"Making Tomorrow Better"

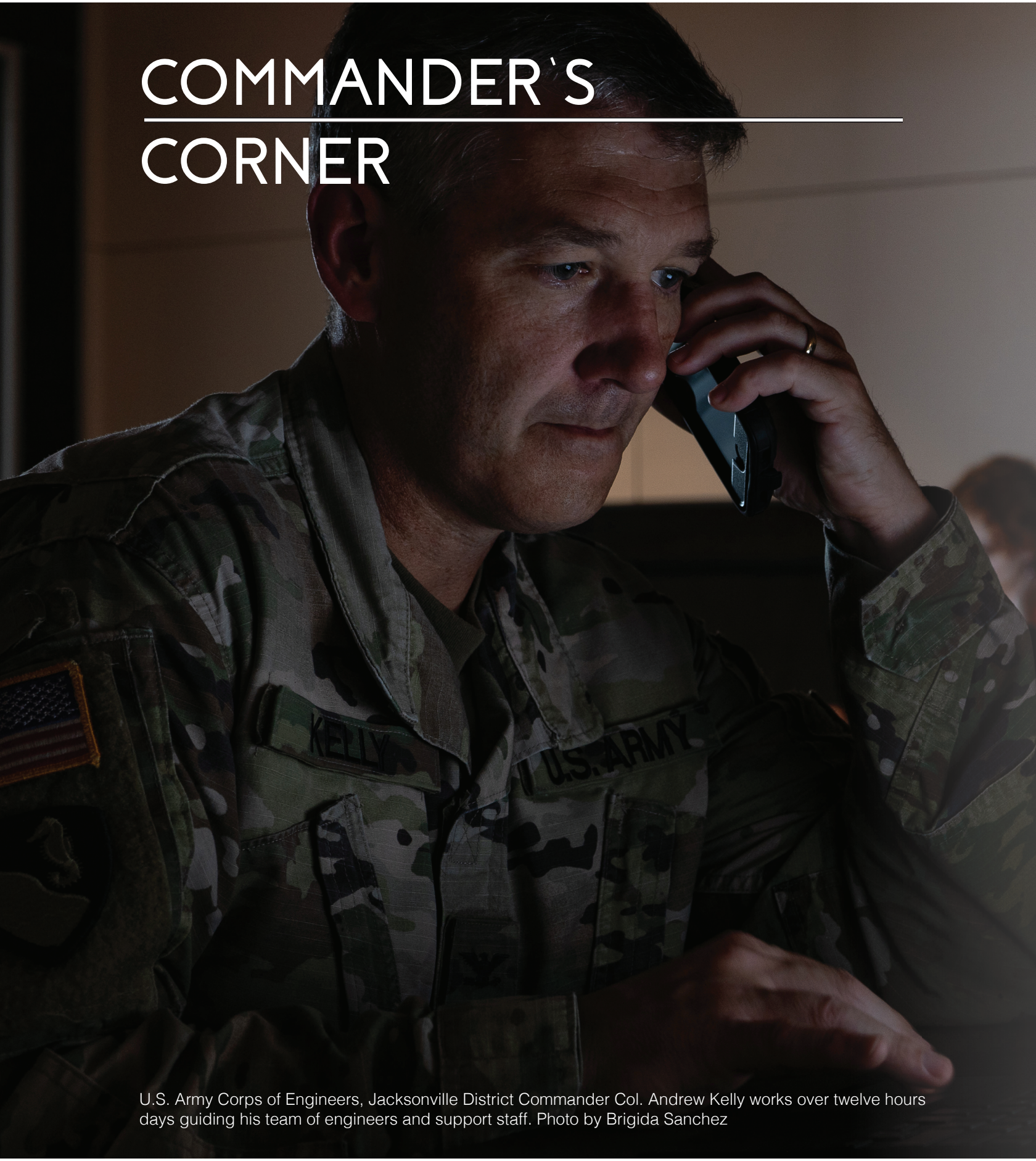
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U. S. Army Corps of Engineers
Jacksonville District

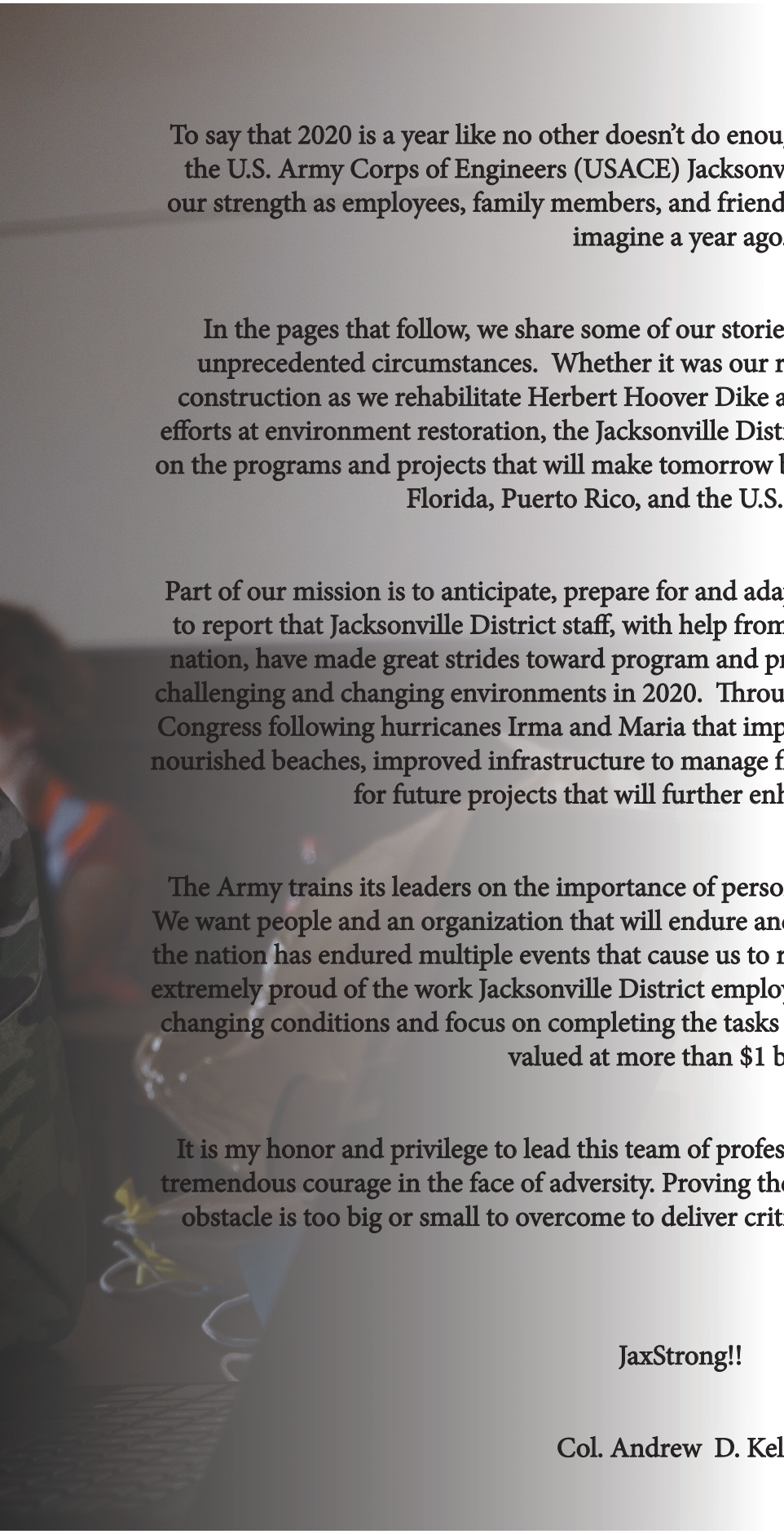


2020 Edition

COMMANDER'S CORNER



U.S. Army Corps of Engineers, Jacksonville District Commander Col. Andrew Kelly works over twelve hours days guiding his team of engineers and support staff. Photo by Brigida Sanchez



To say that 2020 is a year like no other doesn't do enough justice to what we experienced in the U.S. Army Corps of Engineers (USACE) Jacksonville District. This was a year where our strength as employees, family members, and friends was tested in ways we could hardly imagine a year ago.

In the pages that follow, we share some of our stories of how we have adjusted during unprecedented circumstances. Whether it was our response to COVID-19, continued construction as we rehabilitate Herbert Hoover Dike at Lake Okeechobee, or our ongoing efforts at environment restoration, the Jacksonville District team was hard at work delivering on the programs and projects that will make tomorrow better for the stakeholders we serve in Florida, Puerto Rico, and the U.S. Virgin Islands.

Part of our mission is to anticipate, prepare for and adapt to changing conditions. I'm happy to report that Jacksonville District staff, with help from USACE employees from across the nation, have made great strides toward program and project execution while responding to challenging and changing environments in 2020. Through supplemental appropriations from Congress following hurricanes Irma and Maria that impacted our region in 2017, we have re-nourished beaches, improved infrastructure to manage flood risk and initiated a dozen studies for future projects that will further enhance our resiliency.

The Army trains its leaders on the importance of personal courage as a leadership attribute. We want people and an organization that will endure and ultimately prevail over hardship. As the nation has endured multiple events that cause us to rethink what "normal" looks like, I am extremely proud of the work Jacksonville District employees have done to adjust to the rapidly changing conditions and focus on completing the tasks necessary for us to deliver a program valued at more than $1 billion.

It is my honor and privilege to lead this team of professionals. Our employees have shown tremendous courage in the face of adversity. Proving they are resilient and tough and that no obstacle is too big or small to overcome to deliver critical projects to the people we serve.

JaxStrong!!

Col. Andrew D. Kelly

THE JAX TEAM

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The Jacksonville Journal is an unofficial authorized publication of the Jacksonville District. produced and published in accordance with Army Regulation 360-1. Content in this publication does not necessarily reflect the official view of the U.S. Army Corps of Engineers. the Department of the Army. or the Department of Defense.

Distribution: 1,200

Digital edition available on the district webpage at: http://www.saj.usace.army.mil/Home.aspx







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Resiliency Shines Through



VISION

Team of professionals making tomorrow better

MISSION

Deliver value to the nation by anticipating needs and collaboratively engineering solutions that support national security, energize our economy, and increase resiliency.

ON THE COVER

The U.S. Army Corps of Engineers, on the ground COVID-19 Response Team pictured here at the Miami Beach Convention Center, Miami Beach, FL. April 19, 2020. Were just a few of the many personnel working through out the district to establish the alternate care facility.

PROGRESS IS HA

In a year of earthquakes and Pandemic, resilience lea

By Catalina Carrasco

Fiscal year 2020 proved to be a year of continued success for the U.S. Army Corps of Engineers, Jacksonville District, in the Antilles area of operations. Among its many accomplishments were the signing of three chief's reports, and the completion of dredging and construction projects vital to the safety and security of Puerto Rico and the U.S. Virgin Islands.

While the Antilles area was not immune to dangers affecting our nation and the world, the Corps was there to respond to emergencies, from earthquakes to the global COVID-19 pandemic, to protect and support communities.

In the fall of 2019, then-South Atlantic Division Commander, Maj. Gen. Diana Holland, and Jacksonville District Engineer and Commander, Col. Drew Kelly, participated in a ceremony symbolizing the completion of construction to lower risk and protect communities living downstream of Guajataca Dam, which had sustained significant damage from Hurricane Maria two years before.

In a ceremony attended by the Puerto Rico governor and the Federal Emergency Management Agency (FEMA), the Corps turned operation of the dam back to the Puerto Rico Electric Power Authority (PREPA).

During their visit to the area, division and district leaders met with newly appointed U.S. Virgin Islands Gov. Albert Bryan Jr. to discuss ongoing and future Corps projects on the islands.



APPENING

eads significant progress in the Antilles



2D walls are permanent retention walls between the confluence structure of the Margarita Channel and the Rio Piedras, and the abutment wall of the De Diego Bridge in San Juan, Puerto Rico. The 2D walls contract is part of the Rio Puerto Nuevo flood control project. Once completed the project is intended to provide flood protection for near 7,500 residents and 700 commercial and public structures valued at over $3 billion. Photo by: Thomas Spencer



From Left, Jacksonville District Commander Col. Drew Kelly and South Atlantic Division Commander Maj. Gen. Holland present Gov. Wanda Vázquez Garced,and FEMA Coordinator Alex Amparo. a replica of a plaque to be installed at the work site at a later date. Tuesday, October 22, 2019 in Isabela, Puerto Rico.

Photo by Mikell Moore

That fall, the leaders of the district's Planning Division and Project Management participated in joint workshops across the Antilles to discuss the South Atlantic Coastal Study, a comprehensive regional effort to produce a framework for identifying coastal vulnerability and resilience projects in the islands as well as along the South Atlantic and Gulf coasts, from the Carolinas to Mississippi.

In a major step forward, the Corps and the Puerto Rico Department of Natural and Environmental Resources signed an unprecedented amendment to the Rio de La Plata Project Cooperation Agreement in November. The agreement authorizes the Corps to complete a $500 million project at full federal expense, with funding appropriated by the Bipartisan Budget Act of 2018. Signing the amendment was critical for awarding new construction contracts for the project.

Throughout December, Puerto Rico experienced increased seismic activity, raising concerns about the structural stability of dams across the island. If they failed, it could mean unimaginable tragedy for the surrounding communities. Then, on Jan. 7, Puerto Ricans woke to a strong, 6.4 earthquake felt across the entire island, followed by aftershocks that lasted for weeks.

Jacksonville District deployed personnel to the island to support FEMA as it conducted critical infrastructure and temporary power assessments. Engineers Julio Soto, Edgardo Bermudez, Marcial Garay and Nelson Ramos worked alongside PREPA representatives to conduct assessments of Carite Dam in Guayama, Lucchetti Dam in Yauco, and Portugues and Cerrillos Dams in Ponce.

The joint teams inspected the Yauco levee, the channels, and the levees at Portugues and Bucana Rivers to assess their status in the wake of the region's seismic activity. They looked for changes in structural and geotechnical conditions and compared their observations with past periodic inspections to identify changes, and any potential risk. No structural damage was found during the inspection.

In March, the Corps' Jacksonville, Mobile and Savannah Districts teamed up to conduct assessments of possible COVID-19 pandemic response alternate care facilities across Puerto Rico and the U.S. Virgin Islands. The mission was executed in support of FEMA at the request of the local governments.

Also this year, more than $15 million in contracts were awarded for maintenance dredging to remove sediment resulting from Hurricane Maria. At Rio Puerto Nuevo, 240,000 cubic yards of material are being removed and will be placed to provide flood risk reduction to the surrounding communities in anticipation of the river's enhanced hydraulic capacity. In separate dredging projects, the district will remove more than 110,000 cubic yards of shoaling from Arecibo Harbor and 115,000 cubic yards from Mayaguez Harbor, improving navigability and supporting economic activity at both localities.

The district also awarded a $9.4 million contract to install 500 linear feet of channel scour protection and toe key revetment in the municipalities of Dorado and Toa Baja, both elements of the Rio de la Plata Flood Control Project.

The district reached a crucial 2020 milestone in August when then-Corps Commanding General, Lt. Gen. Todd T. Semonite, signed Chief's Re



ports for three flood damage reduction studies in the Antilles.

All three studies – Río Culebrinas in Puerto Rico, and Savan Gut Phase II and Turpentine Run in the U.S. Virgin Islands – were initially authorized under the Continuing Authorities Program, Section 205 of the Flood Control Act of 1948, Public Law 80-858, as amended. The studies, completed at full federal expense, funded by the 2018 Bipartisan Budget Act, bore a cost of $400,000 each. Signing the Chief's Reports advanced the proposed projects to Congress for individual authorization.

Other accomplishments in Puerto Rico included groundbreaking ceremonies for the Salud Creek project in San German and the shore protection project in Loiza. Ribbon cuttings were celebrated at the Upper Margarita Channel site, part of the Rio Puerto Nuevo project, and at Fort Buchanan, where a newly constructed access control point was dedicated to the 65th Infantry Regiment, the Borinqueneers.

Finally, the district bid farewell to Deputy Area Engineer (DDE) and Deputy District Commander for the Antilles Area, Maj. Alexander Walker, and welcomed Maj. Julio Soto as the next DDE in July, to lead the office forward into 2021.



Guánica, PR, February 26, 2020 -- This home suffered severe damage from the January 7th earthquake. Photo by Liz Roll/FEMA


A section of the Rio Puerto Nuevo stilling basin. This project was authorized for construction by Section 202 of the Water Resources Development Act of 1986 (PL 99-662). The Río Puerto Nuevo Basin drains 24 square miles, 75 percent of which is highly developed with a population of 250,000 persons.

