and cannot do, given the circumstances, Engineers at any level, leaders or operators, should be able to explain both limitations and capabilities. When actually operating, Soldiers should be able to consider the terrain on which they are operating on and be trained to build their defensive positions as quickly, without sacrificing functionality.

Engineers still have a role to play at sea, not just on land. Maintaining and keeping ships and their weapons afloat is an absolute necessity. Mines can also appear underwater, posing a threat to submarines and other vessels. Natural barriers like reefs, rivers, hills or valleys can be in the way of an operation. Engineers will need training on their equipment to approach and defuse deep sea mines, remove natural barriers, or find ways over them or around them. This is why we have different types of Engineers and different Engineer unit structures.

Bridging companies specialize in crossing gaps, like narrow ravines or rivers that ordinarily a vehicle could get stuck in. Multi role bridging companies can carry equipment or troops over bodies of water to assault from unexpected angles or quicker more direct approaches. Route clearance companies can clear paths of mines and other forms of obstacles that may slow down a convoy. Construction companies can build roadways for transporting

supplies or more permanent forms of defense like concrete barricades or watch towers. The newly formed armored combat engineer company can perform bridging operations, offensive breaching, and defensive operations while still maintaining strong offense and defensive capabilities without the additional support of another unit. This allows the unit to act more independently while still maintaining effectiveness against both infantry and some armored threats.

Engineers also have roles to play in urban areas as well. Combat engineers who excel both in explosive breaching and weapon handling are effective with opening locked doors or bringing down structures. Construction engineers can also be useful in city environments. Both in repairing any damages done for continued use or in complete demolition. In a much more direct approach, the equipment could be used to bury a stronghold with its defenders still inside.

Looking Ahead

Future units that come to form will need to consider what they can do on their own. Without proper support, they could find themselves stuck in a very unfavorable position in combat or unable to perform a desired task. Newly formed units should consider the benefits of performing multiple roles or specializing in one specific task. They will also need to consider the potential environments they will be in. Engineers could operate in jungles and forests, or in open plains. It could be a dry and hot environment or a wet and humid one. The ground could be soft like sand or layered with rocks. All are important in the life of an engineer.

Future leaders should be well versed in their equipment and tasks in the unit to train and mentor soldiers under their charge. They need to be able to explain the importance, function, and how to construct anything the mission can call for. They will also need to be a bridge

between what is requested and what the soldiers are actually capable of doing. It is not uncommon for engineers to be requested for something they may not be able to perform. It is up to Leaders to explain what they can do, how quickly, and how effective it will be.

Future operators will need to take their training seriously and learn everything they can before the time comes to use that training. Operators should seek opportunities for additional training as well as researching job related information for their personal growth. They too, will be leaders one day, and will need to guide others to success as well. Leaders should also encourage extra training, as well as providing tools and resources to assist them.

Whether in tandem with other Engineers, artillery, or infantry, the ability to build up or break down the environment in our allies favor is crucial to gaining the upper hand in combat. There is much to be learned, a very diverse array of things to train, and much experience to be gained through countless situations. All of which will build an operator, and a soldier in general, to be the best they can be.

It should be more common ground for engineers to train with allied near peers who can effectively demonstrate what going against a threat on equal levels to them is like. Knowledge is a weapon that could completely alter the course of battle. The more knowledge we can feed into our engineers for them to specialize in and implement in different scenarios will no doubt be a benefit to the Engineer core.



Photo by SPC Hassani Ribera Soto



Photo by Mr. Tad Browning



Photo by CPL Rob Kane



Photo courtesy of GDELS

SPC Kristofer L. Smith is assigned to the 59th CEC-A, 20th EN BN at Fort Hood, TX. He joined the army as a 12N at eighteen years old in 2020. His duties include operation of heavy construction equipment such as the Dozer and I-HMEE to build fighting positions, defilades, and ditches. All of the images are courtesy U.S. Army and/or specified contributors.

MS. MADISON BROOK RICHARDS

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MS. ALICE MALASIG



Army Engineer Association

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Opening the Island Preparing for Airfield Damage Repair in the Maritime Domain

CPT Nathan Hall & 1LT Hannah Gillan

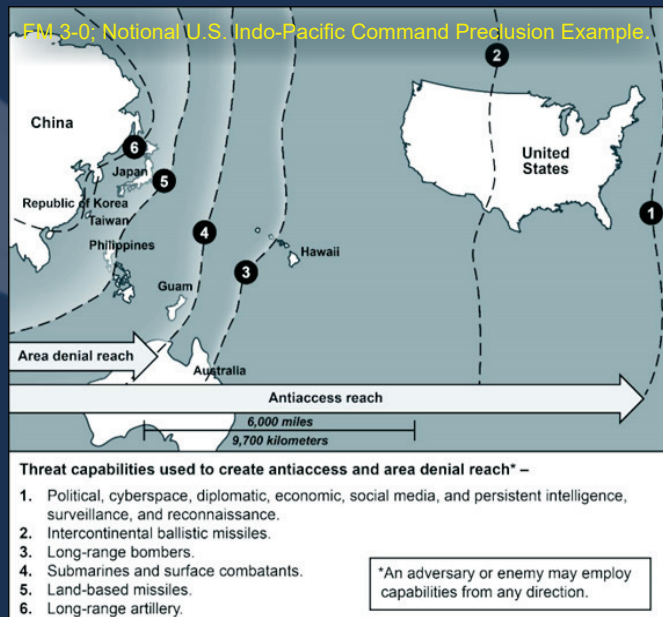
The Army and the joint force are changing. In response to the anticipated threats of the upcoming decade, particularly the 'pacing challenge' of China in the Indo-Pacific region, the Army has unveiled its new Field Manual on multi domain operations. Touted as the most significant change to Army doctrine since the 'Air Land Battle' of the 1980s, the new operational concept not only seeks to demonstrate a set of first principles for 21st century conflict and competition, but also to articulate the Army's role in operating environments more typically associated with the U.S. Navy and Marine Corps. In the maritime domain of the Indo-Pacific, one of the Army's key contributions to the joint force is to assist in gaining and maintaining operational access via the forcible entry. To support joint defeat of enemy anti access and area denial (A2/AD) in a maritime or littoral environment, the Army must be well-prepared and well-practiced at all forms of forcible entry. Airborne forces, for instance, buy time and space for the joint force to get to the fight, relying heavily on the rapid seizure of existing infrastructure (rather than new construction) as a lodgment through which to generate combat power. To ensure the success of these and other forcible entry efforts, the Engineer regiment must hone an existing capability - airfield damage repair - to the unique characteristics of the Indo-Pacific region and the maritime domain.

Airfield Damage Repair (ADR) is an engineer task that entails the use of portable and semi-portable tools and equipment to restore a "Minimum Operating Strip" (MOS) to a damaged runway. ADR is a broad discipline practiced across the services, and can include diverse scenarios: the repair of a friendly runway (i.e. a main operating base is attacked by long-range fires, and prepositioned engineers and equipment must restore the operational capability of its runway), or repair of an airfield not yet under hostile contact (allowing civilians the option to evacuate in the event of a deteriorating security situation). These types of scenarios are more likely in the "second and third" Pacific Island chains, where U.S. bases are generally on U.S. territory, with Air Force or Navy airfield repair capabilities largely present at existing facilities. The most lethal ADR scenario would instead occur in the contested "first island chain" - the rapid repair of a runway that has been

denied by the enemy to prevent our use upon seizure. For our purposes, we will limit our focus to the expedient version of ADR most commonly associated with forcible entry or airfield seizure: deploying forces to a remote location or austere airfield and restoring its air land capability, with as little equipment as possible.

Our adversaries are not blind to the importance of airfields; conflict with any peer competitor is sure to include the early and repeated targeting of enduring airstrips. Recent examples in EUCOM bear out this assumption as shown the aftermath of Russian rocket attacks on Ozerne Airbase in Ukraine in February of 2022. China's efforts in the South China Sea reinforce the importance of existing airfields, both as force projection platforms and as targets; China is hard at work turning atolls into airfields, expanding their sphere of influence at less cost than an expanded blue-water navy. In the absence of a viable alternative for projecting and resupplying ground forces in a maritime theater, the mobility of our own joint force will remain heavily reliant on island landing strips. It is thus doubly critical that the Army's light engineer units are properly equipped and prepared to execute ADR, alongside joint and multinational partners, under the unique conditions of the Indo-Pacific operating environment. With some modifications to unit-level training, doctrinal expansion, and a pursuit of better interoperability with our joint partners and research proponents, the engineer regiment can ensure an expedient ADR capability commensurate with the scale and the specifics of the DoD's "priority theater."

As with any collective task, ADR proficiency and preparedness across the force fluctuates with training cycles and competing missions. The onus of responsibility for improving and adapting training to better fit the INDOPACOM scenario rests with the engineers on the ground - the select FORSCOM units that will practice and execute ADR in a Large Scale Combat Operations (LSCO) environment. The majority of this expedient ADR capability resides in the XVIII Airborne Corps, which in some part missed the Army's reorientation towards INDOPACOM in the mid 2010's due to repeated deployments in support of Operation Inherent Resolve. Even in recent months, the Corps and its immediate response units have been called upon as an answer to Russian aggression in EUCOM, denying some opportunity for 'America's Contingency Corps' to focus on the pacing threat in the Pacific.



Beyond the standard doctrinal means of improving training quality (increasing the frequency of nighttime ADR, incorporating real-world airborne/air assault insertion of equipment, etc.), these units should seek to train under conditions that more effectively simulate an INDOCOM scenario. A near-term initiative that will pay dividends in this regard is replication of theater materials and environment. Over time, engineers become familiar and comfortable with the material properties of their home station; both Airborne Engineer Support Companies (ESCs), for instance, practice dirt-surface ADR almost exclusively in either specially procured airstrip capping material, or native North Carolina soil. In combat, such a repair would typically involve the use of local material (finding and utilizing fill dirt adjacent to the runway), the properties of which vary widely (as any engineer working in the clay of Hawaii's Pohakuloa Training Area could attest). Small unit leaders should seek opportunities to practice with non-local aggregate and spoil, in order to gain familiarity with, and adapt processes to, the materials expected at a Pacific Island landing strip.

