

# Outlook

"Your project. Our passion."

## PEACE RIVER WATER SUPPLY PEACE OF MIND

*The peaceful, scenic, and ever-changing Peace River is a viable water source for many in Southwest Florida. Consequently, dredging projects are vital to ensure the reliability of the pumping facilities that deliver this water to storage reservoirs.*

The Peace River Regional Water Supply Facility (PRF) in DeSoto County relies upon surface water from the Peace River to supply drinking water to the region. Water is pumped from the river using large-capacity, axial-flow pumps which delivers the river water to a surface reservoir. The storage system and water production reliability of the PRF are dependent upon adequate availability of water at the intake pump station.

In 2014, Johnson Engineering began evaluating hydrologic and hydrographic data of the river around the PRF intake pump station. Our team reviewed a variety of historical aerial photographs,



The Peace River Regional Water Supply Facility relies upon surface water from the Peace River for supplying drinking water to the region. Dredging is vital to ensure the reliability of the pumping facilities to deliver water to storage reservoirs.

literature, and performed site assessments, and performed a hydraulic modeling of the river. A hydrographic survey was completed to measure the depth and bottom configuration of the river. The evaluation confirmed changing river bottom conditions over the last 20 years around the pump station's intake structure, due to a number of processes including point bar accretion, cut-bank erosion, riparian vegetation advancement, siltation, and sand deposition.

Ecological assessments were conducted to identify environmental and wildlife concerns associated with the surrounding area. Our team

CONTINUED ON PAGE 2

A quarterly publication by:



Summer 2020

In This Issue:

**Peace River  
Dredging for  
the PRMRWSA**



**USFWS Proposes  
Critical Habitat  
for the  
Endangered  
Florida Bonneted  
Bat**



**Water Quality  
Sampling  
Continues During  
COVID-19 Pandemic**



**Full Depth  
Reclamation:  
Stabilized vs.  
Unstabilized**



## PEOPLE & PROJECTS: ON THE MOVE



Kyle Philpot



David Isley

Johnson Engineering ecologists Kyle Philpot and David Isley recently received their Authorized Gopher Tortoise Agent Permits from the Florida Fish and Wildlife Conservation Commission (FWC). This brings the company total to six authorized gopher tortoise agents who are allowed to permit relocations, survey, handle, capture, and transport gopher tortoises, following FWC policies, guidelines, and rules.



also performed a surface water model of the river which helped determine the need to dredge and to establish the most adequate dredge conveyance. Ecological assessments, sampling, and modeling all were needed to obtain the necessary permits. Our recommendation plan to the Peace River Manasota Regional Water Supply Authority included a two phased dredging plan to improve the reliability of water delivery to the river pump station intake and performing a hydrographic survey on a regular basis to monitor the changes of the river bottom over time.

Phase 1 of the recommended plan involved acquiring a maintenance dredging permit. The area, which was originally dredged in 1974, is directly in front of the river pump station intake structure. The maintenance dredge work was successfully completed in January 2017 and removed approximately 3,500 cubic yards of river sediment directly in front of the pump station. Our team then performed another survey of the river bottom to confirm the dredge work and to provide updated river bottom depths along the channels.

In September 2017, Hurricane Irma hit Florida, severely impacting the area. The Peace River overflowed its banks, flooding the PRF. It was necessary to make sure the facility could continue to pump water for residents. Our team arrived onsite within two weeks to perform another hydrographic survey to identify any sedimentation changes along the river. They found river deposits had accumulated in front of the pump station as a result of some of the

highest historical river flows. It was now necessary to perform a second maintenance dredge to remove an estimated 800 cubic yards of material placed as a result of the high flows.

A year later, our team performed a fourth hydrographic survey of the river to obtain current conditions to prepare the design documents needed for the upcoming Phase 2 dredging project. The second phase of the plan involved maintaining adequate water conveyance between the main channel extending from the CR 761 bridge to the river intake pump station. This phase had a dredge area of approximately 3.8 acres and consisted of removing approximately 16,500 cubic yards of river sediment. Authorization from the FDEP and USACE was also granted to perform a second maintenance dredge as part of Phase 2. Our team provided construction administration, inspection, and water quality assurance during all dredging operations.

The work was successfully completed in August 2019. The team performed a fifth and final hydrographic survey to confirm dredging volumes for Phase 2. In total, 20,200 cubic yards of river sediment was removed from the river and is being stored and stockpiled at the PRF site to be used as a fill resource.

The project resulted in no impacts to wetlands or wildlife, such as gopher tortoises, scrub jays, and manatees. Having a multidisciplinary team was crucial to the overall success of this project which has helped improve the reliability of water delivery to the river pump station intake.