IN THE FACE OF

Jacksonville District answers the call and completes Miami Beach



U.S. Army Corps of Engineers, mechanical engineer and assets manager, Jason Chapple, was one of the many engineers conducting assessments for alternate care facilities such as the Miami Beach Convention Center in response to COVID-19.

F CHANGE

ch Convention Center Alternate Care Facility ahead of schedule

By James Yocum | Photos by Brigida Sanchez



In February, residents of Miami Beach weren't thinking about global pandemics. They were thinking about the approximately 80,000 visitors flooding the Miami Beach Convention Center for the NFL Experience in conjunction with Miami hosting Super Bowl LIV.

A lot can change in two months.

In early April, billboards on I-95 still hyped the big game held Feb. 2, but there weren't many drivers on the road to see those advertisements after the governor issued a "Safer at Home" order that shut down much of the city effective April 3.

Those two months had big changes on the Miami Beach Convention too. Just two years removed from a $620 million makeover that modernized the facility, the center is unlikely to be hosting Super Bowl fans, car shows or boat shows this year. Instead, it will be part of a response to COVID-19 that spans federal, state, county and local governments in a race against the clock to build enough hospital beds to supplement local hospitals and avoid a medical system collapse as happened previously in Italy.

"We've been in the Miami area looking at different places we could build alternate care facilities since mid-March," said Lt. Col. Todd Polk, the Army Corps of Engineers Jacksonville District deputy commander for South Florida.

"Having teams in the field early really paid off. By the first week in April, we had our assignment and shipped a team down to the Miami Beach Convention Center to begin

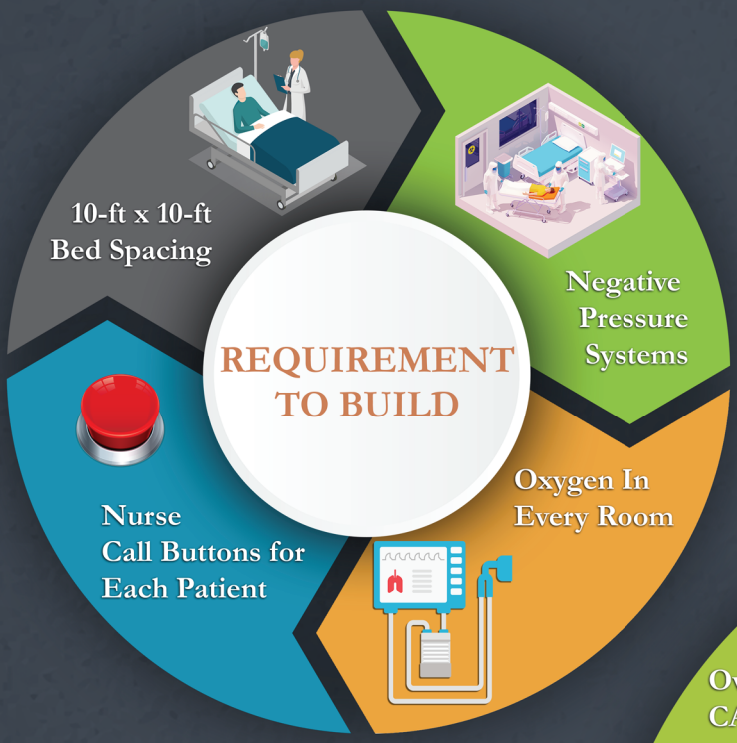
U.S. Army Corps of Engineers

A daunting mission on behalf of all people of Miami Beach

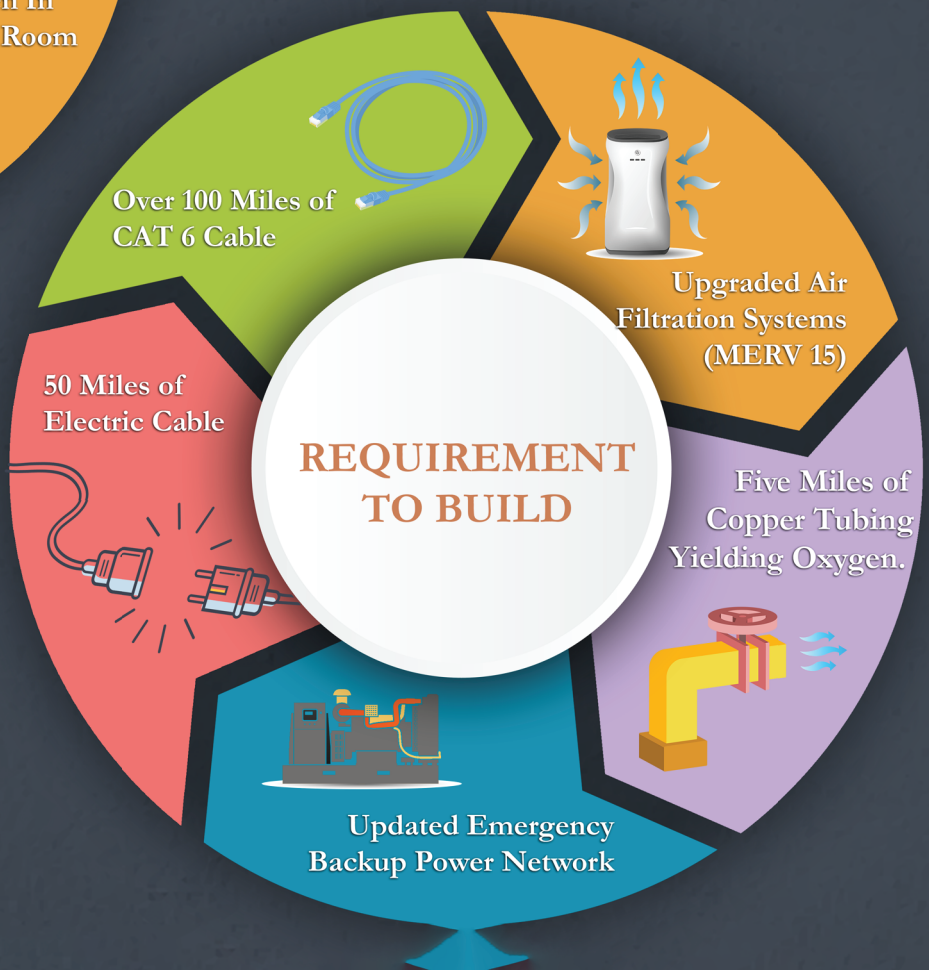


How did we turn 246,000 square feet of open space into an alternate care facility with 450 beds – 400 acute care and 50 isolation bay spaces – along with the equipment needed to treat patients suffering from COVID-19?

ENDSTATE



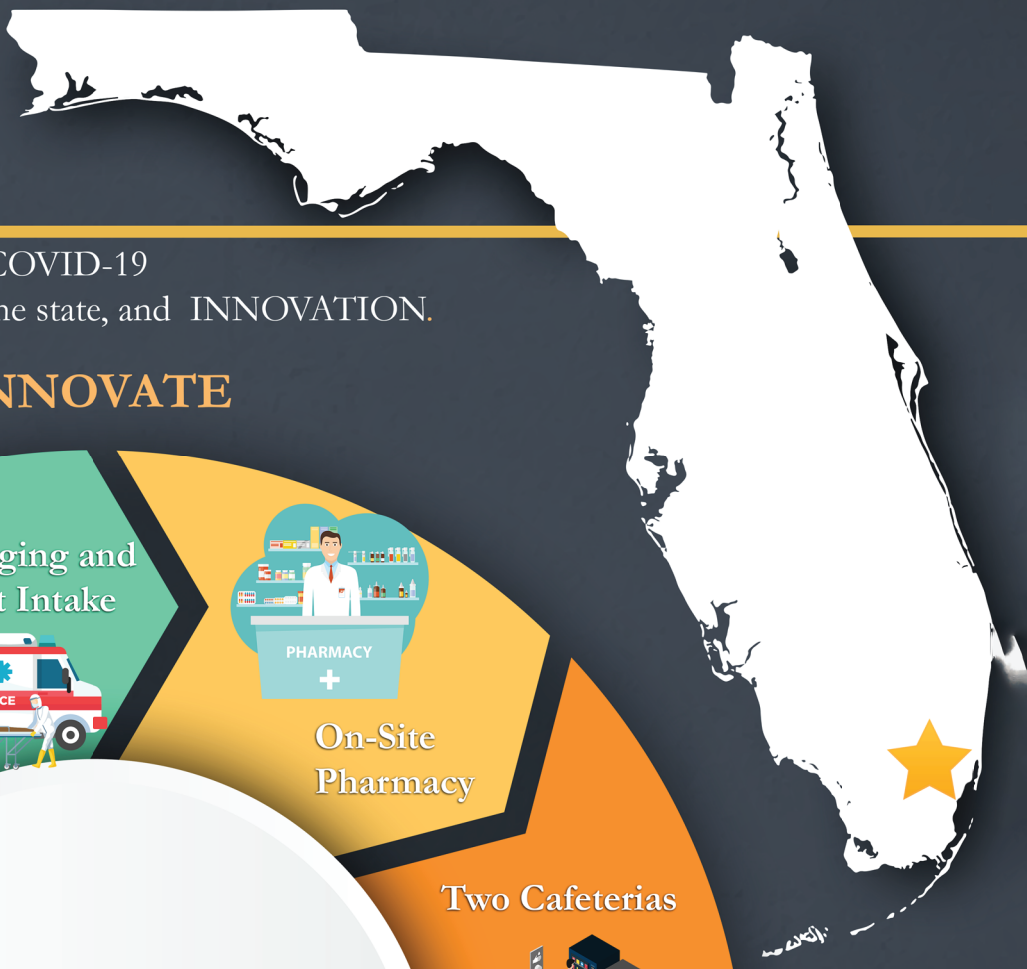
SUPPORT



Use or adapt existing infrastructure to meet the needs of a 24/7 medical operation.

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U.S. ARMY ENGINEER DIVISION SOUTH ATLANTIC



The Jacksonville District response to COVID-19 required teamwork, partnership with the state, and INNOVATION.

INNOVATE

REQUIREMENT TO BUILD

Ambulance Staging and Isolated Patient Intake



On-Site Pharmacy

Two Cafeterias



Dedicated Nursing Stations



PPE Donning Areas



Medical Staff Break Areas



Medical Command Center



On-Site Laboratory



How did we convert the remainder of the 1.4 million square foot convention center into the storage and support spaces needed to support those 450 beds?



construction."

The Federal Emergency Management Agency issued the formal mission assignment to begin converting the convention center on April 4, and the Corps jumped into warp speed. District contract officers awarded the work to Robins and Morton Group just two days later, on April 6, and construction started inside the facility the following day.

"The initial requirements were not even completely ready," said Col. Andrew Kelly, Jacksonville District commander. "We use the analogy of building an airplane while we fly it a lot, but it was really true in this case. We were making multiple changes to the plan every day for the first week of construction. Crews were working 24 hours a day, so we would make a decision to change something and the contractor was executing it immediately." (Please see Infographic page 12 and 13)

And all of this was scheduled for completion by April 27. It became apparent quickly that the state didn't have until April 27. On the second day of construction, Florida Gov. Ron DeSantis visited the site and met with Lt. Gen. Todd Semonite, U.S. Army Corps of Engineers commanding general and the chief of engineers.

"The governor just sat with me in the trailer behind us and said 'You've got until the night of the 20th of April.' There's no time to design and build it. We have a suspense and we have to get it done," Semonite said at the news conference that followed.

That put the pressure on the Jacksonville District team and the contractor, said Polk.

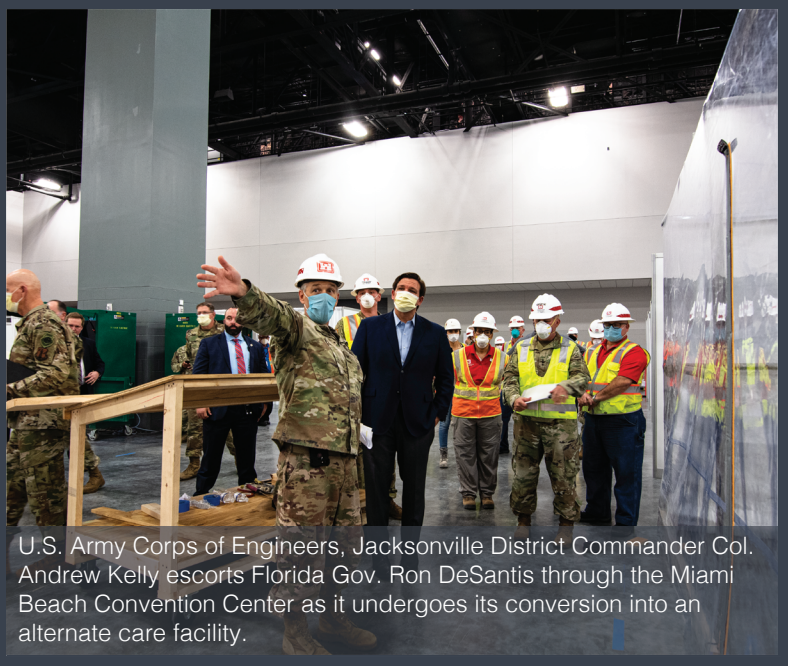
"Instead of three weeks, we had two," he said. "We were already looking at 24-hour shifts and a tight deadline. Add in the complication of requirements being refined in real time and the difficulty everyone in the nation is facing when ordering the medical equipment, and what was a hard assignment became one of the most challenging we've ever faced."

So what did the Jacksonville District do when facing a shortened deadline and a Herculean



Jacksonville District engineer,contractors and Miami Beach Convention Center personnel review plans.


U.S. Army Corps of Engineers, Jacksonville, District deputy commander and senior project manager for the COVID-19 emergency response, Lt. Col. Todd Polk watches as leadership during a press conference.


U.S. Army Corps of Engineers, Jacksonville District Commander Col. Andrew Kelly escorts Florida Gov. Ron DeSantis through the Miami Beach Convention Center as it undergoes its conversion into an alternate care facility.

task? It worked with the contractor to deliver the facility ahead of schedule. Instead of completing construction on April 20 and handing the facility over to Florida at midnight, crews finalized the last pieces in the evening of April 18 and handed the keys over to the Florida Division of Emergency Management at 1 p.m. on the morning of April 19.

Kelly said there were a lot of factors involved in success: national support from USACE on supply chains, enough funding, a willing partnership with the city and county government, a dedicated Corps team on the ground working with the contractor. But the factor that really stood out was the way the state worked to provide the requirements needed to complete construction.

"The biggest concern I had was being able to make the decisions that needed to be made at the right time," Kelly said. "Tallahassee gave us exactly what we needed. They were able to say what we should do, what we needed to adjust in the plans, and make rapid and effective decisions. It was immeasurable for those of us out here daily on the site to not have to wait for a decision."

The Jacksonville District also benefited from the expertise of the Florida National Guard for advice during the build out.

"The partnership the Florida National Guard established with the Army Corps of Engineers during the construction of the Miami Beach alternate care facility has been exceptional," said Col. Ricardo Roig, the Florida Guard's Task Force 50th commander. "We are grateful for the Corps' hard work getting this facility completed and are working with our state partners to provide all necessary support to ensure it is ready to operate."

As the owner of the convention center, the city of Miami Beach was also a large part of the success in completing the project early, Kelly said.

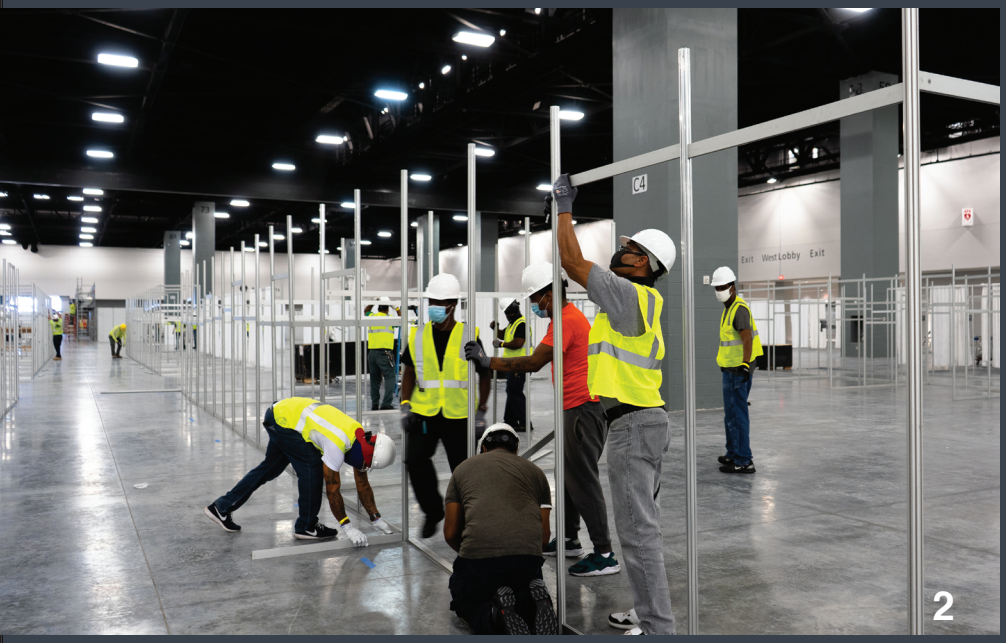
That cooperation was especially important considering that the facility was designed to provide flexibility to local medical systems should COVID-19 strain those services.