Likewise, the impact of the environment on surface repair cannot be overlooked. Swaths of INDOCOM are subject to a significant monsoon season, while other portions of the theater extend into the Arctic Circle. An ESC from Fort Bragg would face a steep learning curve attempting to conduct ADR under the Arctic conditions typically negotiated by Alaska's 6th BEB, or under the unrelenting rains characteristic of a Pacific monsoon season. These gaps in experience speak not only to the importance of varied training environments, but also to the importance of better proliferating best practices.

Over the long term, Army planners should seek to incorporate ADR in joint training, specifically the expeditionary deployment and ship-to-shore projection of ADR capability. The newly released FM 3-0 anticipates that, "In a maritime environment, Army forces are likely to conduct two complex forms of forcible entry operations: airborne or air assault and amphibious landing." The Army's tailored ADR forces are largely familiar with only one of these. In a forcible entry scenario, an Army ESC must be prepared for insertion under canopy, via sling load from a U.S. naval vessel, or even landed amphibiously with the intent to rapidly transition to and complete repair operations on an island airstrip; if the scenario is possible,

we should replicate it. To this end, utilizing an existing, high-value training event provides an opportunity for integration. As soon as is feasible, USARPAC should include forcible entry and ADR in the Pacific Pathways series of training exercises.

RESEARCH AND EQUIPPING

The primary equipping challenge for expeditionary ADR is to provide the maximum capability in the least amount of space. Pavement and soils engineering have existed for centuries, and even the modern tools of the trade are fairly well-refined; in this sense, efforts to better equip a Light Airfield Repair Package (LARP) are minor improvements and iterations on existing technology. The most interesting of these potential improvements is the engineer vehicles that compose a LARP.

A Light Airfield Repair Package is inherently tailorable and scalable, and the equipment it comprises will change based on mission parameters. Typically, eligible for inclusion in the LARP are a combination of the High Mobility Engineer Excavator (HMEE), D6K Bulldozer, 924H Scoop Loader, M1094 5-Ton Dump, M400 Skid Steer, and a Forward Aerial Supply box including expendables, consumables, and a purpose-built ADR Kit. As previously mentioned, the ability to bring smaller, modular platforms in place of larger, heavier construction equipment is critical for reducing the space and transportation assets required to place the LARP at the point of contact.

In this vein, the small, maneuverable M400 Skid Steer is a standout performer - a single construction platforms with multiple attachments to perform various functions, the M400 can also move in and around surface damage effectively. Despite these desirable attributes, the skid steer, both in its

current model/configuration and via potential upgrades, provides immediate opportunity for improvement.

First, a "high-flow" variant (M400 modified with a more powerful hydraulic system to run tools from the ADR Kit) exists in the Army's fleet but has thus far failed certification for airdrop by the Airborne Special Operations Test Directorate (ABNSOTD). The existing "rigging solution" is unable to prevent damage to the retrofitted hydraulic pump on landing. The Five-Year Program dedicated to certifying the high-flow M400 must be revisited as soon as funding allows. Second, over the long term, Airborne



Ozerne Airbase crater damage, Zhytomyr Oblast, Ukraine - February 2022.
Photo courtesy of Planet.com through open-source satellite imagery.

618th Engineer Support Company (Airborne) Paratroopers train on concrete cutting using hydraulic power from the HMEE. Photo by 1LT Ross Caywood.



A 3-7FA HMMWV occupies a protective position in the wet clay of East Range, Schofield Barracks during Exercise Steel Crucible, 2021. Photo by SPC Jessica Scott.



engineer units intended for ADR missions should explore a vehicle that fills the capability gap and size/weight gap between the M400 and the HMEE. The HMEE offers a more robust hydraulic system than the standard M400, and, due to its weight, can handle dig and excavation tasks more quickly than the standard or high-flow M400. However, the HMEE is simply large. It requires a 32-foot platform for airdrop, larger than any other component of the LARP, and can only be dropped from a C-17, vice the C-130-capable M400. A heavier skid steer (e.g., the Caterpillar 279X, 299, or similar) would enable more significant digging and excavation, accommodate existing tools like the skid steer's rock saw attachment (too heavy for the M400), and, once airdrop-certified, would offer additional capability without the significant increase in aircraft space required by a HMEE.

Beyond specific upgrades to existing equipment, the flow of information between ADR practitioners and the experts behind researching and developing their tools represents an opportunity for improvement. Each of the services maintains some degree of ADR expertise in its practitioners (in the Army, these are two airborne Engineer Support Companies and a small handful of airborne Brigade Engineer Battalions), but the DoD's tri-service lead for ADR and airfield pavements research is the Engineer Research and Development Center (ERDC). ERDC does outstanding work not only in its research function, but also in acquisition and transition (demonstrating and practically applying their research for the end user). The aforementioned custom ADR kit is just one example of many innovative contributions now firmly ensconced in ADR SOPs across the Army.

Despite the existence of this robust research enterprise, it is not uncommon in ADR (as in many examples of Army acquisition) for a unit to be fielded equipment that does not solve a problem, or to have a problem without the appropriate equipment. Simply put, the feedback loop between R&D and end users does not always function smoothly. The demand signals provided to ERDC and other acquisition sources seem to be generated echelons above the units that will be their eventual beneficiaries, leaving platoon- and company-level leaders scratching their heads about receiving hugely space- and weight-consuming masonry kits, or wishing for a more powerful Skid Steer variant. Essential to improving this

system is formalized and frequent feedback: while we remain in a period of competition with a known technological peer, FORSCOM units such as the 20th Engineer Brigade must liaise with ERDC counterparts regularly, and with an understanding of what specific feedback will best drive existing research. Current efforts along this line include recent key leader engagements and the development of an 'ADR Symposium.'

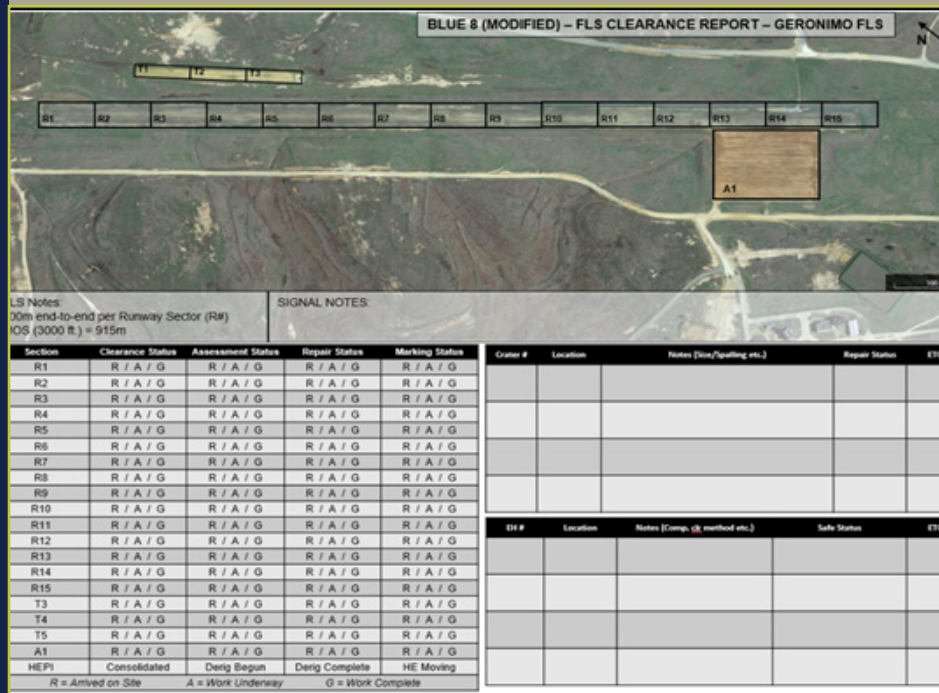
DOCTRINE & ORGANIZATION

In place of Army-specific doctrine, the joint force uses the Tri-Service Pavement Working Group Manual (TSPWG Manual 3-270-01, published by ERDC), which captures current repair methods, equipment, and procedures across the services. This document is a significant improvement from its predecessor, a Unified Facilities Criteria document that was laden with technical information beyond what is appropriate or necessary for practitioners in the force. However, the existing doctrine does leave room for improvement and expansion. Per its own introduction, the TSPWG Manual is limited in scope to pavement repair, omitting, among other areas, damage assessment and repair quality criteria. Training and common understanding within these areas is thus typically guided by unit SOPs, which vary in quality and completeness. These important proficiencies, as well as the manual's currently blank Appendix A ("Best Practices"), are targets of opportunity for development and publication in a future iteration.

In addition to continued refinement of the TSPWG Manual, practitioners would benefit from the refinement and expansion of Task and Evaluation Outlines for the collective tasks that make up the Airfield Damage Repair mission. Under its METL, an Airborne ESC is currently subject to evaluation on 'Perform Roadway Crater Repair,' and 'Repair Airfields,' both platoon-level collective tasks that miss the mark in capturing the methods, equipment, and procedures referenced above. The platoon collective task 'Perform Runway/Taxiway Crater Repair' largely captures the methods, equipment, and procedures laid out in the TSPWG (although it alludes once again to tasks not covered by the manual, such as 'repair quality criteria'). This collective task should be aligned with the Airborne ESC's 'Provide Engineer



Sample FLS Assessment and Clearance Report format for Geronimo FLS at the Joint Readiness Training Center. Sourced from Sample Report Format from 618th ESC (A)



support to Mobility Operations’ MET (either in addition to ‘Perform Roadway Crater Repair’ or in its stead). Furthermore, the Army should codify a new collective task for airfield assessment and other pre-repair activities, enabling a more objective assessment of a unit’s proficiency, task linkage for leaders at lower echelons, as well as guiding unit-level training in the supporting tasks.