For more information, contact Erik Howard, PE, PSM at (239) 461-2441 or ehoward@johnsoneng.com. ■

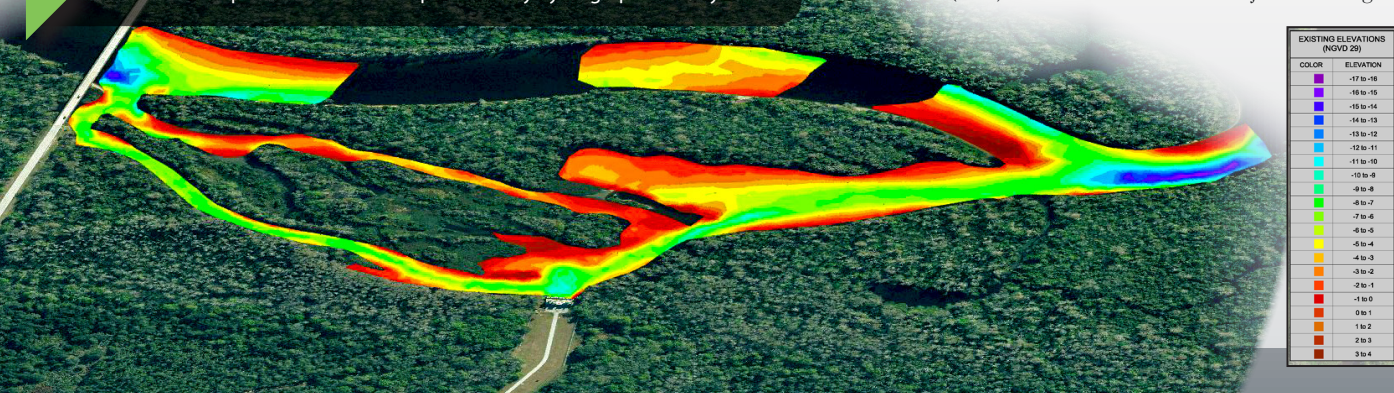
The survey crew calibrated GPS equipment over a primary project control point.



Survey crews used on-board GPS and hydrographic gear to map the depth and configuration of the river bottom.



An elevation map of the river bottom produced by hydrographic survey data.



Benthic surveys were performed near the pump station intake by JEI ecologists for protected aquatic species.



Our engineers collected pre-dredging soil samples for classification near the pump station intake.



Soil samples were collected and recorded at the Water Treatment Plant site.



## USFWS PROPOSES CRITICAL HABITAT FOR THE ENDANGERED FLORIDA BONNETED BAT

Following the 2013 U.S. Fish and Wildlife Service (USFWS) listing of the Florida bonneted bat (FBB) as endangered under the Endangered Species Act (ESA), state and federal wildlife agencies, private consultants, and researchers have conducted numerous studies and surveys to better understand the biology and life history of the species. On June 10, 2020, the USFWS announced a proposal to designate approximately 1.5-million acres of critical habitat for the FBB under the ESA, as well as the availability of a draft economic analysis for the proposed designation. The USFWS contends the critical habitat areas are essential to the conservation of the species, provide the physical and biological features necessary for the FBB to survive and reproduce, and accordingly may require special management or protection.

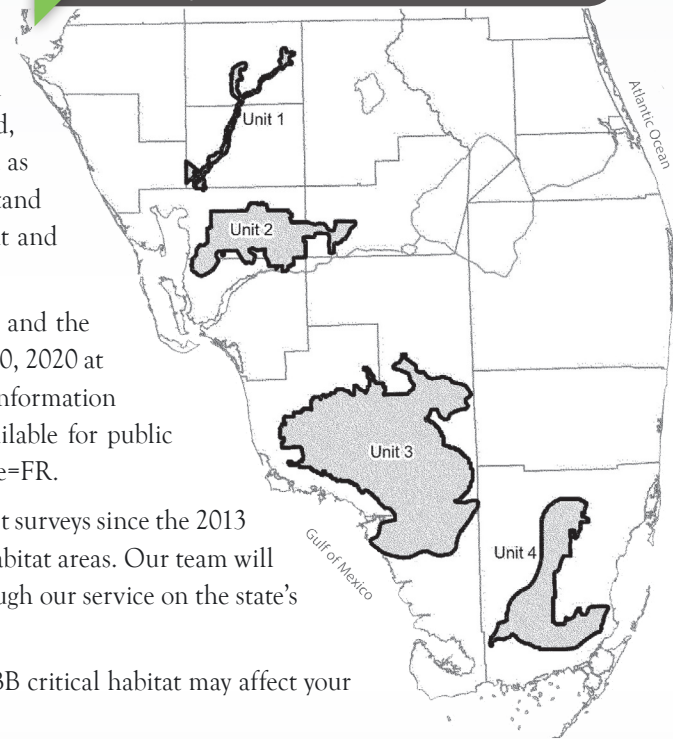
The proposed critical habitat includes four separate units spanning 10 counties across South and Central Florida, and includes Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Lee, Miami-Dade, Monroe, and Sarasota. All four units are currently occupied by the FBB. The USFWS delineated proposed critical habitat units using scientific data from confirmed observations and considered FBB home range sizes, flight distances, and habitat analyses. If adopted, the designation of critical habitat will likely affect Federal agency actions, as well as federally funded and permitted activities. However, it's too soon to fully understand how this proposal may affect Federal rules and regulations and the development and construction industries.