"We are grateful to the Army Corps of Engineers for swiftly constructing the alternate care facility at our Convention Center – a precaution to assure that we are fully prepared for a worst-case scenario and that our community will never face shortages of beds or equipment," said Miami Beach Mayor Dan Gelber.



Leadership from the City of Miami Beach, Mayor Dan Gebler, Mayor Carlos A. Gimenez of Mayor of Miami-Dade, the Gov. Ron DeSantis and the Chief Engineer of the U.S. Army Corps of Engineers, Lt. Gen. Todd Semonite brief the press and the people of South Florida on the current outlook of the COVID-19 Pandemic and the work being done at the Miami Beach Convention Center to convert it to an alternate care facility.


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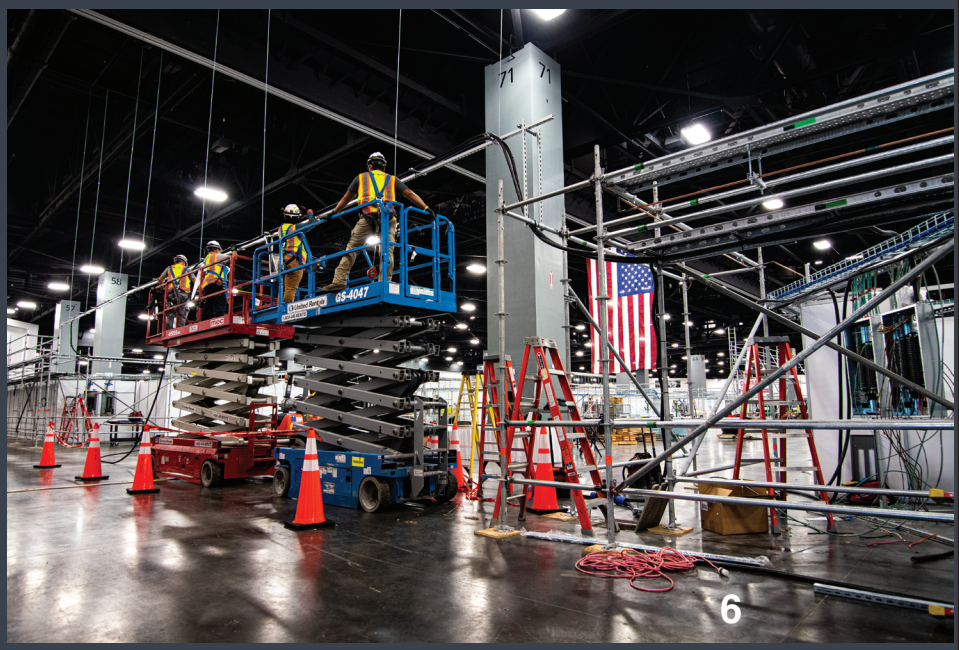



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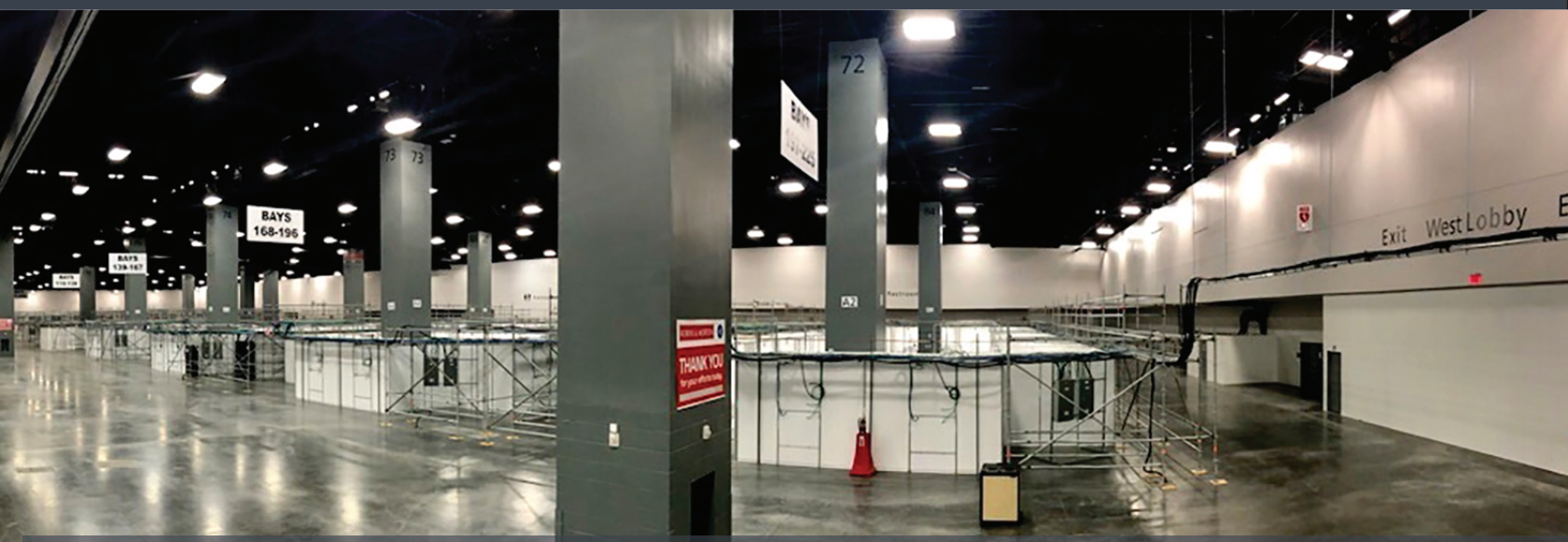

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7



1. U.S. Army Corps of Engineers, Jacksonville District civil engineer and project manager Ingrid Bon reviews conversion plans. 2., 3., 5., & 6. 24-hour construction site crews work at a steady pace to install ICU pods, electrical wiring, and copper piping. 4. ICU pods outfitted by the National Guard received a bed, blanket and pillow. 7. USACE COVID-19 Convention Center Conversion Team. 8. Panoramic of the Miami Beach Convention Center, 246,000 square-feet were filled with 450 beds, 400 acute care areas, and 50 isolation bay spaces.

8







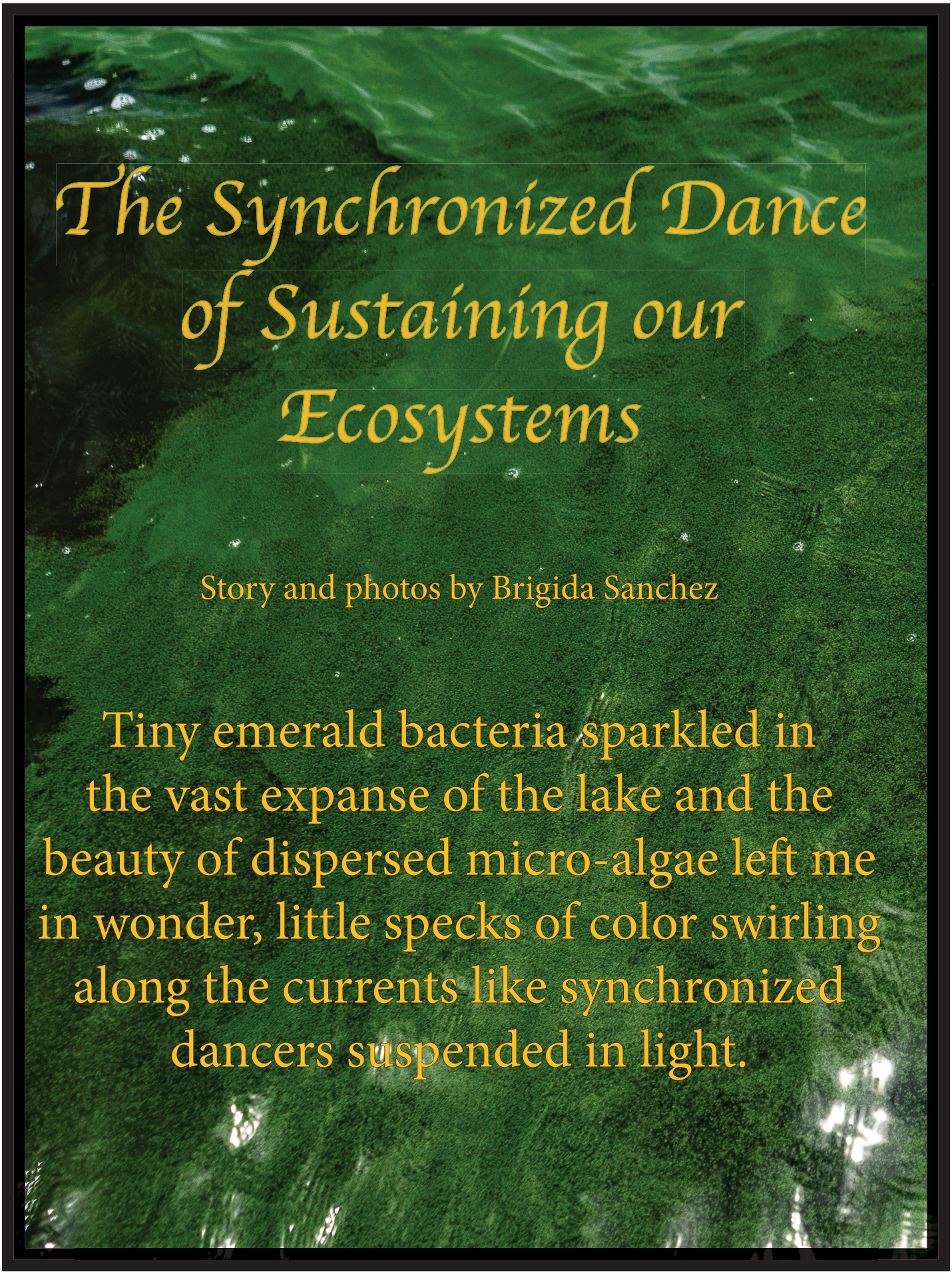


IT'S WHAT WE DO





The US Army Corps of Engineers has an Operations team in the field composed of 120 employees: mechanics, small craft, crane, lock operators, technicians and boat captains. They are essential personnel and are the foundation of our organization supporting emergency efforts, maintaining USACE's grounds and ensuring our waterways are clear for transportation. 1 & 4 Small craft operator, Harry Beatty, manages invasive aquatic plants. 2. Boat captain, Graham Thompson at the helm of the tug boat Leitner. 3. Lead facility Manager and engineering equipment operator, Kevin Howard look out onto the Okeechobee waterway from the bow of the Leitner. 5. The Leitner helps to move large tussocks for removal. 6. Crews observe the dewatering the of Ortona Lock and Dam for repairs to the upper gate. Photos 1-5 Brigida Sanchez 6. by Mike Carlson



The Synchronized Dance of Sustaining our Ecosystems

Story and photos by Brigida Sanchez

Tiny emerald bacteria sparkled in the vast expanse of the lake and the beauty of dispersed micro-algae left me in wonder, little specks of color swirling along the currents like synchronized dancers suspended in light.







But looking at it through an engineer's eye I could see perfect conditions for them to slowly multiply and take over the freshwater expanse of the lake, and slowly suffocate the native ecosystem.

I am spending the morning with the Operational Water Research Team of the U.S. Army Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory (CERL) in Champaign, Illinois, searching for algal blooms that were swept away in Lake Okeechobee by wind and current.

Our boat stops in what seems to be the center of the lake to gather samples of the drifting Harmful Algal Blooms (HABs). Members of the team are wearing N-95 masks and latex gloves, and carrying a massive case of equipment to collect water samples from various locations on the 730 square miles of water. The HABs team needs as many specimens as possible to identify the type of bloom and determine a way to intercept, treat and transform the algae as a part of a research demonstration study.

The blooms found on the lake sometimes produce toxins, but they can also have other impacts. Harmful algal blooms are essentially overgrowths of naturally occurring algae, part of the natural cycle of nutrient transport in the environment. When excessive nutrients become coupled with environmental conditions that favor algae growth, algal blooms become the primary driver of water body degradation, a process called eutrophication that decreases oxygen levels and generates foul odors.

Nutrient pollution and harmful algal blooms cost the nation an estimated $1 billion yearly.

Photos: 1.Algae blooms dispersed by high winds across Lake Okeechobee. 2. A researcher holds samples of blue green algae collected for data. 3. Engineer Research and Development Center researchers chase algal blooms on Lake Okeechobee. Photos by: Brigida Sanchez

The Florida Department of Health estimates the economic impact of HABs at $22 million annually, including medical expenses and lost wages.[1]

In 2019 alone, Florida allocated $17.3 million of its $19 million research and response budget to dealing with HABs. According to the Florida Department of Environmental Protection's Algal Bloom Sampling Status Dashboard, within the past 30 days there have been 114 observations of various types of HABs in Florida.[2]

Considering the widespread nature of the HAB threat, Martin Page PhD, Operational Water Research Team lead at the U.S. Army Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory (CERL) in Champaign, Illinois said, "Cyanobacteria and harmful algal blooms are one of the greatest environmental challenges that our country is facing. They are occurring across the nation, and these algal blooms impact many areas. They have both environmental and economic impacts on the communities where they are happening."

And that's what brought Page and his team to Lake Okeechobee, to set up the 2020 demonstration of the Harmful Algal Bloom Interception, Treatment and Transformation System, known as HABITATS. They are testing the new HAB mitigation process through which the harmful blooms are intercepted, treated and transformed into benign and useful products such as biofuel. This year the team was experimenting to improve fuel yields by incorporating various environmentally friendly organic chemicals in the treatment process, and increasing the system's scalability and ease of deployment.

Page said the team had to consider and prepare for a wide range of factors when planning the demonstration study. Weather always plays



Angela Urban, research community planner collect blue green algae samples and data on Lake Okeechobee, Fl. July 27, 2020.

role in the field, so they were prepared for everything, or so they thought, including hurricanes, but what they could never have anticipated was a global pandemic.

COVID-19 was just one of the challenges that the team, mostly traveling to Florida from out of state, would have to overcome in their 2020 study. Nonetheless, they persisted. They adapted the study to accommodate travel restrictions for some members and succeeded in mobilizing most of the team to the Port Mayaca spillway on Lake Okeechobee in July, which is when blooms tend to be present.

But strong windy conditions had dispersed the algae from the lake's permitted test site, making demonstration testing infeasible. So the resilient HABITATS team moved quickly, re-mobilized and, working closely with the Corps' Jacksonville District and its Florida state partners, found an alternate location to set up and pilot the demonstration.

The team moved and re-established the HABITATS at Saddle Creek in Polk County. Their flexibility and ability to shift quickly to a site some three hours down the road led them to success.

"Algae is a moving target," said Page. "It is a challenge because a lot of planning goes into these projects, and the technology is always advancing, so we are constantly learning and adjusting. We worked very closely with the Florida Department of Environmental Protection to make sure we could conduct our work safely."

Driving north from the lake to Saddle Creek, I could see how HABs had overgrown some small lakes adjacent to housing developments. I stopped to capture photos and this time there was nothing remotely mystical to what I witnessed. My camera and I confronted a toxic, stagnant, green blanket of growth covering the small body of water. I was left feeling over whelmed, standing there camera in hand,



Angela Urban, research community planner and Marissa Campobasso, environmental engineer, collect blue green algae samples and data on Lake Okeechobee, Fl. July 27, 2020.



Many signs have been posted around boating docks located on Lake Okeechobee warning of potentially harmful algal blooms.

painfully aware of the urgency of the team finding a solution to the problem spread out before me.

There are three elements to the HABITATS approach: interception, treatment and transformation. Interception focuses on getting as many algal blooms out of the water efficiently, using as little energy as possible. Treatment consists of pushing the water through treatment systems at high processing rates, again conserving as much energy as possible. The algae and the water are separated into a concentrated, almost paste-like form.