Finally, as the Army modernizes for the approaching “Army 2030” benchmark, HQDA and the Engineer Regiment are both working through Force Redesign proposals to determine and field the most effective force structure for the new Operations doctrine. These proposals notably include the removal of the BEBs from Brigade Combat Teams in favor of a division-aligned Engineer battalion consisting of Combat Engineer Companies (CECs) and, in some cases, an Engineer Support Company (ESC). Given the importance of force projection in the Pacific, and the consolidation of the airborne skillset to a select few units, it is essential that, in addition to the ESCs housed in 20th Engineer Brigade and the 82nd Airborne Division, the newly rechristened 11th Airborne Division receives an ESC (A), increasing the total ADR capacity prepositioned near the Pacific.

Opportunities to better prepare for ADR in the maritime domain exist at every echelon, across many lines of effort. At the small-unit level, leaders can refine training to better reflect the unique operating characteristics of a maritime airstrip and should capture and disseminate SOPs freely to feed a growing body of knowledge across the force. The same leaders are responsible for more frequent and better liaising with ERDC to provide more productive feedback for ongoing research.

At the enterprise level, various stakeholders can make immediate or near-term gains for the ADR practice. The ABNSOTD should prioritize the high-flow M400 Skid Steer for airdrop certification, even as a heavier skid steer variant is considered for long-term fielding. The Tri-Service Pavements Working Group should refine and expand its ADR manual to include both ADR Best Practices and airfield assessment procedures; in the same vein, the Combined Arms Center’s Training Management Directorate should develop and publish complementary T&EOs for airfield assessment and multi-surface ADR procedures to better direct unit-level training. Finally, as the Army develops its future force

structure, the addition of an Airborne ESC to the 11th Airborne Division should be considered.

There is reason for optimism about the Regiment’s way ahead in preparing itself for ADR in the maritime domain. Leaders from the EAB engineer brigades, platoon-level ADR experts, and joint force representatives (such as the Seabees) converged on ERDC’s headquarters in late fall of 2022 with an eye to creating shared goals, improving interoperability, and familiarizing themselves with the techniques and equipment still under development. The 20th Engineer Brigade, perennially responsible for the Immediate Response Force’s Airfield Damage Repair mission, is hosting a multi-week ADR Symposium’ in the summer of 2023, intended to share TTPs and experience across the practitioners of ADR in each service, as well as with ERDC and other entities more involved with institutional efforts. These efforts demonstrate an Army-wide intent to better train and equip our engineer forces for this unique requirement. Between the research proponents and ground-level practitioners, we have both the will and the way to prepare for ADR on the future battlefield - we need only to put them together.

CPT Nathan Hall is an engineer for a USASOC element in the National Capitol Region. Previously, he commanded the 618th Engineer Support Company (Airborne) at Fort Bragg, NC. He deployed twice with USASOC in support of Operation Inherent Resolve. He holds a Masters in Sustainability Engineering from Villanova University, and a B.S. in Mechanical Engineering and Mathematics from Vanderbilt University.

1LT Hannah Gillan serves as a company Executive Officer in the 2nd Battalion, 58th Infantry Regiment at Fort Benning, GA. She previously served as the Executive Officer of the 618th Engineer Support Company (Airborne) at Fort Bragg, NC. She holds a B.A. in International Studies from the Virginia Military Institute.



Enabling Fighting Vehicles to

Defend



Move

FIGHT

Article and Photos By Mr. Richard Beatson

Even prior to the current war in Ukraine, NATO Armies were struggling with how to maximize capabilities, while living within challenging budget responsibilities. Near peer conflict, political instability and rapidly accelerating technology make for a conflict environment that is characterised by unpredictability.

In response, the well-known armoured vehicle requirements triad of mobility, survivability and lethality has been upgraded in recent years to include connectivity, autonomy and adaptability. This move creates an all-encompassing and demanding 'Steel Hexagon' of requirements and trade-offs. This has been reinforced as we have begun to review and understand operations in Ukraine, where the expectation of overwhelming maneuver forces was shown to be blunted using new weapons (Drones predominately) and more tried and true means of counter-mobility and denial of gap (river) crossing supported by artillery fires.

This supports the requirement for all future combat formations to achieve a high level of adaptability. This is shown by the need to respond both strategically and tactically to a battlespace and threat profile which will continue to evolve, including new weapons, but also the longer held tenants of mechanized conflict.

In order to succeed in this complex operational environment, the ability to readily deploy highly adaptable, agile and scalable equipment can offer a significant battlefield advantage. The role of armoured vehicles equipped to adapt to varying mission sets without fundamental modifications will be critical.

One key approach is the integration of rapidly interchangeable front-end equipment, which offers a unique solution to multiple challenges, enabling high levels of adaptability, and as a result, offering the capability to enhance mobility, survivability, lethality and autonomy.

Recognizing the changing demands placed upon armoured vehicles, investment in the development of new products, supporting not only the combat engineer, but also combat forces and combat support units is vital. As the ability to conduct Intelligence, Surveillance and Reconnaissance (ISR) will limit the massing of forces, armoured vehicles may have to perform multiple roles, including dealing with rubble, standard obstacles, and scatterable mines, without engineer support nearby.

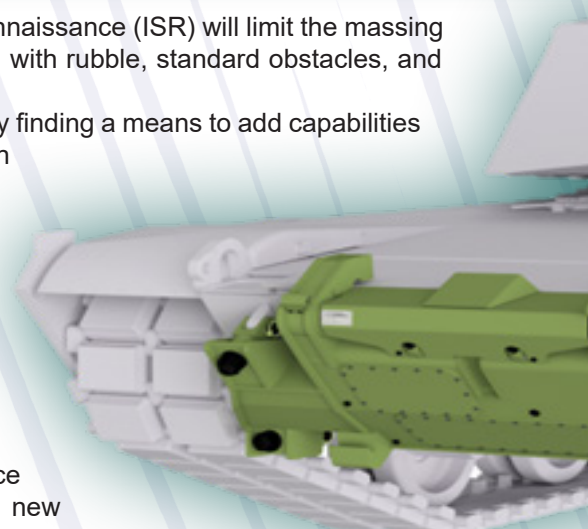
Industry, in partnership with the military, has begun to solve these problems by finding a means to add capabilities which can be rapidly added, interchanged, or removed. Not only does the approach offer high levels of adaptability for individual armoured vehicles, it also offers the opportunity to scale different types of armoured vehicles according to mission requirements.

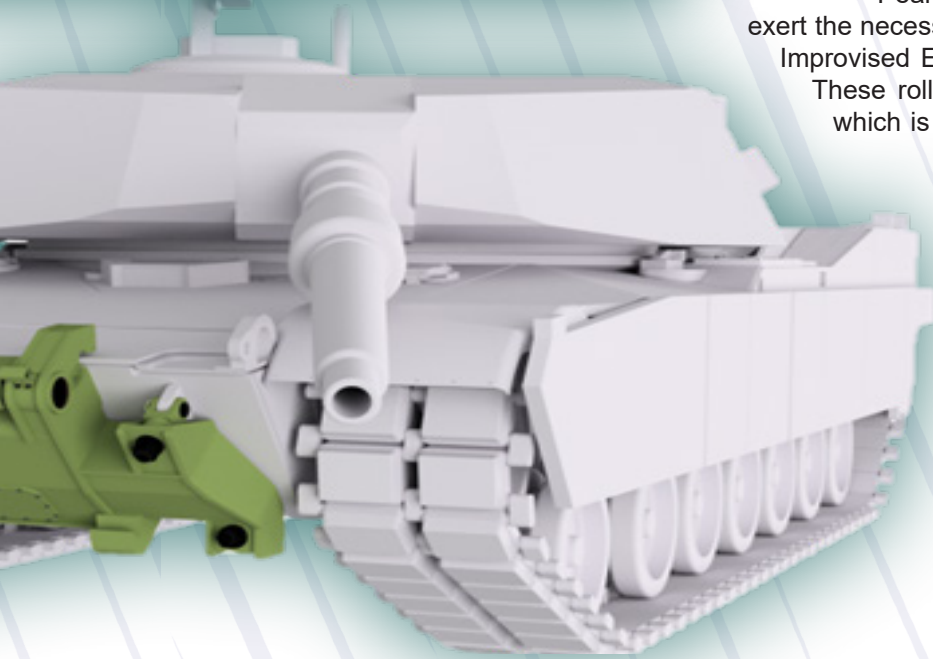
The approach to providing scalable battlefield mobility, counter-mobility and survivability has evolved, driven by a need to help combat vehicles such as Main Battle Tanks to defend, move and fight on a battlefield which is predicted to become ever more sprawling and complex. One example is the development of an attachment named SLICE from Pearson Engineering. It is attached to a combat vehicle to rapidly integrate interchangeable front-end equipment to meet the needs of the mission. The concept was built upon experience with Engineer systems to support mobility and counter-mobility, and leveraging new technologies to allow all combat vehicles to rapidly add or remove equipment to support mission requirements.

The basis for this was recognizing combat engineers cannot be everywhere, all of the time, particularly in increasingly complex and dispersed conflict environments. SLICE has been developed to enable the integration of equipment to defeat ordnance and obstacles to combat vehicles without permanently changing their mission or modifying those vehicles.

Traditionally called a 'Battalion Counter-Mine Set', such equipment has typically required permanent modification of the vehicle to enable integration. Whilst this is a proven concept with its own benefits, SLICE provides enhanced flexibility and crucially, reduced impact on vehicle survivability as a 'plug and play' interface.

