Outlook

A quarterly publication by:

JOHNSON ENGINEERING

Winter 2020/21

"Your project. Our passion."

In This Issue:

NALLE GRADE STORMWATER PARK

A decade in the making, the Nalle Grade Stormwater Park project in North Fort Myers is now complete and open to the public.

Initially envisioned in 2010 as a conceptual stormwater improvement project to provide flood mitigation benefits to the overall watershed for Bayshore Creek, the Nalle Grade Stormwater Park design grew to include water quality benefits to the Tidal Caloosahatchee, and also water conservation, recreation, and ecological enhancement.

The 80-acre site had a portion used by the Lee County Archers for several years and an occasional family picnic, but the remainder of the park was typical Florida flatwoods with a substantial wetland feature. Due to the terrain, the park had limited usage, but the land was a perfect location for water storage and treatment. Lee County Natural Resources worked closely with Lee County Lands and Lee County Parks and Recreation to bring the Nalle Grade Stormwater Park project to fruition.

The pump station sends waterflow through a treatment train that includes a linear filter marsh, retention area, and restored wetland to help to improve water quality by allowing water to naturally infiltrate and reduce the concentrations of nutrients prior to reaching the Caloosahatchee River.

Image courtesy of FASTaerial.com

As a result, the park now provides pollutant removal and flood protection to Bayshore Creek by pumping water flows through a treatment train that includes a linear filter marsh, retention area, and restored wetland. A stormwater pump station contains dual 5,000 gpm low-head pumps sending water through two above-ground impoundments capable of providing up to 145 ac-ft of storage.

CONTINUED ON PAGE 2

PEOPLE & PROJECTS: *ON THE MOVE*

FGCU - Center for Entrepreneurship & Innovation (CEI) Building

Johnson Engineering is the civil engineer for the newest Florida Gulf Coast University building that has recently broken ground. The Center for Entrepreneurship & Innovation (CEI), which will house the University's entrepreneurship program and is expected to be completed in the Fall of 2021.

Rendering courtesy of Parker/Mudgett/Smith Architects

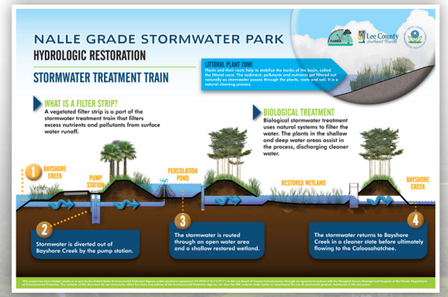
Ryan Scott, PE

project engineer in our Development group, has been named Treasurer of the Calusa Chapter of the Florida Engineering Society (FES).

CONTINUED FROM PAGE 1

The flood reduction in the upper portion of the Bayshore Creek Watershed provides benefits to the downstream surface water conveyance by reducing peak flows experienced. The storage of water on the site improves groundwater flows to the Caloosahatchee during the dry season, which helps the river's hydrologic condition and further improves the water quality. Through all the changes and upgrades, the park's recreational benefits were also improved. In addition to the existing archery range, park visitors can now enjoy the park for hiking, fishing, and bird watching.

Our team provided on-site construction engineering and inspection (CEI) services during construction. We also provided a wide range of additional services for this multi-dimensional project that went beyond the typical efforts of a CEI consultant. One of our firm's key strengths is the diversity in services we provide in-house, and we drew upon those resources to provide Florida Department of Environmental Protection (FDEP) 319 Grant assistance, a Quality Assurance Project Plan, and rigorous Davis-Bacon wage compliance review. The FDEP appreciates the timely filing of reports with the proper information. Entities that provide this type of information as requested usually rank better on future requests for funds.



Our team also designed public education signage throughout the park to help park visitors understand graphically how the park's design will provide flood mitigation and how it will help to treat stormwater. The educational signage is often a component of receiving grant funds under the State administered 319 programs. Our landscape architecture group provided their unique graphical skills to design these signs, as they have done for several of our client's projects.

Highlighting our strengths as a multidisciplinary firm, our in-house licensed drone pilot was able to provide a new mapping service for this project. Each month during construction, we sent the drone on an autonomous and pre-programmed flight to take photos at regular intervals as it covered the entire park area. Our GIS specialist then took these location-based photos and used automated stitching software to combine them into one georeferenced image. We were able to stitch and georectify 360 high-resolution photographs in the same amount of time it takes to manually georeference a single aerial image. Our ability to show the entire 60-acre project area in a single snapshot helped Lee County demonstrate continued construction progress in a clear and concise manner in their grant reimbursement requests to FDEP. The mapping also proved useful when reviewing the contractor's monthly pay invoices, as it provided the ability to review the entire site in a single view on a single date, in lieu of combing through hundreds if not a thousand or more ground-based photographs taken over the course of the month.