In this condition, the concentrated algal blooms constitute biomass waste that is potentially toxic, depending on the algae it contains. This is the substance the team is working to convert into a safe and sustainable product, which bring us to the third element of HABITATS - transformation.

This year the team is investigating hydrothermal liquefaction on a pilot scale, said Page. They are attempting to concentrate thousands of gallons of the harvested algae slurry paste into a biocrude fuel through the hydrothermal liquefaction process. Once optimized, the process can be net energy positive, and the biocrude can be upgraded for various uses.













The Harmful Algal Bloom Interception, Treatment, and Transformation System (HABITATS) demonstrates a scalable capability to remove algae and nutrients from large bodies of water and develop a resource recovery method that enables efficient management of the resulting biomass. Angela Urban, a research community planner, collects the Blue-algae that has been concentrated from lake water using a dissolved air flotation process falls from the treatment unit into a collection tank, Fl.

"This work is very challenging, and it is a dynamic system," said Page. "We don't have control all the time about what the environment is going to do. It presents problems in terms of project execution, but technically we are focused on putting the puzzle pieces of the HABITATS process together and optimizing our efficacy."

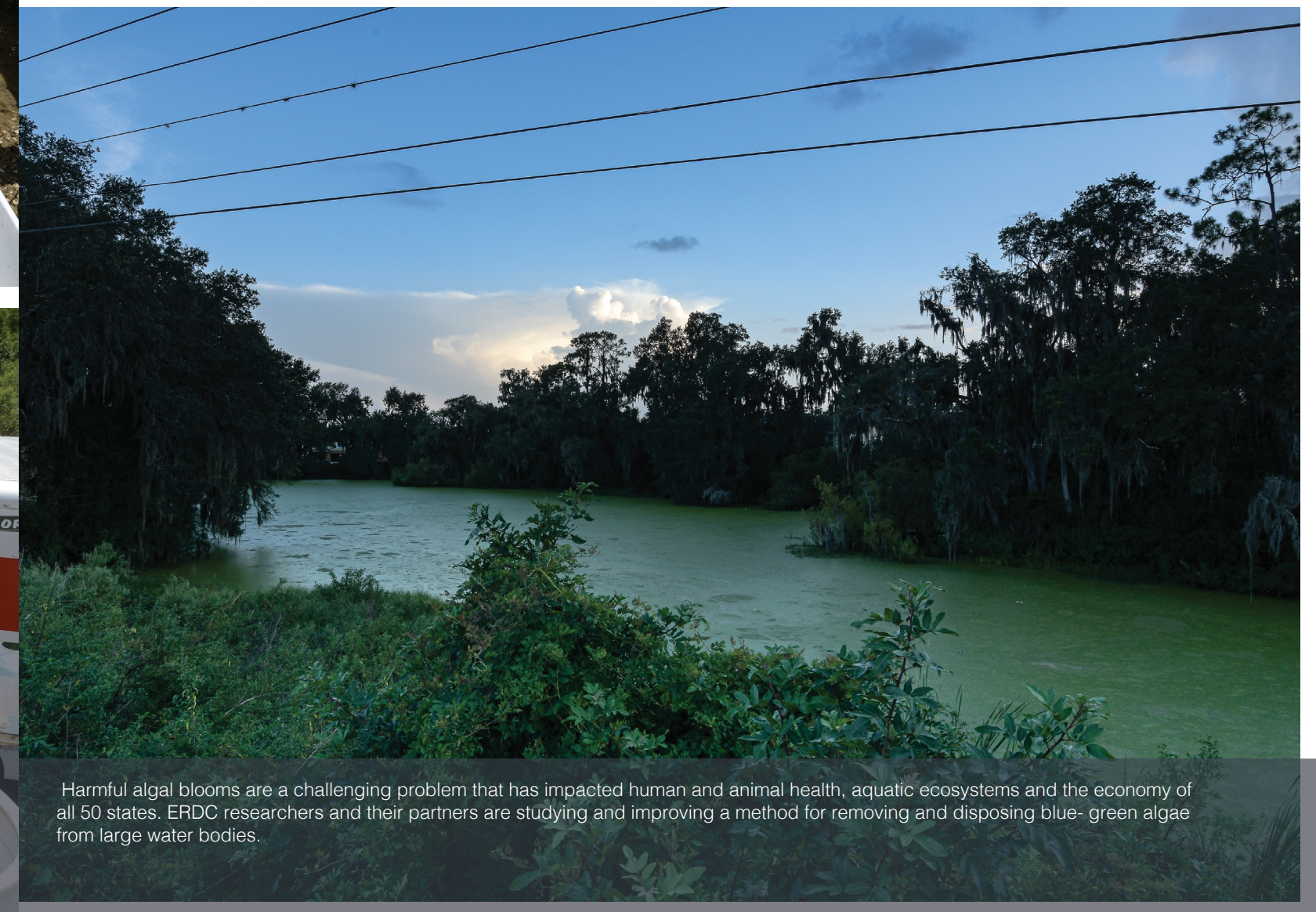
The HABITATS team does not work alone, Page pointed out. It is one element of a collective force of scientists, engineers, outreach coordinators, government and not-for-profit agencies, contractors and businesses of many sizes. In much the same way as tiny algae particles can dance and grow into a large scale threat to the environment, the HABITATS collaborators are a collective of synchronized strength developing its own dance to clean polluted water and create a safer, healthier biosphere that sustains ecosystems and allows societies to enjoy the beauty of the natural world.

The U.S. Army Corps of Engineers Operation Research team's priority is to clean the water and discharge it back into the environment. The process is challenging, but the urgent need to find an ecologically sustainable solution propels the team forward to find solutions for our nation's water systems.

References:

1. Florida Department of Health, Harmful Algal Blooms-Economic Impacts . http://www.floridahealth.gov/environmental-health/aquatic-toxins/_documents/economic-impacts.pdf

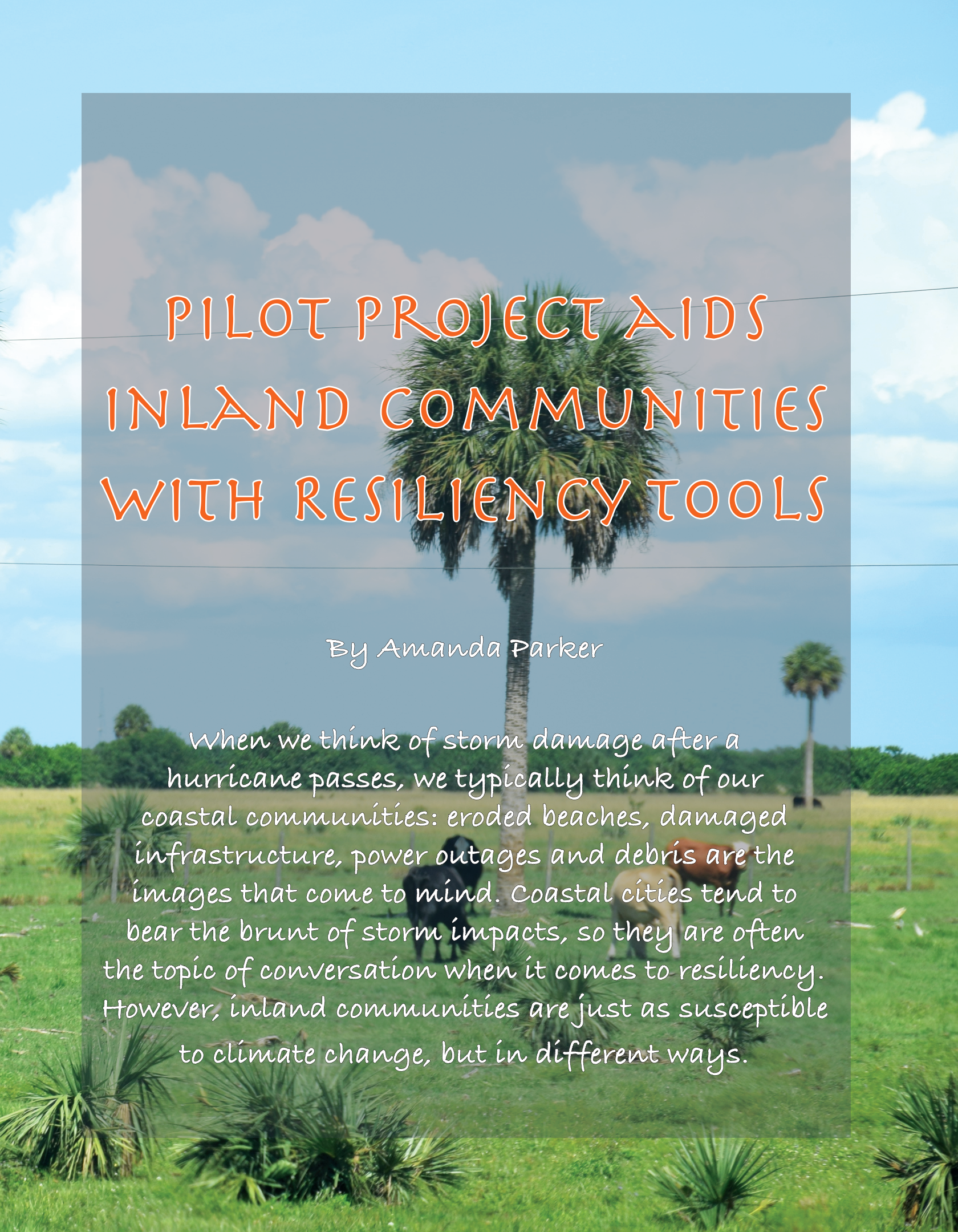
2. Florida Department of Environmental Protection's, Algal Bloom Sampling Status Dashboard. https://floridadep.gov/AlgalBloom



Harmful algal blooms are a challenging problem that has impacted human and animal health, aquatic ecosystems and the economy of all 50 states. ERDC researchers and their partners are studying and improving a method for removing and disposing blue- green algae from large water bodies.



Pastures for cattle are found all over Florida. There are more than 886 thousand head of cattle and Florida ranks 13th in overall cattle numbers nationwide. Photo by Jim Yocum



PILOT PROJECT AIDS INLAND COMMUNITIES WITH RESILIENCY TOOLS

By Amanda Parker

When we think of storm damage after a hurricane passes, we typically think of our coastal communities: eroded beaches, damaged infrastructure, power outages and debris are the images that come to mind. Coastal cities tend to bear the brunt of storm impacts, so they are often the topic of conversation when it comes to resiliency. However, inland communities are just as susceptible to climate change, but in different ways.



The crystal-clear waters of Jackson County's Blue Springs are the head waters of Merritt's Mill Pond. The Natural Spring discharges about 76 million gallons a day. Springs are not only an important part of tourism and recreational economy, but it plays an important role in irrigation, navigation and the generation of power. Photo by Brigida Sanchez

The U.S. Army Corps of Engineers defines resilience as the ability to anticipate, prepare for and adapt to changing conditions, and to withstand and recover from disruptions. In 2016, Melissa Reynolds, Jacksonville District small projects program engineering team lead, attended a workshop through the Leadership Development Program and learned about the Corps' resilience initiative and its vision to address community resilience.

During a subsequent detail assignment as part of the Corps' resilience initiative, the team determined that individual districts should execute community resilience workshops at the local level. The idea for a pilot project was born.

It would be a few more years before Reynold's idea was realized – when the State of Florida Silver Jackets was revitalized and had the opportunity to work with local communities to help them become more resilient.

Reaching out to the Silver Jackets, she and the team formed a partnership to execute an inland community pilot project idea. Over time, the group worked to create a tool that would help inland communities identify and address vulnerabilities.

Community resiliency encompasses more than just water resources, such as sea-level rise. It includes considerations such as infrastructure, cyber resilience, economic resilience and more.

> "The U.S. Army Corps of Engineers defines resilience as the ability to anticipate, prepare for and adapt to changing conditions, and to withstand and recover from disruptions."

Inland communities face a myriad of challenges not often encountered by coastal communities.

The Corps and Silver Jackets met with two inland communities in December 2019 to gather information about their vulnerabilities. "They had vulnerabilities we had not thought of," said Reynolds. "Inland counties do not get direct impacts from hurricanes, but they get a lot of wind. These communities

have large mobile home populations that are susceptible to the wind, and therefore they need shelters that are hurricane proof."

Inland populations also need a way to shelter evacuated people. Significant amounts of refuge space is necessary for those evacuating the coast, but also for those evacuating inland homes.

Often inland communities are home to elderly and low-income populations. Shelters are open, but due to a lack of reliable transportation and transit capacity, people cannot efficiently get to them. Transportation also becomes a challenge when trees block roads. Sinkholes develop underneath highways due to area-wide flooding, resulting in collapsed buildings and roadways.

Rural communities are often home to dairy farming operations. If the power goes out, milking machines will not work, putting cattle at risk of becoming sick and infected. Dairy farmers could lose their cattle, which places them at significant financial risk. These massive operations depend on electricity. They need generators fast when the lights go out.

"When we are dealing with climate change, there are many other related challenges," said Reynolds. "That is why we need assistance from all agencies.

"Inland communities need to become more resilient. We want to help with solutions; not just the physical solutions, but also help them figure out how to pay for them."

The solution? The guidebook. The purpose of the guidebook is to assist with increasing inland community resilience. The team developed the guidebook as a one-stop shop to serve as a reference or interactive tool during a natural disaster and is customized to address each community's risks.

The vision for the guidebook is to serve as an addition to face-to-face interactions, even during non-COVID times.

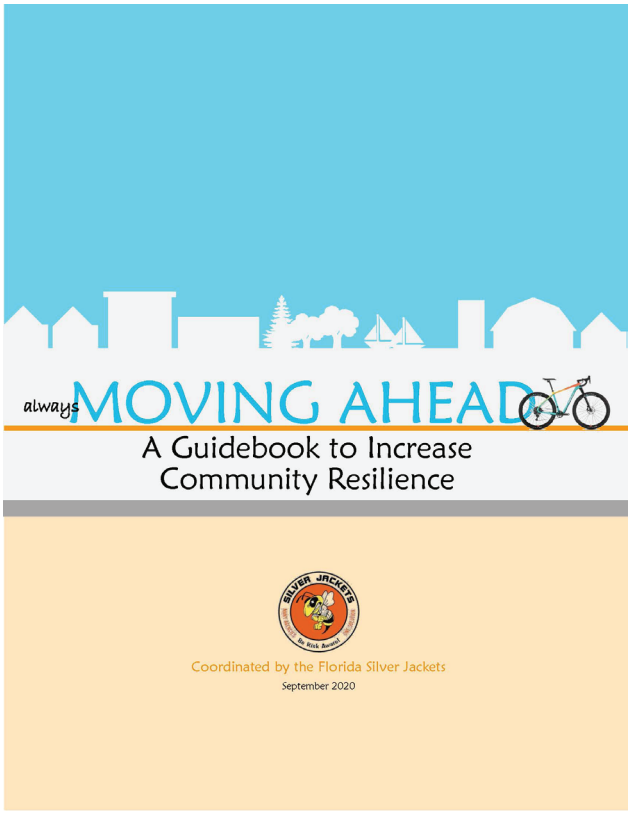
The guidebook identifies community risks, vulnerabilities and potential solutions; and programs that can help improve resilience in vulnerable areas.

Sections include information about a county's risks, existing infrastructure and mitigation measures; and are organized using the Federal Emergency Management Agency's (FEMA) Community Lifelines. FEMA Lifelines were developed to support response planning and operations, and the concept can be applied across the entire preparedness cycle.

The most significant factor in the project's



Rancher Brad Phares' Brahman cattle feeding on grain Okeechobee, Fla. Photo by Brigida Sanchez



success is the establishment of relationships. One of the main focuses is building a network of relationships among county emergency managers, state agencies and federal agencies to improve resilience.

"Ongoing communications between agencies is the goal," said Reynolds. "We will check back with the communities in a year to find out how it's working for them and if the program is effective. This is a grassroots effort, and over time we will improve the tool as we learn and develop it.

"This is not a typical Corps project. The whole point is to establish relationships, but we need something to serve as a reference of what and why we did it. There are going to be lessons learned that we can apply in the future."