Members of the British Army Royal Armored Corps attend the British Army Expo that was held on Salisbury Plain in September 2022. The vehicle featured is a Challenger 2 MBT.





Integration of SLICE is achieved with simple attachment points, designed to meet the vehicle geometry and NATO slave socket. SLICE contains within it all other electric and hydraulic processes to facilitate the integration and operation of the equipment. Once integrated, equipment can be attached, operated, and released simply in field conditions and without any special tools.

Whilst the integration benefits are clear, SLICE also delivers a tactical advantage. Such simple integration methods mean that any vehicle of the same type and geometry can use a SLICE and add front-end equipment, providing high levels of mission flexibility, and enabling Commanders to scale quickly according to combat requirements. Further, front-end equipment can be pooled between vehicles with different roles, meaning that Armoured Engineering Vehicles and Main Battle Tanks can share equipment to overcome natural and deliberate obstacles.

Whilst it is unlikely that a Main Battle Tank or other combat vehicle would be deployed to deliberately clear a minefield, providing it with the capability to do so, when it needs to be somewhere, enhances the Armed Force's ability to respond to rapidly changing situations and to overcome the tactics of adversaries. This leaves Armoured Engineers free to concentrate on specialist tasks in support of the wider force. Armoured Engineering Vehicles will also no longer clearly signal direction of travel and intent, providing a muddled picture to adversaries and supporting freedom of maneuverer. Three types of equipment are typically used with combat vehicles,

Self-Protection Mine Plough

The Pearson Engineering Self Protection Mine Plough, or 'Track Width Mine Plough' as it is commonly known, moves concealed or buried mines and improvised explosive devices away from the vehicle's tracks to create a safe route.

Self-Protection Roller

Pearson Engineering Self-Protection Rollers are designed to exert the necessary forces into the ground to initiate live pressure fused Improvised Explosive Devices across the track width of the vehicle.

These roller types are temporarily fitted to the front of a vehicle which is going to be used in an area where there is a possibility of Improvised Explosive Devices. Ground-engaging wheels reach out significantly ahead of the vehicle to detonate the threat before the vehicle wheels reach it. This capability has saved countless lives and can be tailored to meet the very specific needs of the end-user.

General Purpose Blade

The General Purpose Blade is designed to overcome obstacles such as roadblocks. It can also be used to create tank scrapes to take cover in contested areas where survivability is key.

Mr. Richard Beatson in early 2016 joined Pearson Engineering Limited operating in the area of counter mine and counter IED equipment where he is the Vice President Business Development. He was commissioned into the British Army in 1986 and served as an infantry officer, rising to the rank of Colonel and also commanded an infantry battalion and infantry battle group. His operational deployments saw him serving in Northern Ireland, Kosovo, Bosnia, Horn of Africa, Cyprus, Iraq, Sierra Leone and Afghanistan. Mr. Beatson left the British Army in 2007 and took up employment with BAE Systems in the United Kingdom acting as a business development manager for conventional munitions. Other appointments since then have included time with Esterline Defense Technologies selling electronic counter measures and a period heading up the Government & Defense division of J. C. Bamford (JCB) Excavators.

Chronicles of COURAGE

★ PFC DAVID R. HUTCHINSON ★

by

TROY MORGAN

Director, U.S. Army Engineer Museum
Fort Leonard Wood, MO

On the morning of May 21, 2008, just four days into a year-long tour in Afghanistan, PFC David R. Hutchinson manned a MK-19 automatic grenade launcher in the turret gunner's position of the third vehicle in a convoy. The convoy contained seventeen soldiers in four vehicles from the Army Reserve's 420th EN BDE. The soldiers had just finished extensive training to perform as personal security detail for the brigade. This convoy was their first mission "outside the wire." As the vehicles passed through a steep mountain pass, 15–20 enemy attacked the convoy with rifle-propelled grenades (RPG), machine guns, and automatic rifle fire.

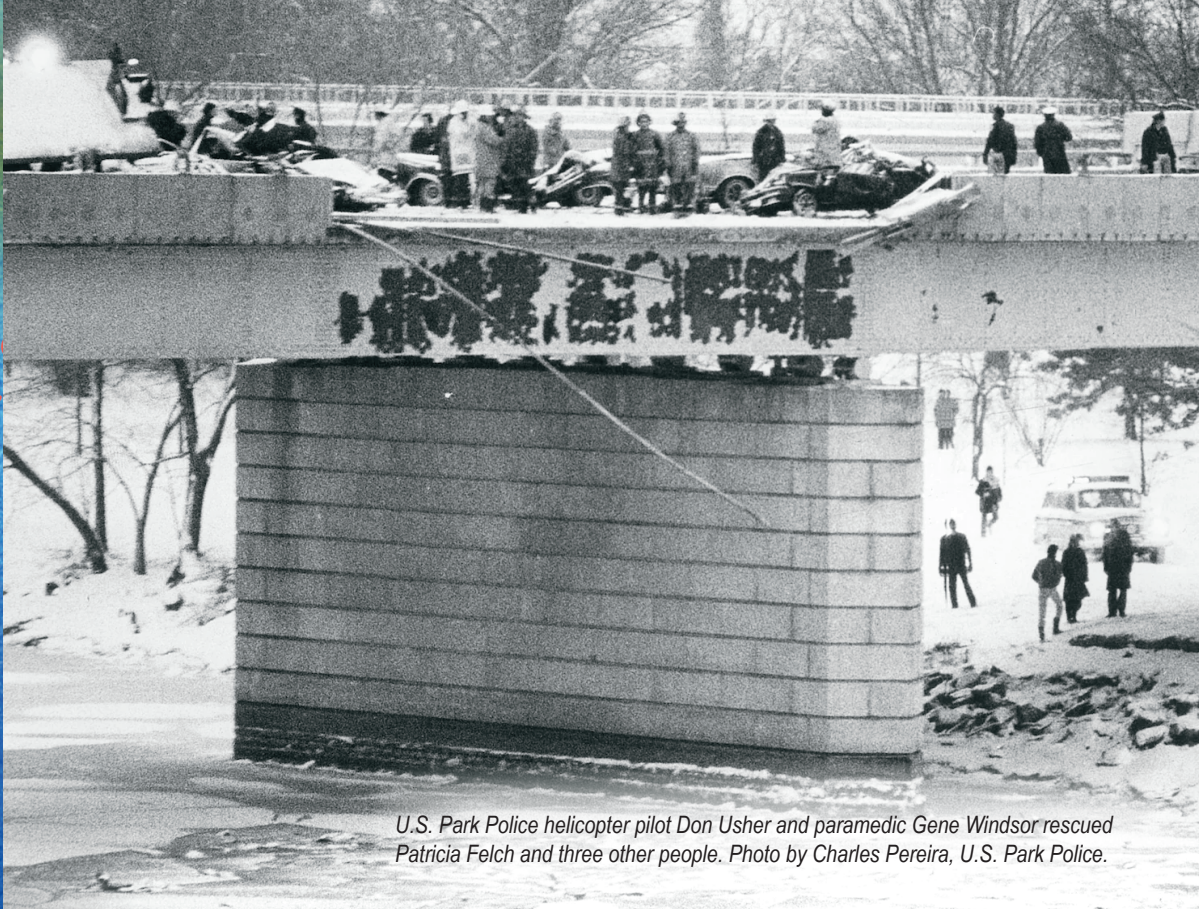
PFC Hutchinson heard the .50 caliber machine gun on the lead vehicle open fire. Hutchinson chambered a round in his MK-19 and scanned his assigned sector to the right of the vehicle. The scan revealed five insurgents firing from foxholes and a machine gun supporting them. Hutchinson quickly determined that the machine gun position was the key to the enemy's assault. He directed his MK-19 fire on that position and destroyed it. Enemy fire now concentrated on Hutchinson's vehicle. He responded with MK-19 fire against the exposed enemy troops. Hutchinson expended an entire can of ammunition, destroying positions and killing at least five enemy soldiers, before two RPGs struck the crew compartment of the vehicle in which he was riding. RPG shrapnel impacted his right leg and caused him to collapse unconscious into the cab of the vehicle.

The devastating fire dispensed by PFC Hutchinson broke the back of the ambush and allowed the convoy to exit the kill zone. Hutchinson awoke severely wounded in the crew compartment of the HMMWV. He noticed his first sergeant had serious wounds to the head, neck, and shoulder. Hutchinson ignored his own wounds and administered buddy-aid to the wounded first sergeant. By the time the convoy had traveled the one and a half miles to a medical evacuation site, Hutchinson had stabilized the wounded first sergeant. Once the MEDEVAC helicopter arrived, Hutchinson refused to be carried on a stretcher and walked to the helicopter. This act freed two additional soldiers to provide security for the evacuation site. Because of the severity of his wounds, PFC Hutchinson was evacuated back to the United States.

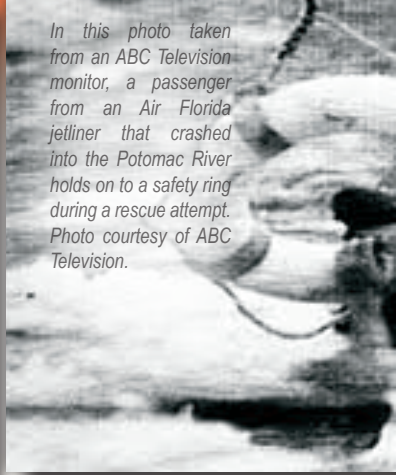
The leader of the security detail recommended PFC Hutchinson for a Bronze Star with "V" device. The recommendation worked its way up the chain of command, garnering glowing recommendations at each level. Finally the award packet reached the desk of Joint Task Force Commander, MG Jeffrey Schloesser. MG Schloesser upgraded the award to the Silver Star, noting "Clear heroism and conspicuous gallantry." **AE**

FACING PAGE: PFC David Hutchinson conducts pre-deployment training at Fort McCoy, WI.