The public may submit comments on the proposed critical habitat designation and the draft economic analysis throughout a 60-day comment period ending on August 10, 2020 at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2019-0106. Additional information on the proposed critical habitat designation and draft economic analysis is available for public inspection at: <http://www.gpo.gov/fdsys/browse/collection.action?collectionCode=FR>.

Johnson Engineering ecologists have conducted dozens of FBB acoustic and roost surveys since the 2013 FBB listing, including most of the counties that comprise the proposed critical habitat areas. Our team will continue to stay abreast of the latest changes to state and federal regulations through our service on the state's FBB Working Group.

For questions on environmental surveys or how the proposed designation of FBB critical habitat may affect your project, contact John Curtis at (239) 461-2462 or [jcurtis@johnsoneng.com](mailto:jcurtis@johnsoneng.com). ■

Index Map of Critical Habitat Units for Florida Bonneted Bat (*Eumops floridanus*), Florida



## WATER QUALITY SAMPLING CONTINUES DURING COVID-19 PANDEMIC

Wearing masks and maintaining social distance in the open air, Johnson Engineering Environmental Scientists Tim Denison and Abe Elizarraraz continue to collect water quality samples near Estero Bay for the City of Bonita Springs water quality monitoring project. Even during the COVID-19 pandemic, these samples are collected and tested as part of the Total Maximum Daily Load (TMDL) initiative to improve the water quality of Imperial River. The Imperial River runs nearly parallel to the north of Bonita Beach Road, eventually emptying into Estero Bay.

For more information on water quality monitoring, contact Tim Denison at (239) 461-2458 or [tdenison@johnsoneng.com](mailto:tdenison@johnsoneng.com). ■





# Outlook

**JOHNSON**  
ENGINEERING



Volume 47, Issue 71

Prsrt Std  
US Postage  
**PAID**  
Ft. Myers, FL  
Permit #215

## Office Locations

Corporate Headquarters  
2122 Johnson Street  
Fort Myers, FL 33901

2350 Stanford Court  
Naples, FL 34112

17829 Murdock Circle, Suite B  
Port Charlotte, FL 33948

251 W. Hickpochee Avenue  
LaBelle, FL 33935

17900 Hunting Bow Circle  
Suite 101, Lutz, FL 33558

201 S. Berner Road, #3  
Clewiston, FL 33440

Comments, questions or to receive future newsletters electronically, e-mail [mkt@johnsoneng.com](mailto:mkt@johnsoneng.com).  
© 2009 by Johnson Engineering, Inc. All rights reserved. No materials or photographs in this publication may be reproduced without written permission from Johnson Engineering.

1.866.367.4400 | [www.johnsonengineering.com](http://www.johnsonengineering.com)  
Engineers | Surveyors | Planners | Ecologists | Landscape Architects | Geologists | Scientists



## FULL DEPTH RECLAMATION: STABILIZED VS. UNSTABILIZED

Full Depth Reclamation (FDR) is an increasingly popular alternative for roadway rehabilitation. The process is simple; a roadway reclaimer or mixer is used to physically mix an existing roadway in place. The existing asphalt and a certain portion of the base is blended together, often with an additive to help stabilize the new composite material. This new composite base is then compacted, graded and topped with a new asphalt surface course. This process is not recommended in all instances but can be a good option in case where the base material is inconsistent or in remote areas where the cost of hauling in new material, or hauling out the millings, becomes prohibitive.

One of the key cost factors is the additive used to assist in the stabilization. The two common additives are asphalt emulsion or Portland cement. There are pros and cons to both. An asphaltic binder remains flexible and resistant to cracking, however it can be expensive. Portland cement is considerably cheaper and produces a very strong composite base but you often have issues with cracking, which will eventually reflect up through the asphalt. Many times a combination of both materials can be used but it requires extensive analysis and the end product is only as consistent as the existing material you started with.

So is it critical to include a stabilizing additive at all? Not necessarily. This has been done on private roadways for some time, the contractor typically referring to the process simply as "reclaiming". However on public roadways it becomes more important to achieve a particular strength and reliability. On the Fort Denaud Road project in Hendry County, Johnson Engineering worked with the Hendry County Engineering and Road and Bridge Departments to develop a more formalized process to reclaim the road without the expensive additives. As part of the geotechnical analysis, a series of tests were conducted to estimate the structural capacity of the composite base section. During construction a test strip was performed utilizing a roadway reclaimer traveling at various, forward speeds. The mixed material was not stabilized. It was collected and tested for Limerock Bearing Ratio (LBR) and gradation to determine the optimum forward speed of the reclaimer. Special construction specifications were developed and the road was built, without any additives...other than the water needed to help with compaction. The end result was a new roadway, fully reclaimed in place with a homogenous composite base, a smooth ride and a significantly lower price tag than other stabilized options.

For more information contact Ryan Bell, P.E. at 239.461.3310 or [rbell@johnsoneng.com](mailto:rbell@johnsoneng.com). ■