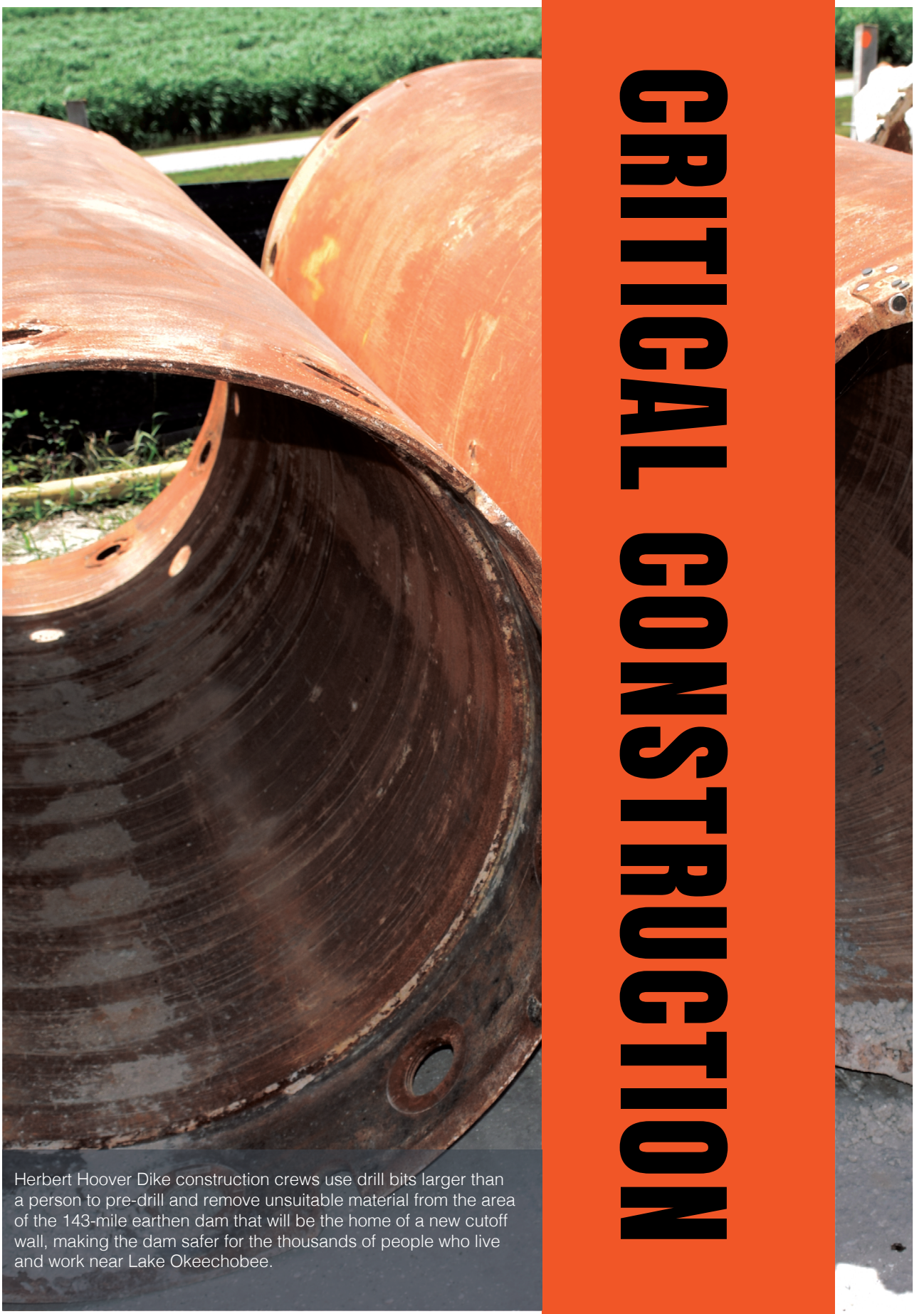
The guidebook comes with a workbook designed to be used as a living document by the communities to update and add notes in overtime as new information and resources become available.

Currently scaled to achieve increased community resilience at the county level, this work also serves as a pilot project applied to other rural counties in Florida and across the nation.



Pastures for cattle are found all over Florida. There are more than 886 thousand head of cattle and Florida ranks 13th in overall cattle numbers nationwide. Photo by Jim Yocum

CRITICAL CONSTRUCTION



Herbert Hoover Dike construction crews use drill bits larger than a person to pre-drill and remove unsuitable material from the area of the 143-mile earthen dam that will be the home of a new cutoff wall, making the dam safer for the thousands of people who live and work near Lake Okeechobee.

Critical Construction Continues,

and progress made at Herbert Hoover Dike in 2020

Story and photos by Jim Yocum

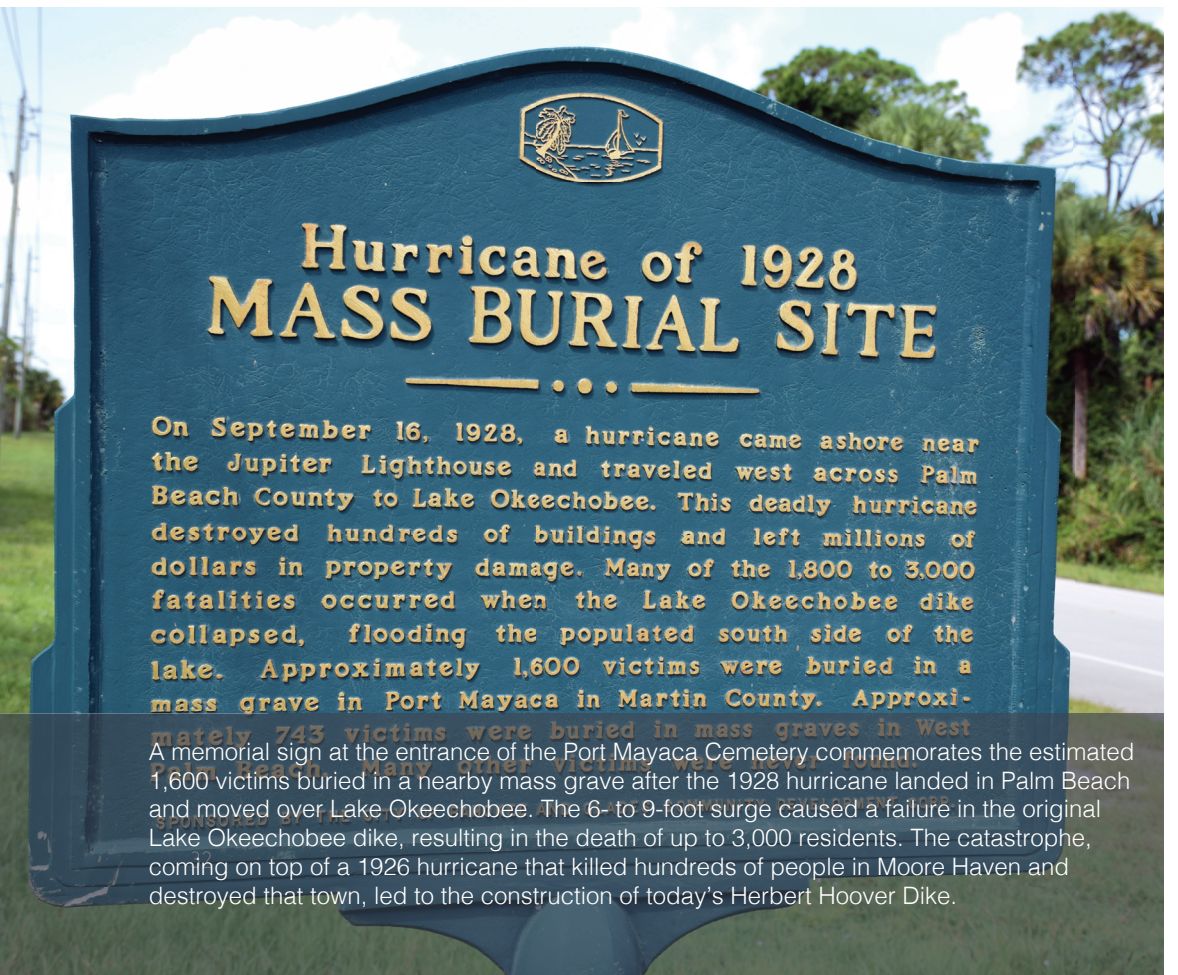
For more than a decade, people living around Lake Okeechobee have looked up at the Herbert Hoover Dike (HHD) and seen behemoth cranes piercing the skylines, moving a stately 50-100 feet each day, being fed by a seemingly never-ending convoy of cement trucks.

None of today's residents were around 105 years ago when locals began to build the first embankments that would grow into the 143-mile earthen dam that is HHD. But since 2007, residents have watched as crews drive the ever-present equipment along the ridgeline that marks the construction area of the HHD Rehabilitation Program and will continue to be a constant presence until the work is finished in 2022.

Construction on the original HHD started in 1915 and ended in 1938 with the final embankments installed. The convenience of the local materials used years ago brought back the crews and equipment locals have grown accustomed to seeing traverse the dike.

While the local gravel, rock, limestone, sand and shells were convenient and easy to access by dredging around the inside of the new dam, their makeup caused problems for the integrity of the dam. It's certainly not what engineers would use to build a dam today, according to Tim Willadsen, the project manager for the HHD Rehabilitation Project in the Programs and Project Management Division of the U.S. Army Corps of Engineers, Jacksonville District.

"All earthen dams have water that flows through and underneath them – that's what we call seepage," Willadsen said. "With HHD, especially in the south, that water has specific paths that it flows through that potentially can pick up material and carry it.



A memorial sign at the entrance of the Port Mayaca Cemetery commemorates the estimated 1,600 victims buried in a nearby mass grave after the 1928 hurricane landed in Palm Beach and moved over Lake Okeechobee. The 6- to 9-foot surge caused a failure in the original Lake Okeechobee dike, resulting in the death of up to 3,000 residents. The catastrophe, coming on top of a 1926 hurricane that killed hundreds of people in Moore Haven and destroyed that town, led to the construction of today's Herbert Hoover Dike.

Once you carry material out of the internal workings of a dam or its foundation, that's when you are subject to collapse and catastrophic failure."

That risk of catastrophic failure of the dam itself and the deteriorating culverts that provide water to local users with permits to draw from the lake led to a dam safety risk that had to be addressed. Focusing on prioritizing critical spots during the planning, the Jacksonville District was able to gradually reduce the risk of catastrophic failure throughout the rehabilitation effort.

The potential loss of life, compared to an estimated 3,000 people thought to have perished in the 1928 hurricane that overtopped the dike, could be significantly higher today with a population around lake that has grown tenfold.



A contractor uses a CSM – cutter soil mixer – machine to dig straight down into the Herbert Hoover Dike, cutting through rocks and adding cutoff wall material that will improve the safety of the 143-mile earthen dam.

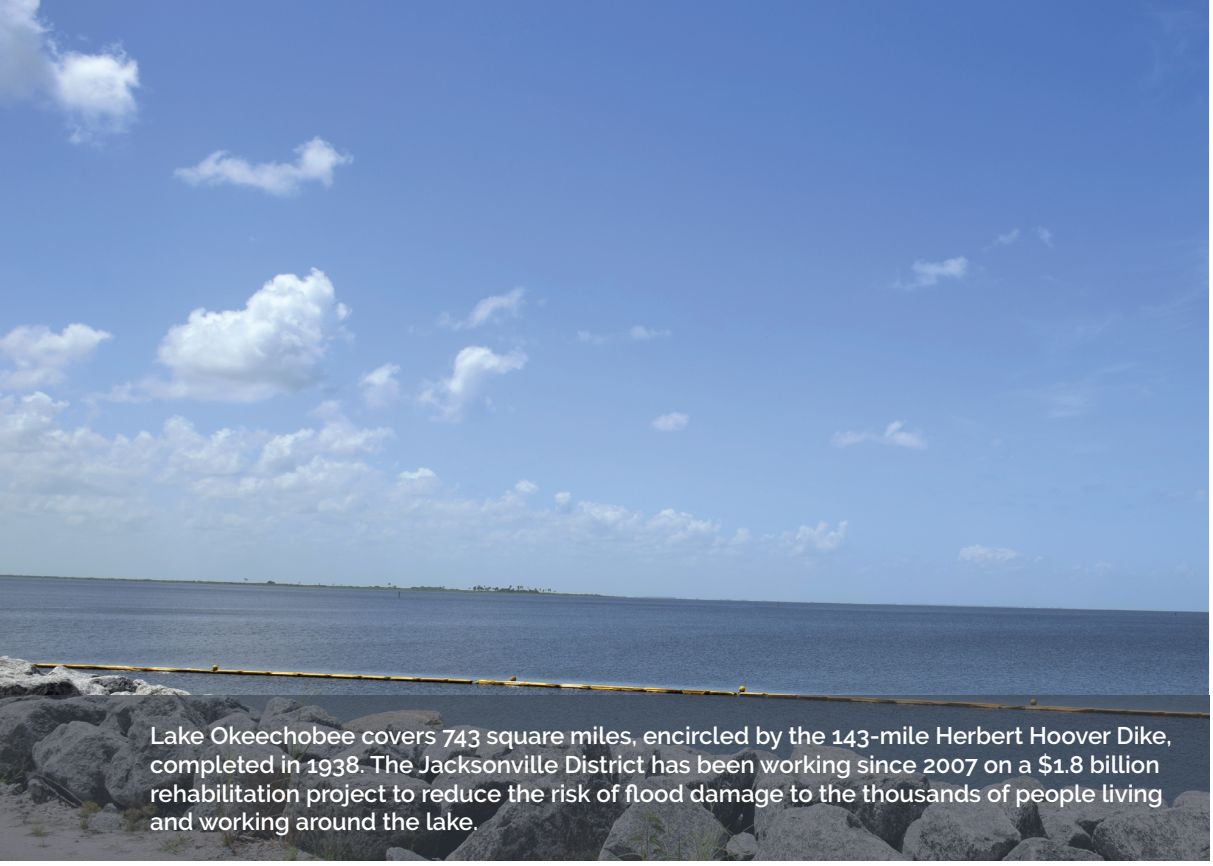
Almur Whiting, dam safety program manager for the Jacksonville District, said the dam safety modification study completed in 2016 helped prioritize the remaining work on the dike to reduce risks as sections of the project came online.

"The Herbert Hoover Dike Project and Dam Safety Modification Construction is prioritized such that the highest risk areas around Lake Okeechobee are completed first," Whiting said. "The risk of failure around HHD is reduced with each completed structure replacement and each mile of seepage cutoff wall installed. The risk is reduced over time as construction progresses."

Whiting said the district is working on a post-implementation evaluation risk assessment as construction is completed, to confirm that the work met the risk reduction objectives in the initial study.

"We anticipate being able to lower our Dam Safety Action Classification designation for HHD at the end of construction, which will create a safer living and working environment around Lake Okeechobee," Whiting said.

The HHD Rehabilitation Program generally falls into two major types of work: building a cutoff wall in the dike itself; and repairing or abandoning and removing the culverts that provide water to permitted users around the lake, according to Mike Rogalski, deputy chief of the Programs and Project Management Division for the Jacksonville District and the program



Lake Okeechobee covers 743 square miles, encircled by the 143-mile Herbert Hoover Dike, completed in 1938. The Jacksonville District has been working since 2007 on a $1.8 billion rehabilitation project to reduce the risk of flood damage to the thousands of people living and working around the lake.

manager for HHD rehabilitation.

Because of its cost – $1.8 billion – and the complexity and timeline for the project, it was treated differently than other Corps of Engineers projects, Rogalski said.

"From a process perspective, this was one of the Corps first mega-projects," he said. "It was designated a mega-project in 2012, and we were able to embrace the requirements and procedures that a mega-project requires to track this, which has actually helped us greatly."

HHD Rehabilitation Program was fortunate to be fully funded several years ago through its final planned completion in 2022, a large factor that has kept the program on budget and on schedule. With $1.42 billion of the $1.8 billion obligated to date, Rogalski said that he is confident the Corps will deliver the final project by 2022.

Cutoff Wall Construction

The most visible aspect of HHD Rehabilitation is the cutoff wall construction meant to reduce the risk of failure of the dike. While the public can't see the wall being built inside the dam itself, it can see the massive cranes and seemingly endless parade of concrete mixer trucks moving atop the HHD.

Willadsen explained that too much seepage could cause the failure of the earthen dam. Still, in the HHD case, the goal is not to create an impermeable barrier to water flow, because water in the lake has to move to surrounding areas for use by communities and agricultural interests.

"That was one of the concerns," he said. "A true seepage barrier – in most applications, you want to prevent water from flowing between different areas. We did not want that here. We wanted to keep the seepage flowing because it is needed downstream. The groundwater flow is critically important for all that agriculture out there, so we had to do this in a way that it wouldn't affect the flow from getting to the fields."