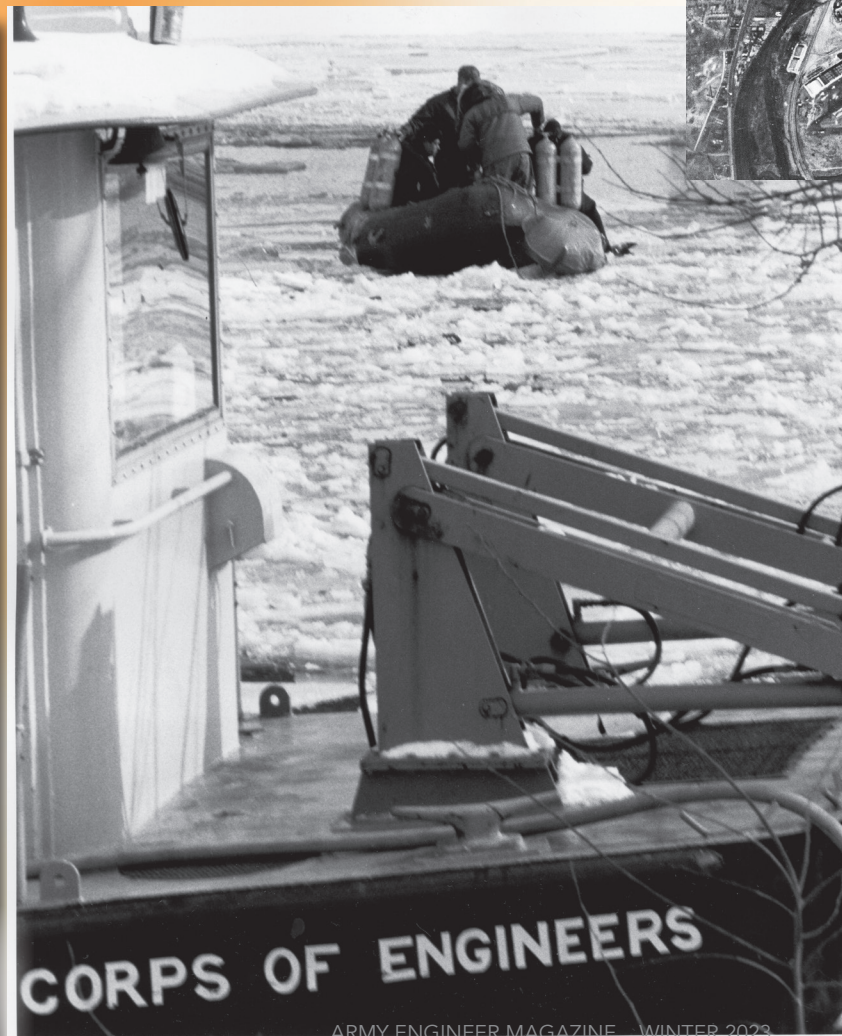
U.S. Park Police helicopter pilot Don Usher and paramedic Gene Windsor rescued Patricia Felch and three other people. Photo by Charles Pereira, U.S. Park Police.



In this photo taken from an ABC Television monitor, a passenger from an Air Florida jetliner that crashed into the Potomac River holds on to a safety ring during a rescue attempt. Photo courtesy of ABC Television.



A U.S. Park Police helicopter pulls two people from the wreckage. Photo by Charles Pereira, U.S. Park Police.



EMERGENCY OPS

AIR FLORIDA FLIGHT 90

1982

On any day, the population of the Washington, D.C. Metropolitan Region, which encompasses Washington, D.C., and its closely surrounding suburbs of Maryland and Virginia, can swell to over 6 million residents, 14 million visitors, and 200,000 workers that leaves the 6,246.4-square mile region brimming with people and bustling with activity. January 13, 1982, in Washington, D.C. was a highly desired but rarely attainable "Snow Day" for us kids. The day that started off at 2 degrees would build to over 8 inches of snow by its end. For me, as a small child, the day went from elation to confusion as double disasters struck the Washington, D.C. region. What a difference a few hours make. On that day the D.C. Metro derailed near the Smithsonian Station where three persons died and 25 were severely injured. A half hour previous, Air Florida Flight #90 crashed into the 14th Street Bridge which links Alexandria, VA to downtown Washington, D.C. The aftermath found 74 of the 79 persons on the plane and another four persons on the bridge deceased. This was before cell phones, so the location of loved ones who were stuck on snowy icy highways, who were not able to move because of a salvo of emergency responses all over the region, or who were passengers on the subways or airplanes was problematic.

On this flight, en-route to a Rapid Deployment Force conference at MacDill Air Force Base in Tampa, FL were USACE's own LTC Herbert L. Hiller and Mr. Arnold Ivener of the Assistant Chief of Engineers Office. They were victims of the crash that day. Mr. Aland Dean Williams, Jr., Citadel Class of 1952 and passenger, died after he passed up the helicopter rescue line 5 times for other survivors. He finally succumb to the mercilessly Potomac River that was surging with jagged blocks of ice. President Ronald Reagan posthumously awarded him the U.S. Coast Guard Gold Lifesaving Medal. Passersby Mr. Lenny Skutnik, Congressional Budget Office aide, dove into the icy water to rescue Ms. Priscilla Tirado who was too weak to take hold of the rescue line dropped from the helicopter. He was awarded the U.S. Coast Guard's Gold Lifesaving Medal as well. Passerby Mr. Roger Olian, federal government sheet metal worker, tied a rope to himself and jumped into the icy water, holding on to defenseless survivors as they waited for the rescue line. He was awarded HHS Distinguished Service Award.

Lives were saved that day through many components that came together to achieve a tremendous emergency response. Clearly the Corps of Engineers has never been comfortable as passive watchers to any emergency. The Baltimore District's River crew based on the Anacostia River in Washington, D.C. and the 30th Engineer Battalion earnestly assisted with search and recovery efforts following the crash.

The NTSB's investigation determined that the pilots should have activated an engine anti-ice system that keeps sensors working correctly. Without these proper settings the engines may have correct power for other conditions but in the blizzard conditions of that day the engines were not set to give enough power for a proper take off. Nevertheless, both tragedies became Focusing Events.

In the D.C. Metro region, we have sometimes found ourselves as involuntary participants in chaos and horror. Unfortunately, disasters would repeat itself in the region with September 11th, the D.C. Sniper, Anthrax attack, and January 6th Insurrection. I wonder if the fear and the loss of these experiences have ever left me as the events go out of focus? I think that they have lingered just outside of my peripheral vision as shadows.

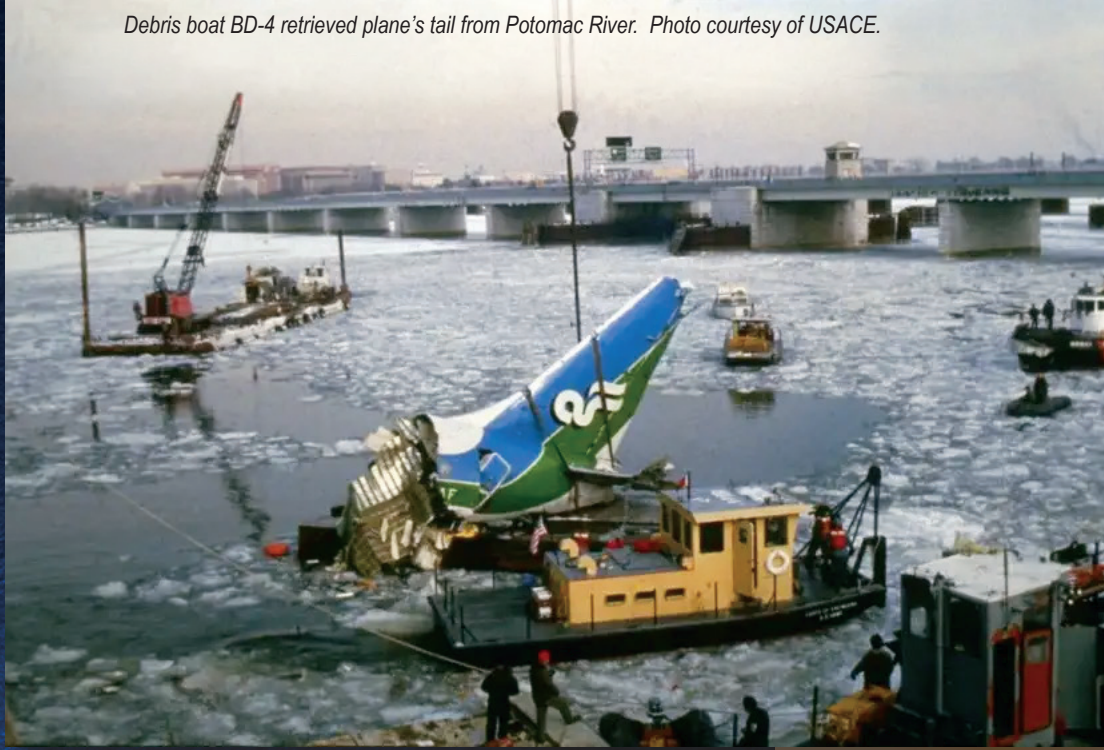


Linda S. Mitchell, Editor, Army Engineer Magazine



A debris boat from the Baltimore District USACE in the foreground as military divers in the rubber boats move out onto the Potomac River during operations to pinpoint the exact location of the wreckage of Air Florida's Boeing 737 on the bottom of the ice-clogged river. Photo courtesy of USACE.

Debris boat BD-4 retrieved plane's tail from Potomac River. Photo courtesy of USACE.