Johnson Engineering is proud to provide our knowledge and expertise on projects that will have a positive impact on the local ecosystem. This project is just another piece of the puzzle that will help bring us a step closer in improving our water quality and quality of life for our south Florida communities' residents and visitors.

For more information, contact Jordan Varble, PE at (239) 334-0046 or jlv@johnsoneng.com. ■


Image courtesy of FASTaerial.com

HOW YOUR PROJECT CAN BENEFIT FROM DRONE FOOTAGE

Are you looking to take your development project to the next level? Needing information about a property before purchasing? Are you looking to assess and prioritize damage from emergencies, natural disasters, or from long term exposure to the elements?

Our licensed and insured team of Federal Aviation Administration (FAA) certified drone pilots can help by providing you with the imagery and knowledge needed to make informed decisions. We can assist with identifying problems and formulating solutions for your project using information provided by our drone footage. All services are kept in-house and not processed through a web-based application, ensuring your information stays secure.

Competitively priced, contact Juli Kern at (239) 334-0046 or MKT@johnsoneng.com to request a quote for your next project. ■

PURCHASING LAND?

Purchasing land and wanting an expert opinion on presence of potential wetlands, surface waters, protected species locations, or other habitat conditions? Using drone flight data, our team of ecologists can use the imagery provided to estimate wetland boundaries, review a site for potential evidence of protected species, and help identify exotic vegetation.


Preliminary wetland boundary


Potentially occupied gopher tortoise burrow


Melaleuca identified for exotic removal

JOBSITE PROGRESS

Looking to show existing conditions or jobsite progress?


Drone flight establishing existing conditions


Drone flight documenting project's progress

UP-TO-DATE IMAGERY

Our GIS department can create maps using drone flights to show the most up-to-date aerial imagery of the project's progress.


Maps created to show the progress of a project using drone flights

ASSESS SITE STATUS

Needing to assess a site for erosion, damage from natural disasters, or presence of potential hazardous materials?


Assessing lake bank erosion


Turning flat maps into vibrant topographies helps to paint the bigger picture

Impressive entry signs can be used on your website

MARKETING?

Needing pictures for your website or company marketing materials? Our pilots work diligently to ensure you get the highest quality pictures and videos possible.

Outlook

Volume 47, Issue 73

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

JOHNSON ENGINEERING

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.

1.866.367.4400 | www.johnsonengineering.com
Engineers | Surveyors | Planners | Ecologists | Landscape Architects | Geologists | Scientists

SUSTAINABLE FORESTRY INITIATIVE PEFC

LAKE BANK EROSION MANAGEMENT PLAN

The Plantation Community in Venice, Florida originated in 1980 on more than 1,500 acres of land and today has more than 2,400 residential homes and two championship 18-hole golf courses. The community has 62 man-made interconnected lakes that serve as stormwater drainage, flood control, and irrigation. After 40 years, the approximately 22 miles of shoreline are all in various states of erosion. The Plantation Management Association (PMA) hired Johnson Engineering to perform a comprehensive study of all the lake banks and stormwater management features and develop an all-inclusive management plan for the community for the next 20 years.

A critical component of this project hinged on how to assess the entire development and the miles of lake bank. A conventional survey would have taken months for the field work needed and the data would be static and not easily reviewable to reference for assessment.

Our team developed a plan to conduct a drone survey using our in-house commercial drone pilot to conduct a 4k High Definition (HD) video. This recorded video provided a living reference of the lake banks and the ability to quickly assess and review the areas, allowing for direct comparison of future stages of the lake banks.

Our investigation uncovered various underlying causes of lake bank erosion such as the initial design, soil conditions, lake bank slope steepness, mowing management, wind/wave action, overland flow, and gutter downspout point discharge, among others. We developed a color grading map to graphically show the current state of all the lakes, along with various short- and long-range erosion management strategies, as well as real budgeting and action plans for correcting the issues over the next 20 years.

This successful project can become the template for all large track developments with large stormwater management systems, with multiple lakes and various stages of lake bank erosion. As these developments come to maturity, there is a constant balancing act between owners and management boards trying to address owner complaints and concerns. The drone method proved to save considerably on the budget and provided a working solution for the volunteer boards responsible for addressing issues for the developments.

For more information, contact Chris Beers, PE, PSM, at (941) 766-6262 or cdb@johnsoneng.com. ■