The cutoff wall the Jacksonville District requires instead is a partial penetrating seepage barrier. Rather than stop the water, the goal is to stop the water from carrying material through the dam and weakening the structure or foundation.

By forcing the water to go down the cutoff wall and back up the other side, it must travel through multiple strata layers, making it very difficult for the water to carry material with it, he said.

"There's not enough energy left in that water that is going to carry material and lead to a catastrophic embankment failure," Willadsen said. "In a nutshell, if you can keep the water controlled as it's flowing through the embankment, you lessen the chances of there being the movement of material that leads to failure."

To date, the design is working as planned.

"They (the contractors) pull cores to test for the permeability of the wall, the strength of the wall, homogeneity of the wall, and continuity of the wall," said Willadsen. "The cores look good when they come out. So far, everything is working great. With all the miles of wall we've put in over the years, we've had no issues."

Culvert Replacement or Abandonment

While the construction on top of the HHD may be visible to anyone driving around the area, addressing the culverts that provide water to permitted users is sometimes harder to see for locals.

Spaced around the HHD, the culverts are a literal break in the dam itself that allows water to flow through when gates are opened. But they were not designed to last forever. They were beginning to show signs of deterioration, soil erosion and piping around the culvert, erosion through the conduit itself, and the risk of overtopping in heavy storms, Willadsen said.

"All far exceeded the original life cycle and needed to be replaced because each one around the dike is the highest point of risk to the dike," he said.

The HHD Rehabilitation Program calls for either replacing or abandoning those existing culverts. The cost of replacement or removal is significant. If they were no longer needed, abandoning them is the most economical and efficient solution, as long as it is done correctly, then you can leave the conduit in the middle of the dike," Willadsen said. "That's a whole lot less expensive than building a huge cofferdam and opening up the dike."

Abandoning doesn't mean just closing a culvert and forgetting about it, he said. Abandonment includes disassembling much of the headwall to ensure that the conduit running through the dike is filled with something that will prevent water movement or a void in the dam. While abandonment does cost money, it is not nearly the amount the Corps would pay to remove the culvert. That process includes building a watertight cofferdam, dewatering the structure, removing the culvert and filling in that portion of the dike.

New culverts don't offer significant new capabilities compared to the old ones, but they are much safer when built to today's standards, reducing the risks to communities surrounding the dike greatly

What Is Protecting Residents During Construction?

For those living around Lake Okeechobee who rely on HHD to protect them, the 1928 hurricane victim memorial at the Port Mayaca cemetery is a stark reminder that the 734 square miles of lake sits higher than the homes



A contractor uses a CSM – cutter soil mixer – machine to dig straight down into the Herbert Hoover Dike to cut through rocks and add cutoff wall material that will improve the safety of the 143-mile earthen dam.

and businesses located sometimes only a few hundred meters from the dike.

Construction was prioritized to identify and mediate the highest risks first, but a heavy tropical storm can be dangerous to construction crews and residents whenever there are active construction zones. That's why the Jacksonville District has worked closely with federal, state, county and local officials to prepare emergency response plans.

"The HHD culvert replacement and seepage cutoff wall contractors and the district's Construction Division Resident Office have pre-storm emergency action plan provisions to shut down and secure their sites, and ensure the safety of their personnel," Whiting said.

Additionally, HHD has an active and frequently updated Emergency Action Plan that includes storm event protocols developed and followed by the Jacksonville District and multiple federal, state, local and tribal governments.

"In an annual meeting between all agencies and before hurricane season, typically in May, these protocols are walked through and discussed to reiterate the understanding of what will take place during an approaching tropical cyclone," Whiting said.

In the event of a tropical storm emergency, residents are urged to closely follow their county or tribal emergency management officials' instructions, and never take risks to ride out a storm if ordered to evacuate.

What's Next?

With 13 years of work complete and two more planned, some area residents may wonder what is next for the dam that has protected their communities for 105 years.

In addition to the reduced risk anticipated in the project implementation report to be compiled after construction ends, many stakeholders are focused on what happens to the lake once the rehabilitation work ends.

Tim Gysan, the Jacksonville District's senior project manager for the Lake Okeechobee System Operating Manual (LOSOM), has been leading project development team meetings with federal, state, tribal and local government



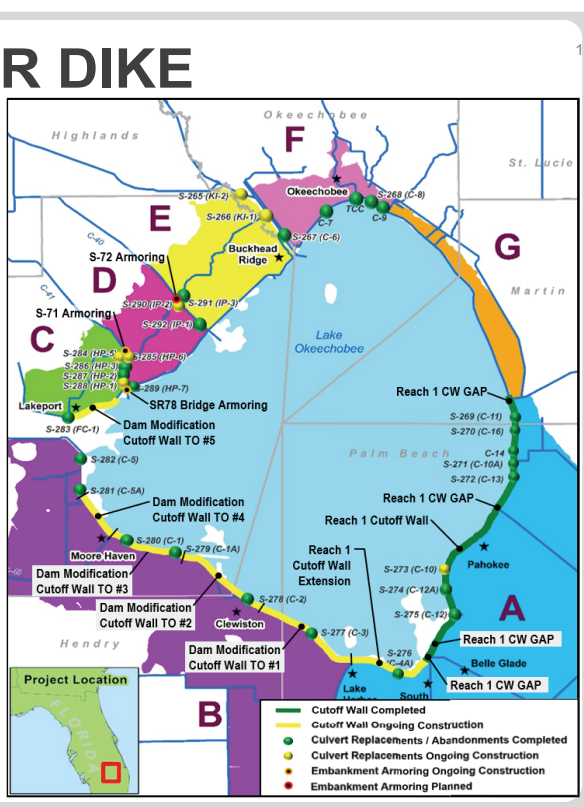
HERBERT HOOVER DIKE

IMPLEMENTATION PROGRESS

Completed Work
- 21.4 miles of cutoff wall in Reach 1
- Reach 1 Cutoff Wall Gap Closures
- 21 culvert replacements
- 4 culvert removal / abandonments

Ongoing Work
- 7 culvert replacements (6 contracts)
- Reach 1 Cutoff Wall Extension (6.4 miles)
- Cutoff Wall MATOC Task Order #1 (8.4 miles)
- Cutoff Wall MATOC Task Order #2 (7.0 miles)
- Cutoff Wall MATOC Task Order #3 (5.2 miles)
- Cutoff Wall MATOC Task Order #4 (3.9 miles)
- Cutoff Wall MATOC Task Order #5 (4.1 miles)
- SR78 Bridge & S-71 Embankment Armoring

Planned Work
- S-72 Embankment Armoring
- **All Zones completed by 2022**





Construction is on schedule for the C-10 culvert. The C-10 is one of 7 culverts in the Herbert Hoover Dike, with 21 already completed and another four removed or abandoned since work began on the rehabilitation project in 2007.

officials for almost a year to come up with a plan for managing water levels in the lake once the HHD is complete.

The project delivery team is identifying alternatives for the Lake Okeechobee Regulation Schedule, which LOSOM will replace. All those alternatives assume that HHD rehabilitation is complete, and the current operations insistence on dam safety is still a major factor in evaluating those alternatives.

"Dam safety is a constraint in the LOSOM schedule development process, and as such, LOSOM schedule performance will be evaluated against the flood risk assessment captured in the Dam Safety Modification Report (DSMR) for HHD," Gysan said. "Proposed lake schedules will not increase flood risk beyond that identified in the DSMR, on which the HHD rehabilitation was based."

Turtle Rescue

Love of reptiles and amphibians leads to animal rescue

By Nakeir Nobles

Entering college to become a science teacher but graduating as a herpetologist, Regulatory Division's Danielle D'Amato has always had a love for reptiles and amphibians. The passion for the non-domesticated animals eventually led to the creation of Sustainable Care and Urgent Treatment for Every Shell (SCUTES), a nonprofit D'Amato founded this year with her husband.



Danielle D'Aamato prepares to release a very large snapping turtle into the wild after it recovered from a motor vehicle accident.

"There are a lot of people who rescue cute and cuddly, but people often forget about our scaled wildlife," D'Amato said. "I will take in and rehabilitate all local native reptiles."

D'Amato has been rescuing scaled wildlife for more than four years, has experience rescuing cats, dogs and has assisted at a local lemur sanctuary. While rescuing animals like raccoons and squirrels, she found there was no local turtle and tortoise rescue facility. After discussing with her husband, she knew she had to help.

"Rescuing is challenging; it doesn't have a Monday thru Friday schedule. It's a lot of nights, weekends, and time you can be doing something fun," D'Amato says. When treating animals that are in pain or with

extreme injuries, you have to have a tough exterior and be able to hold it together. Animals can pick up on our energy, D'Amato says.

Calls for rescue assistance happen at all hours D'Amato says and advises anyone interested in rescuing to have perseverance and a commitment to help. One must be willing to learn as much as possible about physiology and best treatment practice for the species you want to help.

"Otherwise, you may not be helping. Attempting a rescue without the correct knowledge," D'Amato says, "can exacerbate the existing injuries, and attempting rescue without the correct permit can be illegal."

Rehabilitating turtles and tortoises is more challenging than mammals. "Mammals make noise and cry out when they are in pain, turtles don't. You really have to pick up on their unique movements and smells."

D'Amato says each animal has its own unique injury and personality for treatment. "I have one right now that refuses to eat in the outdoor enclosure and will only eat when I place it in the yard and watch it from a distance. And I have the same exact plants in the pen and the yard."

"There have been a few that have received a special place in our hearts..."

To date, D'Amato has rescued 89 animals. Her goal is to rehabilitate and release the animals back into the wild. Gophers [tortoises] are legally returned back to where they came from.

"If I do not have an exact location, the Florida Fish and Wildlife Conservation Commission (FWC) has to get involved." There are a few that cannot go into the wild and must go through FWC or are adopted, depending on the species, D'Amato said.

Sometimes D'Amato gets animals that cannot be legally released. Gopher tortoises have to go to FWC if they are non-releasable. Some get permanent homes as education animals.

The time an animal spends at SCUTES varies.

Animals that need extra care, D'Amato has rehabilitated them anywhere from eight to nine months. There



A fully recovered Gopher tortoise released back into the wild after its shell had been damaged from an encounter with a dog.

is a current resident, D'Amato says, that needs extended care due to a pretty rough break in the carapace, bridge, plastron, and a broken pelvic bone.

"There have been a few that have received a special place in our hearts so that are permanent members [at SCUTES]."

During Hurricane Matthew, D'Amato said she had 24 turtles inside her home, including an Aldabra (the world's second-largest tortoise. Weighing nearly 200 pounds, "It was a really fun experience to say the least," she said.

Most animals D'Amato receives come from everyday citizens.

"I have also received them from veterinarians, nature centers, and environmental consultants. Word of mouth is how people find me, or they call FWC and are then directed to SCUTES."

D'Amato has no limitations on what she will do to rescue a turtle. She says it may be creating a turtle relay, picking up a sea turtle and taking it to Jekyll Island, or making a trip to Orlando to pick up one.

"Thankfully, there is a network of concerned citizens willing to help throughout the state."

SCUTES partners with the Ark Wildlife Care and Sanctuary, Swamp Girl Adventure, Central Florida Wildlife Center, Inc. "We also have a great partnership with the Jacksonville Herpetological Society."

The animals' SCUTES primarily receives are Gopher tortoises (Gopherus Polyphemus), a Keystone species that is listed as Threatened in Florida. "We have seen an increase in box turtles due to all the development and habitat loss."

D'Amato cites habitat loss and development as the number one factor affecting turtles and tortoises. She said they are now the most endangered group of vertebrate animals, with more than half of their species threatened with extinction.

"Gopher tortoises live in high, dry, sandy areas. Unfortunately, that makes for a great location to build a housing development. Once the development is built, the surrounding tortoises are injured trying to cross the road or chewed on by domestic dogs."

Animal rescue doesn't come without a price tag. Along with the typical food and medical bills that D'Amato incurs, she says creating turtle pens and the building is also costly as well.

Because there are items that D'Amato's sanctuary hasn't acquired yet, medical bills for the animals become costly. Without an x-ray machine, she has to pay for vet visits, which sometimes may be the only option to get a proper diagnosis of an animal's ailment. D'Amato says on the rare occasion when she knows a turtle won't survive, humane euthanasia is the only choice, and a vet trip is necessary.

D'Amato would love to welcome volunteers, but due to rehabilitation laws, the only "hands-on" help SCUTES can use is transportation. "I've had coworkers assist me with this and grateful each time someone drives a turtle to my facility." SCUTES welcomes assistance with social media, community education, and outreach.

Those who are interested in assisting with rescuing animals, D'Amato suggests they contact a local organization and inquire about ways to help. Some organizations want people who would like to help clean, donate materials, or public education. She says going to the Internet and searching keywords like an injured turtle, Jacksonville, is typically what people search to find her. Social media, she says, is also a game-changer. When someone posts a picture of an injured animal, rescues are instantly tagged.

"Most rescues have something for everyone, depending on time and ability. There is always a way to help rescue even if you don't have time. Something as simple as ordering from an Amazon wish list is helpful."

To prevent turtles from having to go to rescue and be rehabilitated, D'Amato stresses dogs are not wild animals, and can be trained not to eat or bother a turtle. Her dogs have been trained and would never eat or chew on a turtle. She says if you see a turtle in the road, please stop

and move it across the street in the direction it was moving. Do not relocate the turtle. Humans do not always know best as some turtles have a very specific home range and will travel great distances through dangerous areas to go home.

D'Amato boasts she has not had any animals come to her twice for treatment. However, there have been repeat canine offenders that have chewed up more than one [turtle].

"I try to do my best to educate pet owners on how to prevent future interactions, and sometimes it works, sometimes it doesn't."

Photos provided by Ms. D'Amato.



D'Amato pictured with a Thick Loggerhead sea turtle to be released in fresh water to help remove the barnacles on the turtles back.

Getting the Job Done

Operations Division's Mission Essential Employees

By Erica Skolte



Needles have been placed all the way across an I-beam as the first step in dewatering the Ortona Lock and Dam for repairs to the upper gate. Photo by Tammy Cleveland

Throughout the past year's challenges, the Operations Division's workforce of 175 people, based in 12 offices and working on a diversity of missions, were the embodiment of resiliency and courage.

They kept up the momentum, with some employees teleworking at home and meeting virtually. By contrast, mission-essential employees continued their work out in the field, taking the necessary precautions to keep themselves and others safe, especially when traveling to COVID-19 hotspots.



"Operations Division is one of the most diverse programs in the Jacksonville District, or in any Corps District," said Carol Bernstein, chief of the Operations Division. "We oversee operations and maintenance of a variety of Corps projects, within Florida, Puerto Rico and the U.S. Virgin Islands. We survey navigable harbors and channels, reduce flood risks, stabilize shorelines, provide recreational opportunities, control invasive species, and respond to natural disasters and emergencies."

"Eighty-five percent of our operations staff have been designated as mission essential, with the majority of our staff supporting navigation and flood risk management missions," said Candida Bronson, deputy chief of the Operations Division. "Our business line budget of close to $30.5 million reflects the priorities in Florida: 61 percent of the operations and maintenance budget is dedicated to flood risk management, while 29 percent helps to keep waterways open for navigation. Both are essential missions for the Corps."

"One of the things that we had to look at during the time of COVID was continuity of operations," said Bernstein. "If those mission-essential individuals or support staff were not able to perform for some reason, we had plans to pull in backup personnel. We had backup plans to the backup plans to ensure our critical work continued."

Flexibility and the ability to adapt have been keywords for 2020. In an organization where much of the staff works in field offices, it's often challenging to stay in contact and maintain relationships. The Operations Division worked hard to find creative ways to communicate when traveling and meeting in person was limited.

The annual Operations Roadshow, which was once a guaranteed opportunity for leadership to travel throughout Florida and meet with staff in person, was held virtually this year. Bernstein, Bronson, and branch and section chiefs met with staff in a series of WebEx video virtual meetings across the state. Field offices included the Palatka Office, the Survey Depot, the South Florida Operations Office, and lock operators from all six locks and dams. Leadership highlighted the successes in each branch and listened to the concerns of the staff.

Other accommodations included limiting travel to essential overnight trips only, providing sanitation supplies in offices and vehicles, maximizing telework and virtual meetings when possible, and using separate cars for travel. Also, restricting access to some recreational facilities and reopening those in phases when social distancing requirements were safely met.

One of the branches that require many of its personnel to travel is the Survey and Mapping Branch. The department continued their heavy schedule of surveys to support new work and dredging contracts, including Kings Bay, Jacksonville Harbor, Tampa Harbor, Gulf Intracoastal Waterway, Palm Beach Harbor, Canaveral Harbor, Port Everglades and Ponce de Leon Inlet.