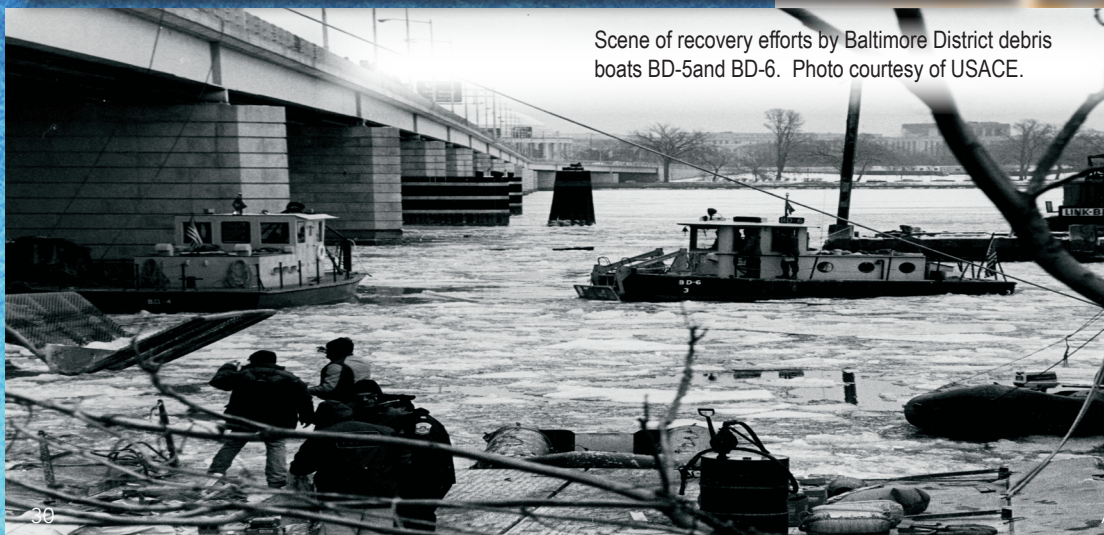


Baltimore District debris boat BD-6 under bridge Courtesy of USACE.



USACE divers in Potomac River. Photo courtesy of USACE.

Scene of recovery efforts by Baltimore District debris boats BD-5and BD-6. Photo courtesy of USACE.





USACE divers in Potomac River. Photo courtesy of USACE.



A U.S. Park Police helicopter pulls two people from the wreckage of the remains of the Air Florida jetliner after it fell into the Potomac River. Photo by Charles Pereira, U.S. Park Police.



Military divers brave the freezing water in their search for victims and clues of the crash. Photo courtesy of USACE.

The Corps of Engineers that Day.....

The Corps of Engineers quickly mobilized to assist the Army, which was acting as the Department of Defense's executive agent for support in disaster and emergency relief. The Corps worked alongside the National Park Police, Coast Guard, and units of the Navy, Marine Corps, and Air Force all under the direction of the DC Police Department and the Federal Emergency Management Agency (FEMA).

The Corps' contribution to the salvage efforts included three debris removal vessels and two 18-by-40-foot barges from the Corps' Baltimore District. The debris vessels' primary job was to keep the river ice broken in order to assist dive crews. They also scooped debris from the area, such as pieces of the fuselage, briefcases, and luggage, which Corps workers then placed in plastic bags and transferred to special holding areas under one of the spans of the 14th Street Bridge.

Corps of Engineer barges were used as platforms for the 82 specially trained Army, Navy, and Coast Guard divers who participated in the rescue and salvage operations. Divers endured challenging conditions: shifting currents, ice chunks littering the river's surface; eight-inch visibility; and water temperatures ranging in the mid- to low-30s. The Army divers who assisted with these efforts were from the 86th and 511th Division Detachments of the 30th Engineer Battalion at Fort Belvoir, Virginia.

Further assistance came from the Corps' Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, New Hampshire, which used an ice-penetrating radar mapping system. What was then considered experimental technology was put to the test to identify the exact location of the underwater debris. The radar equipment was mounted on the skids of an Army helicopter during survey flights over the crash zone, and later was mounted on Navy rubber boats for closer surveys through river ice. This technology was credited with locating the critical "black boxes" which contained the flight data and cockpit voice recorders.

Other vital Army engineer support included river surveying and topographic mapping from the 82nd Survey Company and the 584th Cartographic Company, 30th Engineer Battalion, Fort Belvoir. The 902nd Engineer Company (Float Bridge), 11th Engineer Battalion, also at Fort Belvoir laid pier-like ribbon bridging sections from the shore out over the ice to permit divers to reach the scattered sections of the submerged aircraft.

**Corps of Engineers, Public Affairs Office
Assists with Salvage of Downed Domestic Airliner**

Restoring NY-NJ Estuary Will Create Breathtaking Views and More Bipartisan Infrastructure Law Funding

By JoAnne Castagna, Ed. D



I have a vivid memory as a child while living in Brooklyn, NY in the 1970's. I'm in the car with my family and we're driving along the Belt Parkway when suddenly the vehicle fills up with a familiar stench that tells me we've reached Jamaica Bay. I hold my breath and look out the window. I see a mountain of raw garbage - a dump 100-feet-high - with tiny bull dozers plowing through it. Hungry seagulls circle the top while contaminated soil falls into the bay.

Today, the dump and pungent smell are gone, but not the negative effects it's had on the bay. The estuary is slowly improving with work being performed by my agency, the U.S. Army Corps of Engineers, New York District. The Army Corps with partnering agencies is using funds from the Bipartisan Infrastructure Law to revitalize marsh islands in the bay. It's part of a larger project to restore the degrading estuary in New York and New Jersey.

This project fulfills some of the goals of the law that was implemented this past spring by the U.S. Congress and signed into law by President Biden. The Army Corps received funding that will be applied to over 500 projects throughout the United States. "The Army will work with community partners to leverage these historic civil works funds for investments that strengthen national supply chains through our commercial navigation mission, help communities impacted by climate change to increase their resiliency, advance environmental justice, and invest in communities that have too often been left behind," explained The Honorable Michael L. Connor, Assistant Secretary of the Army for Civil Works.

The Army Corps' New York District will be applying these funds to a number of projects, including the Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project. The Hudson Raritan Estuary is located within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty National Monument.

An estuary is a partially enclosed, coastal water body where freshwater from rivers and streams mix with salt water from the ocean. Estuaries can include a variety of habitats including salt marshes, mangrove or maritime forests, mud flats, tidal streams, rocky inter tidal shores, reefs, and barrier beaches.

The Hudson Raritan Estuary is a complex ecological system located within a highly urbanized region of 20 million people that includes the New York Harbor, rivers, wetlands, coastlines, and open waters. Over the years, industrialization has degraded the estuary and 1,000 miles of its natural shorelines have been replaced with piers, docks, and bulkheads, destroying naturally sloped shorelines that transitions from shallow to deep water that are needed by fish and sea life to thrive.

Restoring the estuary is important because the ecosystem provides habitat for birds, fish, shellfish, and other wildlife, maintains water quality by filtering out contaminated sediments, provides recreational opportunities, boosts the region's economy, and acts as a buffer from flooding for coastal communities during destructive and powerful storms.

One study done by Lloyd's of London showed marshes play a critical role in reducing damage to infrastructure from coastal storms. The study showed that during 2012's Hurricane Sandy marshes prevented \$625 million in direct flood damages across twelve states. In New Jersey, coastal marshes reduced property damages by more than 20 percent. Ms. Lisa Baron, project manager, New York District, U.S. Army Corps of Engineers revealed, "The plan for the overall HRE Program is to restore a mosaic of 621 acres of habitat at 20 individual projects sites. These projects will restore estuarine and freshwater wetlands, shorelines, fish passage, oyster reefs, shallow water habitat, coastal forests and Jamaica Bay marsh islands while providing maximum ecological and societal benefits to the region." Baron has been involved in various types of environmental restoration initiatives and projects for more than 30 years, including managing the HRE Project for the last 15 years. The BIL funds will help to kick start five of these restoration sites that include four projects over the next few years including Stony Creek



Marsh Island Restoration Project, Jamaica Bay, New York, Flushing Creek Restoration Project, New York, Bronx Zoo & Dam and Stone Mill Dam Restoration Project, New York, and the Oyster Restoration at Naval Weapons Station Earle Project, New Jersey. Stony Creek Marsh Island Restoration Project, Jamaica Bay, NY Jamaica Bay is located in portions of the Boroughs of Brooklyn and Queens in New York City and is part of the Jamaica Bay Park and Wildlife Refuge, the country's first national urban park and one of the Gateway National Recreation Areas that is visited by millions of people each year.

The bay covers 26 square miles and opens to the Atlantic Ocean. The land surrounding the bay is heavily developed and includes John F. Kennedy International Airport, the Belt Parkway, and several landfills, including the ones I saw as a child - the Fountain Avenue and Pennsylvania Avenue landfills. Inside the bay there is a marsh island complex. In the last century, these once vibrant islands have been rapidly disappearing resulting in extensive habitat loss. Over 2,000 acres of marsh islands have been lost since 1924, and 85% of the wetlands have been lost in the region.

In general, historic wetland loss in the region is due to human development that's included the filling in of marshes and open water areas, hardening of shorelines, input of raw and treated sewage, sewer overflows, and landfill leachate, or water containing contaminants seeping from landfills.

The disappearing marshes pose a threat to wildlife and coastal communities. It's been estimated that the marsh islands if left alone would vanish completely by 2025. Fortunately, due to work the Army Corps has performed over the years, this won't happen. The Army Corps, along with partnering agencies, has restored approximately 180-acres of marsh in Jamaica Bay through a number of successful restoration projects. According to Ms. Baron, "Restoring these marsh islands provides significant benefits to the region and combats many of the reasons for their loss. The restored marsh islands keep the sediment within the Jamaica Bay system; wetland vegetation stabilizes the islands; the islands reduce waves and erosion of surrounding shorelines and adjacent islands; the wetlands improve water quality within the bay; and the marsh islands that we construct will continue to build the ecological resilience of the bay to respond to increasing sea level rise."