At the same time, the branch must maintain a flexible posture and always be ready to respond. Survey vessels may be staged in advance of a storm, as the major ports must be surveyed as

soon as possible after a storm passes so they can be reopened.

"In spite of the many COVID-19 risks and challenges, including having to plan weeks in advance to obtain approval from headquarters for all travel, the in-house survey crews managed to meet all surveying requirements with minimal delays. This was just one example of the crews demonstrating self-sacrifice and personal courage during their day-to-day operations," said Brian Brodehl, chief of the Surveying and Mapping Branch.

"Simultaneously, they have been performing an exceptionally heavy workload due to the supplemental dredging requirements, which had to be executed during a specific timeframe. This has been a testament to their perseverance and dedication to the mission."

"Not only are our survey crews on the road getting it done, but they are also working in hotspots like Palm Beach and Fort Lauderdale," said Dale Traylor, chief for the Field Survey Section.

Victor Wilhelm is the Unmanned Aircraft Systems (UAS) and Remotely Operated Underwater Vehicle program manager, a specialized part of the Survey and Mapping Branch. He spearheaded the program, is considered the technical leader and trainer for the Corps, and wrote the Corps' UAS enterprise book.

Wilhelm runs the first full-time operational program in the Corps, with more than 10 years of experience. The program offers tailored accurate, high-resolution, portable, safe and inexpensive autonomous systems that support a broad range of applications.

Applications include regulatory compliance, construction monitoring, ecosystem restoration, wildlife and invasive species monitoring, navigation structures, emergency operations, culvert pipe inspections and support to the U.S. military.

The South Florida Operations Office in Clewiston is another location where many employees must travel to perform their jobs and have boots on the ground in remote areas.

"It has been a busy and challenging year for the South Florida Operations Office. While some employees have been able to continue their duties from home, the vast majority continued to report to projects in the field. The lock operators, mechanics, technicians and rangers have continued to succeed in their roles and exceed expectations in campground visitation. Navigation lock usage has been busier than normal," said Jeff Fallin, chief of the South Florida Operations Office.

"Despite these challenges, we've been able to keep up with scheduled maintenance and inspections, continue acceptance of new construction around the Herbert Hoover Dike, and also complete two major maintenance closures – the dewatering and maintenance work at Canaveral Lock and Dam, and the upper gates of the Moore Haven Lock and Dam. I'm proud of all South Florida Operations Office team members," he said.

"In response to COVID-19, for the safety of our staff, volunteers and visitors, we conducted an orderly shutdown of our campgrounds and recreation areas in south Florida - and then began reopening them in a phased approach," said Tammy Cleveland, deputy chief for the South Florida Operations Office.

"Everyone attached to the South Florida Operations Office is mission essential, so the majority of ops folks left their houses every day to do their jobs, and we found ways for them to do that as safely as possible."

Chief of Navigation and Flood Risk Management Gary Hipkins and his team are also based out of the South Florida Operations Office, though many work at remote locations.

"My staff has been hiring different people with different skill sets," said Hipkins. "Due to the intricacy of the new controls on the Herbert Hoover Dike and lock structures, it's important to have a well-trained, knowledgeable and diversified staff. We've been hiring people who have computer skills as well as technical skills, who are capable of working with the new

electronic and computerized systems such as the Sutron; which is used for monitoring water levels and water management, as well as being able to problem-solve and expertly turn a wrench."

Lock operators, mechanics and electricians are all essential employees. "We're there 365 days a year – electrical failures, hurricanes, you name it: we're there," said Ed Marshall, the East Side Lock Supervisor.

This past year, lock operators adjusted their shifts to accommodate extended lock hours for vessels to find safe harbor during Hurricanes Isaias and Laura. Operators worked extra hours, hunkered down overnight at the St. Lucie Lock and Dam, to manage water levels in the C-44 Canal to protect the communities downstream from flooding.

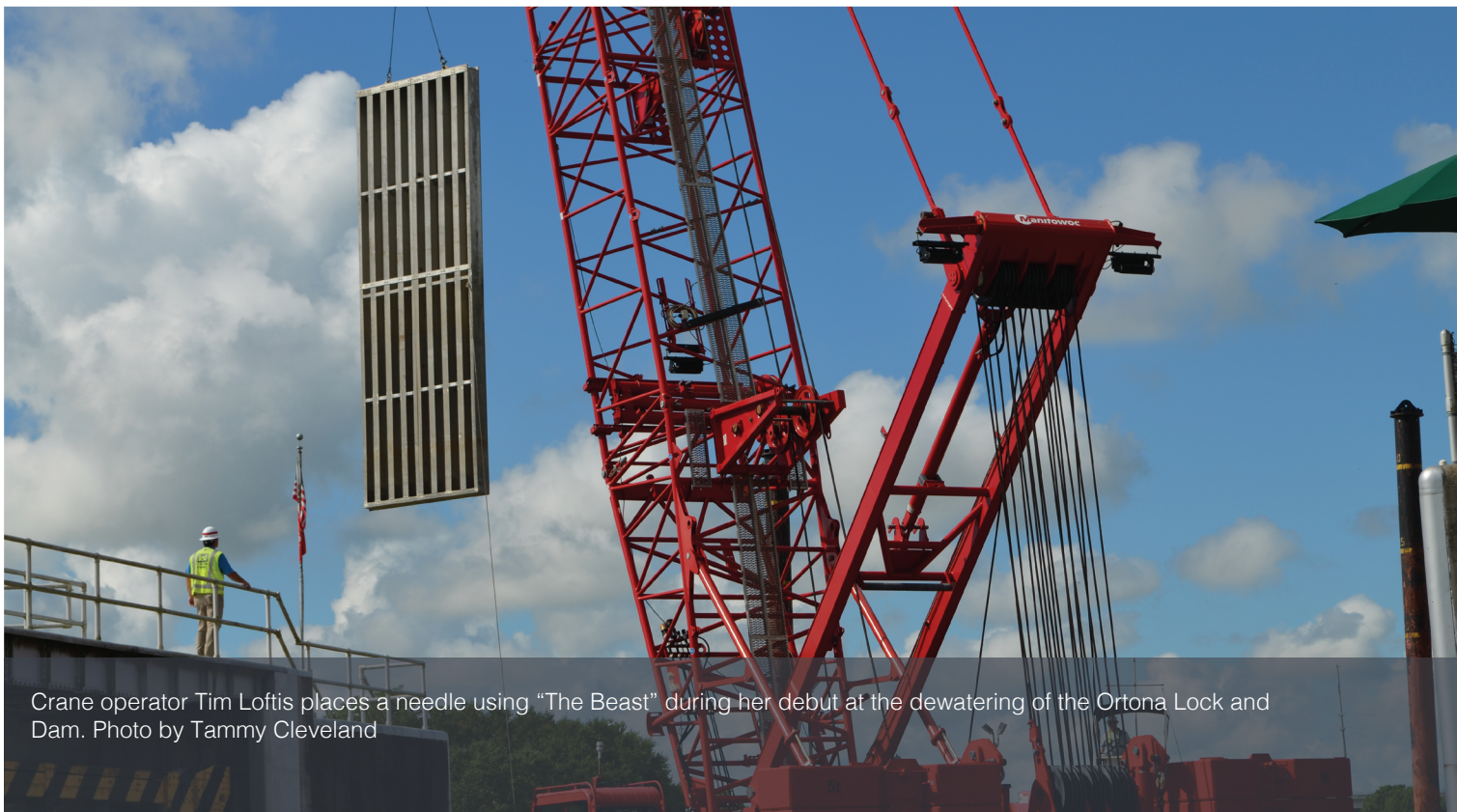
Though located in central Florida, the Canaveral Lock is also part of the South Florida Operations Office.

"We have a huge impact on the economy of the Space Coast, so completing the dewatering and maintenance repairs on the Canaveral Lock and Dam was important," said D.J. Hazebrook, lockmaster for the Canaveral Lock. "In 1965, we built the lock larger than originally planned to allow passage of the Saturn rocket's first stage, used to put Apollo rockets into space.

"We continue to support launch missions of NASA and SpaceX. Rockets are too big to truck, and the oceangoing NASA barge Pegasus transports rocket components to the Kennedy Space Center in Cape Canaveral. Along with her tug helpers, American and Termite, she takes up the entire 600-foot lock chamber," said Hazebrook. "Commercial, charter and recreational fishing boats also depend on us. On the opening day of snapper season, we locked through 118 boats on their first two lockages of the morning."

Bill Keeney, the west side lock supervisor, planned and coordinated maintenance repairs at the Moore Haven Lock and Dam on the Okeechobee Waterway, located on the west side of Lake Okeechobee. The Okeechobee Waterway extends 154 miles from the Atlantic Ocean at Stuart, along the St. Lucie Canal, crossing Lake Okeechobee, and continues along the Caloosahatchee River to the Gulf of Mexico at Fort Myers. It is a key navigational shortcut through the middle of the state and a vital evacuation route for vessels to find safe shelter in advance of tropical storms.

"We did the dewater and repairs on the upper gates of the Moore Haven Lock and Dam under COVID protocols," said Keeney. "The amazing thing is that with a minimum number of staff to



Crane operator Tim Loftis places a needle using "The Beast" during her debut at the dewatering of the Ortona Lock and Dam. Photo by Tammy Cleveland

help maintain social distancing, we were able to do the dewater, investigate the problem, fix the problem and do a steel structure inspection. And got it all completed a day early."

Heavy equipment operators work out of the South Florida Operations and Palatka Offices.

"We established protocols to follow CDC guidelines and to help with our social distancing," said Paul Jacques, chief of maintenance and contract quality assurance sections for the South Florida Operations Office. "We picked earthwork jobs where we could disinfect a piece of equipment and keep that same guy on that piece of equipment, so they weren't cross-decking. Once a piece of equipment was disinfected, work was sustained, and it was still full performance here."

Simultaneously, South Florida Operations Office maintenance crews received and stockpiled 12,000 tons of assorted rock for the C-43 culvert replacements and completed bank restoration at Harney Pond Canal. Heavy equipment teams completed 27 Herbert Hoover Dike erosion embankment repairs on dikes, ramps and parking lots.

Also, a team from the Corps' Vicksburg District provided support to complete 13,500 feet of rip rap replacement and 30,000 square feet of sod along the Indian Prairie Canal embankment.

The Operations heavy equipment team based in Palatka also worked at both ends of the state, working on the Kings Bay Dredged Material Management Area in Georgia, and completing the rock revetment at the C-111 canal in south Florida earlier than scheduled.

The Invasive Species Management Branch provides support to multiple functions: to navigation to keep federal navigation channels and waterways open for commerce and recreation; to ecosystem restoration, including the Comprehensive Everglades Restoration Plan projects; and for flood risk management, to maintain the integrity of levees and flood control structures, keeping structures open to prevent damage and maintain water flow, as well as environmental stewardship.

The removal of aquatic growth project alone has a budget of $3.4 million for fiscal year 2020.

"I'm the only non-essential person in my branch," said Jon Lane, chief of the Invasive Species Management Branch. "Our missions had to be completed, and they are all critical. Everybody stepped up, put on their masks and went out and did their job. There was no hesitancy in their desire to complete the mission and keep the mission going."

Invasive species management always requires extensive coordination and communication with multiple partners and stakeholders throughout the state and the country. This year, Lane's group discovered new ways to use the WebEx platform to collaborate.

"We found that we could set up a meeting more quickly since we didn't have to find a location. In one instance, we put a document up on the WebEx and edited it in real time as a group. We could never have done that before. We found an hour to hammer it out together and nailed it," he said.

Lane has grown the Invasive Species Management program, which was once only focused on invasive aquatic plants, to include invasive animals such as burrowing green iguanas and redhead agamas, to maintain the integrity of Corps structures.

The aquatic plant control team completed surveys and spraying of invasive aquatic species on the St. Johns River near Palatka, and in Volusia and Brevard Counties. In fiscal year 2020, 33,000 alligator weed flea beetles were collected and shipped to 9 different agencies across six states. These represent only a small sample of the activities managed by this diverse program.

"I am very proud of each person in Operations, both on the front lines and in a support role, for what they do every day. Our team demonstrated their resilience through all of the challenges and executed our missions in a manner that helped to keep themselves and others safe," said Bernstein. "Our people make us successful and have kept our momentum moving forward."

We Remain Consistent.



District's Regulatory Division stays the course with program changes and COVID-19

By Nakeir Nobles



Wetlands in Mandarin, Fla. As the Corps' largest regulatory program in the nation, the Jacksonville District Regulatory Division positioned itself to meet challenges in 2020 while remaining committed to providing the highest public service level. Photo by James Yocum

Program change appears to be the central theme in fiscal year 2020 (FY20) for Jacksonville District's Regulatory Division. During FY20, the division continued its focus on mission execution during significant program changes. Rule changes, Executive Orders and new regulatory guidance had a significant impact on the program.

Changes focused on streamlining efforts to address energy, infrastructure and economic growth. FY20 was no exception to previous years as the division moved forward on many energy and infrastructure projects.

As the Corps' largest regulatory program in the nation, the Jacksonville District Regulatory Division positioned itself to meet these challenges while remaining committed to providing the highest public service level. Every challenge was met through commitment, innovation and efficiencies.

The division manages various program efficiencies that allow us to address high volume workload with a commitment to excellence in public service. Such efficiencies include programmatic means to address resource agency consultation, dedicated project delivery teams to address program challenges, promote consistency and manage a robust list of general permits with local, state and federal agency partners.

The division created a Regulatory Board to provide clarity and guidance on problematic regulatory issues. Efforts to manage pending workloads have allowed for a reduction of vintage projects from 56 to just three.

The ability to adapt and deliver demonstrates the division's creative, proactive and innovative spirit. Whether it's adapting to program changes, budget restrictions, attrition, natural disasters, or COVID-19, Regulatory Division continues to deliver. Although we anticipate further program changes, the division will do so with confidence and assurance in its tradition and spirit.

One significant program change Regulatory has faced involves implementing a rule redefining Waters of the United States, referred to as the

Navigable Waters Protection Rule (NWPR).

Becoming effective June 2020, division staff supported national efforts in developing the NWPR and continued to provide support on division-level integration teams to implement transition plans.

As a result of this rule, Regulatory Division requires re-assessing the previously determined limits of jurisdiction for all pending and finalized actions, resulting in changes in the permit evaluation process.

Implementation of the rule revealed an increase in jurisdictional determination requests and requests for a re-evaluation of the limits of jurisdiction, which have resulted in the need to re-evaluate appropriate regulatory action, including determining if no permit is required in some cases. Internal project delivery teams were established to assist with implementation and provide consistency in applying the rule.

The division anticipates further changes to the workload as a result of the new rule. Despite these changes, productivity continues to be high, as illustrated in the following final actions summary chart (Figure 1).

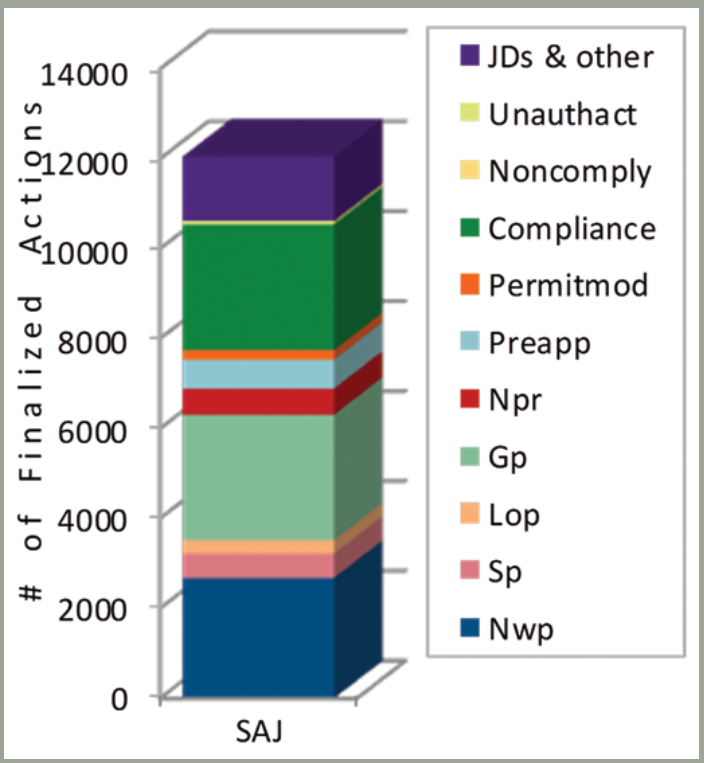


Figure 1: Final actions summary chart

In addition to the new NWPR, the division saw increased momentum with the state's efforts to assume a portion of our program under Section 404, Clean Water Act (CWA), for activities in 'assumed' waters. It continues to work with the state on legal and technical aspects of assumption.