Now with BIL funds, the Army Corps in collaboration with the New York City Department of Environmental Protection will be restoring another marsh island that sits in the heart of the bay - Stony Creek Marsh Island. Sixty-two acres of the island will be restored.

To perform this work, approximately 150,000 cubic yards of sand will be beneficially used from the dredging of the Jamaica Bay Federal Navigation Channel or Ambrose Channel and placed on the island. The material will be graded and contoured to appropriate elevations suitable for a marsh and then planted with native vegetation.

When completed, the island will have 26 acres of low marsh, 22.5 acres of high marsh, 3.5 acres of scrub-shrub wetland, 8.7 acres of shallow marine habitat, and 1.4 acres of tidal channels or narrow inlets. This will create a healthy marsh for one of the most biodiverse regions in the Northeastern United States. Jamaica Bay provides critical spawning and nursery habitat for more than 80 migratory and estuarine fish species, as well as terrapins and four species of endangered or threatened turtles. In addition, 300 bird species - or 20 percent of the Nation's birds - call the bay their home and visit it every year as a stopover point along the Atlantic Flyway migration route to their breeding grounds. These birds include the federally listed threatened piping plover and endangered rosette tern.

Flushing Creek Restoration Project, New York

While birds are making their Atlantic Flyway migration, they will also stop at Flushing Creek, located in the Borough of Queens, in New York City. The Flushing Creek site is comprised of approximately 19 acres of shoreline and is surrounded by a highly urbanized area including houses, transportation systems, businesses, and industry.



Places I want to visit
New York & New Jersey →
Jamaica Bay
Bronx Zoo
Naval Weapons Station Earle

Restoration site locations for the Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project. Credit: USACE. Landfill operations at Jamaica Bay, New York in 1973. Credit: Environmental Protection Agency. This page: picnic area at Shirley Chisholm State Park in Brooklyn, New York. Former site of the Fountain Avenue and Pennsylvania Avenue landfills in Jamaica Bay. Source: Wikipedia. Aerial photo of the Upper Bay and Hudson River in New York City in 2018. Credit: USACE. Aerial photo of the Yellow Bar marsh island restoration project in Jamaica Bay, New York. Credit: USACE.



In the last century, the creek's marsh habitat has degraded due to human development that's included stream channel straightening, filling of wetland areas, and headwater reconfiguration of the creek. This was a result of the region's preparation for the World's Fair that took place in Queens in 1939 and 1964. These activities led to a creek with low ecological value suffering from habitat loss, bank erosion, dominance of invasive plant species, low benthic and fish abundance and diversity, and poor water quality.

Now with BIL funding, the Army Corps in collaboration with the New York City Department of Environmental Protection will restore a large portion of the creek. Approximately 19 acres of habitat will be restored. The work will include removing invasive plant species, such as common reed grass, and excavating, placing, and re-grading soil to restore wetlands and upland forests. In addition, select areas of intertidal mudflats - a nuisance source of hydrogen sulfide gas - will be converted to low marsh.

When completed, wetlands will be restored including 9.8 acres of low marsh, 2.5 acres of high marsh, and 1.8 acres of scrub-shrub wetlands in the transitional areas between the wetlands, and 3.9 acres of upland maritime forest. The restored habitat along Flushing Creek will be characterized as a more diverse, functioning community that will contribute to shore stabilization and flood control. Not only will the public be safer, but residents will also have improved access to green space and a revitalized waterfront for recreational and educational experiences. They will be able to see the hundreds of migratory birds that use the area as a stopover location during migration along the Atlantic Flyway. These birds include waterfowl, such as the mallard, canvasback, lesser saup, and wood duck and wading birds, including the cattle egret, snowy egret, and the great egret. This project also includes providing a habitat for migratory fish, where they can nurse, feed, spawn, and find refuge from predators.

Bronx Zoo & Dam and Stone Mill Dam Restoration Project, New York

Speaking of restoring migratory fish habitats, this project advances one of the primary goals of the HRE Project - to improve tributary and habitat connectivity. North of Flushing Creek, is the Borough of the Bronx, in New York City and the location of the Bronx Zoo & Dam and Stone Mill Dam. These two dams are located close to each other along the Bronx River, that flows through highly urban communities that include roadways, parking lots, the Bronx River Parkway, the Metro North Harlem commuter rail line, the Bronx Zoo, and the New York Botanical Garden.

Over the years, the Bronx River's complex ecosystem has degraded, losing more than 99 percent of its freshwater wetlands. This has been due to industrialization, channel modification, filling of wetlands, runoff of contaminated sediments from roadways, and the construction of these two dams that have created barriers to fish movement upstream to reach egg-laying sites, threatening the survival of their populations. Now with BIL funding, the Army Corps in collaboration with the New York City Parks and Recreation, will be providing fish access and connection to key spawning and nursery habitats upstream.

The work will focus on removing or modifying fish passage barriers - which may include installing fish ladders and opening up or removing the dams at both locations to allow fish access to and from an additional seven miles of upstream habitat. Ms. Jamie Ong, environmental protection project manager, New York City Parks and Recreation used a metaphor to describe this work to a group of teenagers who visited the project this summer through the Columbia Teachers College Global Citizens Program. She expressed, "I likened our options for fish passage to the doors of a subway car, which sometimes open only on one side, like a technical fishway, and asked them to imagine a car with no walls or doors, which would be comparable to dam removal."

Providing a habitat for migratory fish is important socially, economically, and ecologically. Migratory fish, such as river herring, are a source of food for birds such as the blue heron and osprey and commercial fish, such as striped bass, cod and haddock, whose populations have been declining. Ms. Ong added, "The teens were surprised to learn about the diverse animal species we are monitoring as part of this project, including the American eel and the great egret. Coincidentally, a great egret flew overhead while I was talking with them. These and many other fish and wildlife species will benefit from better connections between Bronx waterways and rivers upstream."

In addition, the river and its shoreline will be improved. This will include restoring the bottom of the channel, removing invasive plant species, like knotweed, and replacing it with vegetation that will improve wildlife habitat and stabilize the shoreline to prevent soil from washing into the river.

Oyster Restoration at Naval Weapons Station Earle Project, New Jersey

Besides fish, other aquatic life has been declining over the years in the Hudson Raritan Estuary and this includes oysters. Up until the late 1800s, the bottom of the estuary was blanketed with oysters. The eastern oyster populated 200,000 acres of the estuary and today it's considered ecologically extinct, primarily caused by water pollution, dredging, poor land management, and over harvesting. Now with BIL funding, the Army Corps in collaboration with the New Jersey Department of Environmental Protection and the NY/NJ Baykeeper is aiming to bring the oyster back.

The Naval Weapons Station Earle is a secluded Naval location located on the coast of New Jersey, on the Raritan Bay. The plan is to expand a .25-acre oyster reef constructed by the NY/NJ Baykeeper to create a 10-acre oyster reef habitat under the station's 2.9-mile pier that is close to the land and away from naval ship activity. Ms. Stacey MacEwan, project manager, New Jersey Department of Environmental Protection, Office of Natural Resource Restoration stated, "Oysters bring a range of benefits to the estuary. Oysters improve water quality



NY/NJ Baykeeper divers in the Raritan Bay are handed an oyster castle, a concrete block, that will be stacked in a pyramid to provide habitat structure for the oyster reef and other marine life. Photo by NY/NJ Baykeeper. Team visiting the successful Elders West marsh island restoration project in Jamaica Bay, NY. Photo by USACE.

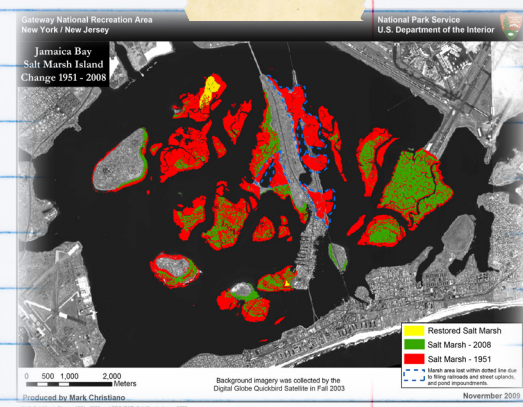


through filtration processes, but the reef itself provides a vertical structure that supports a diverse community of fish and invertebrate species, and the reef structure can also help to protect the shoreline from erosion. This type of project can provide large-scale benefits in a relatively small footprint." Ms. Meredith Comi, coastal restoration program director with the NY/NJ Baykeeper agreed, "Knowing that protecting our shorelines is leading to an increase in species diversity is very cool and is even more of a reason to use nature-based features in resilience projects."



Today, when I drive past Jamaica Bay in New York, I'm instinctively prepared to be struck by that putrid dump smell and to hold my breath, but instead I'm stunned by the change that's occurring in the area.

The landfills were restored and are now a 400-acre, 130-foot-high state park. Instead of seagulls hunting for food, family's picnic on wooden tables and instead of toxic soil leaking into the bay there is a healthy mix of trees, shrubs, and wildflowers growing along the park's walking paths and grounds. Park visitors also have spectacular panoramic views of the Empire State Building to the northwest, the Verrazano-Narrows Bridge and New York Harbor to the west, and Jamaica Bay to the south. As restoration work moves forward on the Hudson Raritan Estuary New York and New Jersey Ecosystem Restoration Project, the views of the bay are sure to take the breath away of future generations – in a good way.