A milestone event occurred in August 2020 when the state submitted its application to the U.S. Environmental Protection Agency (EPA) to assume a portion of the 404 Program. In anticipation of the EPA's potential approval as early as the end of the 2020 calendar year, the division continued to develop plans to implement assumption.

This transition includes updating the U.S. Army Corps of Engineers-State Operating Agreement, which will incorporate the Corps' and state's methods for processing applications for work in assumed waters. However, the Corps will retain certain waters within 300 feet of the ordinary or mean high water mark of tidal waters. Identification of assumed waters will be facilitated by developing GIS data to identify assumed versus retained waters and tribal lands and federal projects.

As the world adapted to a new norm resulting from COVID-19, Regulatory has been no exception. The entire team made necessary adjustments to continue dedication and mission support. By applying flexibility and using technologies such as Microsoft Teams and Skype, district leadership and team members have maintained successful program execution and effectively minimized this transition's effects.

Regulatory has taken the opportunity to promote camaraderie and foster team building in a new virtual world. Our adaptation has allowed continued success but also highlights our ingenuity and the strength of the regulatory community.

This new virtual existence provided regulatory team members the opportunity to share glimpses of their pets, sounds of neighborhood birds, and occasionally family members who offer cameo appearances. The regulatory team is proud of its proactive efforts to place all employees on telework status, promote flexibility to accommodate people first, and execute the mission at hand.

The division supports our Emergency Operations team by developing subsequent phased plans for a return to work. In December and January of this fiscal year, the Regulatory Division responded to earthquakes in the Antilles through alternative-emergency permitting procedures.

Emergency permitting procedures allow the division to utilize streamlined agency coordination to authorize activities, which could adversely affect lives and property, and create economic hardship if not permitted expeditiously.

Previous natural disasters, such as Hurricane Michael in 2018, and Irma and Maria in 2017, provided the impetus for Regulatory to develop standard operating procedures to outline processes for emergency permitting. The division has also partnered with the Federal Emergency Management Agency (FEMA) for information sharing to address permitting needs in response to FEMA program assistance requests.

The division has effectively partnered with other resource agencies, such as the U.S. Fish and Wildlife Service and National Marine Fisheries Service, to identify best management practices and expedited consultation procedures to address emergency permitting requests.

Additionally, the division internally addressed the need to shift resources in response to emergency events.

In FY20, the South Atlantic Division (SAD) finalized its peer-review effort of each district's business model, workload, workforce, organizational structure and efficiencies. During the evaluation of each district's program and attention to workload and budget, Jacksonville District's Regulatory Program was identified as underfunded and understaffed.

As a result, the district received an additional $300,000 this fiscal year, increasing the total annual budget to $17,394,000. The additional funding helped the division better manage resources in response to rate increases, staffing needs and the effects of COVID-19.

Regulatory anticipates receiving an additional $200,000 in FY21. As part of the peer-review effort, SAD continues working with the districts to establish a list of critical permitting actions, which could be used for determining future district allocations.

Another peer-review outcome was identifying efficiencies, which could be developed, broadened and/or shared. SAD identified efficiencies that focused on meeting responsibilities under the Endangered Species Act (ESA), such as programmatic biological opinions and general permits to address activities across multiple districts such as aquaculture and artificial reefs.

As part of a Supplement to the FY20 Appropriations Bill, the division also received additional funding, resulting in a $250,000 plus up. These additional funds have been committed to developing GIS data layers to map all federal projects within the district, including the Antilles. This GIS data will provide a much-needed tool and efficiency with permit evaluation and coordination on Section 408 issues.

In FY20, the division experienced a 10 percent average attrition rate, which precipitated an aggressive recruitment plan. Consequently, 14 hiring actions were completed since December while facing challenges due to COVID-19.

As of August, our workforce includes 107 full-time equivalents (FTEs). Our affordable goal is 115 FTEs, and our IMD identifies a total of 124 FTEs. In developing the workforce management plan, we continued to account for budget changes, rates, step increases and workload.

Our future organizational structure will be

shaped by anticipated events such as the new rule defining waters of the United States, state assumption under Section 404 of the CWA, and potential changes with our state programmatic general permitting agreement. The following chart (Figure 2) illustrates the division's past five years budget and workforce numbers:

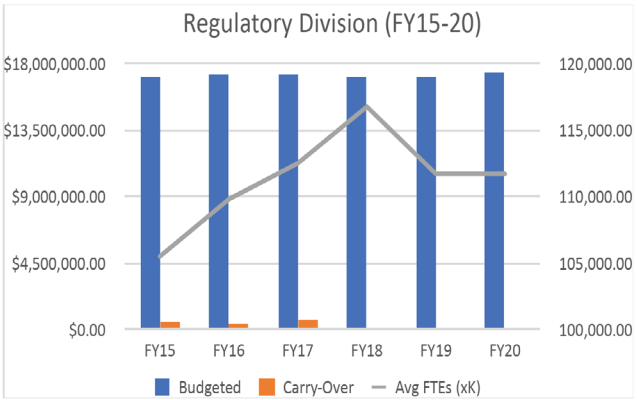


Figure 2: Jacksonville District Regulatory Division budget and workforce numbers.

A significant efficiency was added to the division's list of accomplishments this fiscal year through reaching a programmatic consultation agreement with the U.S. Fish and Wildlife Service through Standard Local Operating Procedures for Endangered Species (SLOPES) in the Florida Panhandle.

The Panhandle SLOPES effort provides programmatic concurrence, under the ESA, for a range of regulated activities which may affect 42 species. Additional SLOPES are currently under development to provide programmatic concurrence under the ESA, for key species located throughout the Florida peninsula.

In addition to existing programmatic agreements with the agencies (e.g., U.S. Army Corps of Engineers Jacksonville District's Programmatic Biological Opinion (JAXBO), species effect determination keys, etc.), the SLOPES reduces permit review timeframes and increases the division's efficiencies.

To provide additional efficiencies, and as part of its peer review effort, the Jacksonville District Regulatory Division is developing an 'effect determination' white paper for use by all districts within SAD to provide consistency with determining the effects of regulated actions to meet requirements under the ESA.

Additionally, the division is updating the Operations Regulatory Module (ORM2) User Desk Top Guide to address program changes. The division's efforts to improve efficiencies cross district and regional boundaries. Our proactive measures are a real success story and have inspired the opportunity to expand such efforts outside the district.

The division has managed several significant and sometimes controversial energy and infrastructure projects, such as Ridge Road Extension in Pasco County and Turkey Point Nuclear Power Plant in Miami-Dade County. We continue our evaluation of transportation projects such as the Kendall Parkway (SR836) expansion in Miami-Dade County.

The Regulatory Division also continues monitoring dispersed water management projects throughout south Florida and has reached a final decision on the A-2 stormwater treatment area (STA) project. Our A-2 STA efforts highlighted our ability to work with civil works and the South Florida Water Management District to complete our review within target deadlines.

The division mining team continued its efforts to address large mining operations throughout the state, including projects with Florida Rock, and address continued interest in mining within the Okefenokee basin.

The mining team has successfully partnered with Savannah District to address mining projects, affecting resources that cross district boundaries. Future litigation may continue to influence the national regulatory program.

We routinely coordinate with the Office of Counsel on many sensitive regulatory actions, which may involve litigation. In FY20, we addressed approximately 80 requests for information under

the Freedom of Information Act (FOIA).

FY20 was a hectic year for the Regulatory Division. In addition to the program challenges stated above, we are now working in advance of the re-issuance of the 2020 Nationwide Permits (NWPs).

These new NWPs propose expanded scope, increased thresholds, and new activities that focus on energy, infrastructure and the economy. This effort will require significant time and resources. As with state assumption, we have created our best and brightest teams to revise our NWP regional conditions.

Integral to this effort is to streamline the regional conditions and coordinate with resource agencies to ensure that regional conditions address the activities with minimal effects on resources.

Very talented professionals comprise the Jacksonville District Regulatory Division. Experienced and capable leaders, brilliant program managers, and extraordinarily dedicated and productive project managers are at the forefront of our program. Its interaction with the public is unequaled within the U.S. Army Corps of Engineers, completing nearly 50 outreach efforts this year alone.

The staff was recognized on many occasions for their public service. Many team members are national or regional instructors of the regulatory program and serve on regional and national project delivery teams.

We are in the process of bringing new technologies to our business line to serve the regulated public better. Technologies such as GIS, electronic permit applications, and software-generated documents promise to operate smarter and more efficiently.

Our capabilities will continue to be tested as we prepare for the future. Our commitment to public service remains strong. We remain equally committed to our people who continue the legacy of the Jacksonville District program.



The U.S. Army Corps of Engineers Regulatory Program began in 1890 with the responsibility of protecting and maintaining the nation's navigable waterways. As a result of changing public needs and evolving policy via new laws and court decisions, protection has been extended to all waters of the United States, including many wetlands. Docks on the St. Johns River, Jacksonville, Fla. Photo by Jim Yocum

Resiliency SHINES Through

During a Strange and Trying 2020

Story and photos by Peggy Bebb

A typical year in review for the Jacksonville District's Emergency Management Branch (EM) consists of hurricane response and recovery. However, 2020 brought more challenges than expected and kept the branch busy responding to earthquakes and a pandemic.

The first challenges of 2020 came in January, when Puerto Rico and surrounding areas experienced a multitude of earthquakes and aftershocks, shifting the EM branch into high gear.

Activating the Emergency Operations Center (EOC), EM branch chief Logan Wilkinson deployed dam safety inspectors to inspect several dams, including those built either by local authorities or by the Corps and turned over to local sponsors.

While the district responded to these earthquakes and their subsequent aftershocks, the COVID-19 global pandemic hit, bringing a whole new set of challenges not seen before. It was an uncertain

time for all.

Wilkinson and the team searched for new ways to operate the EOC to support the pandemic response. Corps-wide telework to slow the spread of the virus, and strict health standards that included social distancing while supporting mandatory deployments, was a unique challenge.

"The Corps found unique ways to respond to COVID through virtual support and social distancing when deployments were required," said Wilkinson . "COVID caused USACE to look at unique ways to support any hazards, and we are prepared to respond both virtually and in-person if necessary."

Jacksonville District's EM branch employs only a handful of workers. Currently, that number stands at five after the transfer of one EM specialist. This team, tremendous district support, Corps-wide volunteers, and the Crisis Action Team (CAT), set the pace for success during this unprecedented year.

Jacksonville's response to the earthquakes coincided with the COVID-19 response. The district was tasked by the Federal Emergency Management Agency (FEMA) to assess potential Alternate Care Facilities (ACFs).

Wilkinson and staff brought in teams to provide assessments across the district's area of responsibility within a short timeframe. The team worked quickly due to the nature of the fast-moving pandemic and the risk of area hospitals reaching anticipated capacity limits.

FEMA finally gave the go-ahead, and Jacksonville was able to move forward on a buildout and complete an ACF at the Miami Beach Convention Center while balancing deployments versus a virtual workforce.

"We have an outstanding team of engineers who volunteered to meet the intent and direction provided up front by our Chief of Engineers. We were able to meet these demands under budget and ahead of schedule," said Wilkinson.

"In the future, how we respond is going to be different due to COVID. We are looking at ways



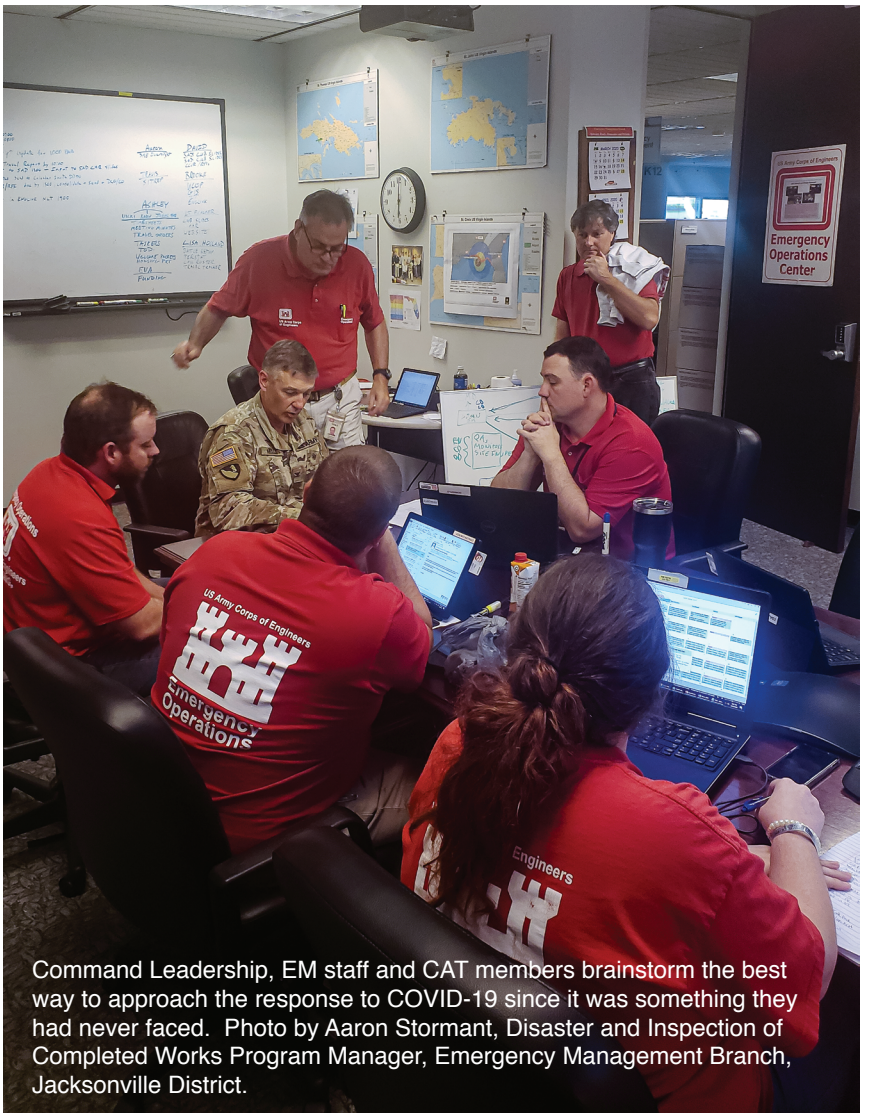
Ashley Gorges, Emergency Management Specialist, briefs Northeast Florida Assessment Team Three on administrative responsibilities prior to their deployment to the COVID-19 response. Photo by Peggy Bebb, Corporate Communications Office.

to continue to respond and recover while working mostly virtual with a core group that would need to be available for deployment to execute any missions FEMA asks us to do," noted Wilkinson.

"We've updated our standard operating procedures to include response to a pandemic as well as continuing the district's mission essential functions in a virtual capacity via telework."

The Emergency Management community of practice throughout the Corps is considered relatively small. However, when any hazard threatens the United States or its territories, and the Corps assists with recovery, they come together with over 30,000 enterprise-wide volunteers.

According to Wilkinson, the Corps' success and resilience are due to senior leaders setting priorities up front to do whatever it takes to assist the states and federal government and, most importantly, the survivors who have been impacted by any hazard.



Command Leadership, EM staff and CAT members brainstorm the best way to approach the response to COVID-19 since it was something they had never faced. Photo by Aaron Stormant, Disaster and Inspection of Completed Works Program Manager, Emergency Management Branch, Jacksonville District.

Jacksonville District prepares year-round by facilitating and participating in exercises throughout its operation area and participating in national-level activities. Wilkinson said the district's EM team has annual internal exercises, training, and seminar sessions for CAT members and senior leaders.

"We spend much of our time reaching out to our federal, state and local partners discussing capabilities and building strong relationships," he said.

Because of these strong relationships, the Corps has become the number one go-to agency when a disaster exceeds the state's or territory's capabilities.

Winding down 2020 and moving into 2021, EM must continue to remain vigilant and prepare for the worst. "We have a deep bench built in our CAT volunteers throughout the district who augment the EOC during times of activation," said Wilkinson.

"Without these volunteers, we would not be able to meet mission demands successfully. We have some of the best and brightest who are willing to put their job and family life to the side to rise to the occasion and support the nation."

Steadfast, strong, supportive, and resilient – that's what makes up Jacksonville District.

The U.S. Army Corps of Engineers. Jacksonville District. delivers value to the nation by anticipating needs and collaboratively engineering solutions that support national security. energize our economy and increase resiliency.

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