Stone Mill Dam within the NY Botanical Gardens in Feb 2022. Photo by USACE. Flushing Creek's degraded habitat and highly urbanized in November 2022. Photo by USACE. An oyster castle, a concrete block, encrusted with vegetation and invertebrates, providing habitat for marine life. Photo by NY/NJ Baykeeper. Marsh loss over the years in Jamaica Bay, New York. Photo by NPS.

Dr. JoAnne Castagna is a public affairs specialist and writer for the U.S. Army Corps of Engineers, New York District. She can be reached at joanne.castagna@usace.army.mil.

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MAJ (Ret) David Phillips

LTC George Pincince
Mr. Larry Poe
SGT Robert Powers
SGM (Ret) Jesse Pratt
COL (Ret) Alan Proffitt
CSM (Ret) John Rather
COL (Ret) David Reed
COL William Reyers
COL Terry Rice
MAJ Michael Richey
Mr. Rodney Riffe
COL (Ret) Theodore Rigo
Mr. Stephen Rivera
COL (Ret) John Rivenburgh
LTC Mark Rodwell
SFC (Ret) Mark Romo
BG Harry Roper
LTC Harry Rossander
COL (Ret) Michael Rossi
COL James Rowan
COL (Ret) Robert Ruch
COL (Ret) Gregory Runyon
COL Jerry Samples
COL Howard Schauer
CSM (Ret) Alan Schlie
LTC Robert Schultz
Mr. Brian Seguin
CW5 (Ret) Byron Todman
LTC (Ret) Thomas Shea
LTC (Ret) Stephen Shepard
COL (Ret) Robert Shields
COL (Ret) James Shumway
MAJ Gerardo Siniscalchi
COL Patrick Slattery
COL Grant Smith
COL (Ret) Charles Smithers
COL (Ret) David Spaulding
BG Scott Spellmon
COL Michael Stransky
Mr. Russell Struckman
COL Peter Tabacchi
LTC (Ret) David Talbott
LTG Jeffrey Talley
CSM Richard Thalman
COL (Ret) David Theisen
COL (Ret) John Thomson
COL (Ret) Donald Tomasik
SSG Ryan Trantham
LTC James Traves
COL Robert Vasta
MAJ Chris Vernon
LTC (Ret) Charles Vincent
COL (Ret) Keith Walton
CPT Jeremiah Weiker
COL David Wong
COL William Zammit

Castle Captain

CPT Stephen Adams
MAJ Chad Apple
SFC Lucy Audain
Mr. Charles Barton
MAJ Crystal Batey
Mr. Troy Bear
COL Ben Bigelow
SFC (Ret) Eric Blystone
CPT James Bouchard
COL Victoria Bruzese
COL Steven Buethe
LTC David Burk
MAJ Chad Caldwell
1SG (Ret) Anthony Campo
CPT David Carlson
LTC (Ret) Ronald Cathchings
COL Richard Chandler
COL John Church
CW4 (Ret) Juanita Corea
SFC David Cornejo
LTC David Cox
SGT John Crable
CPT Kevin Daley
MAJ William Dunlop
PFC Allen Faust
MAJ Katie Fidler
Ms. Linda Finley
MAJ Daniel Fox
1LT Drew Freinberg
COL Archibald Gallup
COL Richard Garza
CSM Scott Genz
CPT David Gleason
Mr. Glenn Goddard
CPT Matthew Golden
MAJ David Goodwin
CPT James Gunderson
BG (Ret) Gary Harber
BG William Heffron
Mr. Charles Hines
CPT Stephen Holden
CPT John Ingram
LTC (Ret) R. Scott Jackson
SSG Travis Jackson
LTC Todd Jacobus
CW3 Richard Jakubowicz
COL Marsha Killam
CW2 Shawn Knauff
COL Eric Larson
LTC (Ret) Donald Lauzon
Mr. Richard Leifield

COL (Ret) Debra Lewis
COL Gerald Lukowski
LTC Glen MacDonald
1SG Felix Marinelli
COL Sean McDonald
CPT Kevin McMahon
SFC Stoney Miller
COL Neal Mitsuyoshi
LTC (Ret) Robert Mittelstaedt
SSG Jose Munoz
LTC Michael Murray
Mr. William Myers
LTC Jeff Palazzini
MSG Stephen Pauly
Mr. Ronald Payne
CPT Chris Perez
LTC (Ret) Brett Perry
LTC Thomas Perry
COL (Ret) Xanthan Polk
CW2 Xavier Rua
COL Elliot Schroeder
SFC (Ret) Paul Schweitzer
SFC Brian Sears
LTC (Ret) Richard Smith
COL (Ret) Steven Solka
LTC (Ret) Roger Somerville
COL Charles Stachowski
COL Steven Stockton
Mr. Dale Stoutenburgh
SFC (Ret) Robert Suesakul
1LT Victor Swanson
MAJ Shaun Swayne
CPT (Ret) Kenneth Tamberg
MAJ Daniel Terbilcox
CSM Rathe Thompson
MAJ Antony Thompson
LTC (Ret) David Tollenaar
LTC (Ret) Harvey Walker
CPT Paul Weber
MG Barclay Wellman
Mr. Don Wenzel
COL (Ret) Wilbur Gregory
SPC (Ret) Daniel Wilson
MAJ Daniel Wolgemuth
COL Thomas Verell
1SG Kendall Vetter
MSG Melissa Wright
MAJ Andrew Wyman
COL Dallas Wurst
LTC (Ret) Kirk Zecchini

Castle Crusader

CPT Stephen Adams
COL John Alfano
COL Jeffery Anderson
LTC (Ret) Austin Appleton
Mr. Henri Arraj
LTC Paul Baker
COL Robert Baldwin
MAJ Garrett Barr
Mr. Charles Barton
LTC Craig Baumgartner
1SG Jason Beals
Mr. James Beirs
COL (Ret) David Bender
1SG (Ret) Robert Berkowitz
1SG Brian Black
LTC (Ret) Richard Booher
COL (Ret) John Booth
LTC (Ret) Richard Boston
CPT James Bouchard
COL John Braden
Mr. Forest Brooks
COL David Bruschwein
COL (Ret) Randall Butler
MG (Ret) Robert Bunker
LTC (Ret) William Burdett
LTC Michael Calnan
COL (Ret) Harold Carlson
Mrs. Pressley Carr
COL Patrick Combs
BG Narsico Cruz
MSG (Ret) Cornel Danciu
LTC Ronald Davidson
CW2 Courtney Diley
CSM (Ret) Edward Evans
Ms. Janet Faust
MAJ Beau Fochtman
COL Kenneth Frey
COL (Ret) William Fuller
COL Ted Fultz
COL (Ret) Neil Gafney
Mr. Chad Gartrell
LTC Kirk Gibs
GEN (Ret) Frank Grass
COL Arthur Gravatt
LTC Gregory Gray
MAJ Rafael Gutierrez
CW2 William Hodges
MAJ Keith Hottinger
MSG (Ret) John Huber
Mr. Kurt Ingold
SFC Wesley James
COL Frank Janecek
Mr. Bryton Johnson
COL Gary Johnston
COL Walter Juzukonis
COL Kerry Kachejian

Mr. Douglas Kamien
COL Russell Keeton
MG John Kem
Mr. Byard Kershaw
LTC Glenn Kiesewetter
COL Christopher Klein
COL Albert Kraus
MG (Ret) Anthony Kropp
SGT Gene Kuentzler
Mr. Ralph Lamoglia
LTC (Ret) Donald Lauzon
Mr. Richard Leifield
LTC (Ret) H. Brian Loggins
LTC (Ret) Larry Lyle
COL (Ret) Orrin MacMurray
COL Charles Martin
CPT Shane McNamara
CPT Joseph Michael
SSG Nicholas Milosevich
COL (Ret) Philip Morris
COL (Ret) John Morris
MG (Ret) Terrence Mulcahy
1SG Lloyd Mullins
COL (Ret) Joseph Muscarella
CPT (Ret) Eugene Newsome
SFC Charles Novak
CPT Brett Paasch
MAJ (Ret) Mark Penrod
1SG (Ret) Gene Phillips
COL Eric Potts
COL (Ret) A. William Pulket
1SG Robert Reed
CPT Jacob Rodgers
Mr. Paul Rodman
LTC Mark Rodwell
LTC Michael Rounds
COL (Ret) Peter Rowan
Mr. Johnny Salinas, Jr.
COL (Ret) Timothy Sanken
Mr. Brian Seguin
CPT Michael Slonaker
LTC Terry Smith
COL (Ret) John Spinelli
SSG (Ret) Billy Steele
LTC Edward Svitil
COL Brett Sylvia
COL Peter Tabacchi
MAJ Antony Thompson
COL Michael Thuss
CW4 (Ret) Cornelius Vandermotten
Mr. Sid Vogel
LTC Jason Wallace
COL (Ret) Keith Walton
MAJ Daniel Wolgemuth
Mr. Richard Wright

Castle Sentinel

Ms. Gloria Bell
CPT Grayson Saint
Ms. Melinda Slonaker
LTC (Ret) Gary Norenberg
Mr. Steven Stack
SFC (Ret) Dennis Cavaltera
SFC (Ret) William Hayes
COL (Ret) Robert Rowlette
Mr. Bradley Jelley

Thank You

WE EXIST TO SERVE,
RECOGNIZE, AND
HONOR THE ARMY
ENGINEER

PROFESSION AT THE
SOLDIER/CIVILIAN
LEVEL TODAY AND
TOMORROW.



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Nutter Field House will undergo renovation beginning January 5 and is expected to reopen just before Engineer Regimental Week in April. In 1942 Nutter Field House was named for 2LT Daniel Nutter, a 25th Armored Engineer Battalion Soldier killed in action in 1944. This multipurpose venue is used for its original purpose to serve as a recreational facility for Soldiers as well as for military balls, sporting events and is the hub of regimental week activities. Photo courtesy of U.S. Army, FLW.