

Outlook

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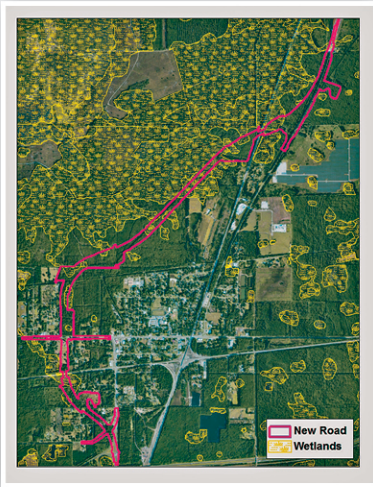
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USING GIS-MODELING TO ADDRESS A STATE WETLAND MITIGATION BANKING POLICY

Wetland mitigation banks can provide a solution for offsetting unavoidable wetland impacts from transportation projects and developments. However, the use of mitigation bank credits is regulated by both the State of Florida and the U.S. Army Corps of Engineers. Being able to meet regulatory requirements can mean more competitive pricing for credit buyers, and the ability to compete to sell credits for mitigation bankers.



A new road designed to bypass the Town of Baldwin will result in unavoidable wetland impacts.

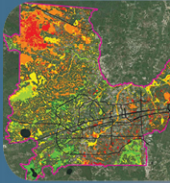
Wetland mitigation banking is a concept that began to develop in the 1980s, out of a need to address the requirements of the Clean Water Act, which initiated the protection of wetlands in 1972. Prior to the Clean Water Act, the value of wetlands was not recognized, and as a result it is estimated that Florida lost nearly one half of its wetlands. The realization that wetlands provide a lot of value, such as protection of water quality, flood attenuation, and wildlife habitat, led to State and Federal rules that are meant to result in no net loss of wetland functions. Since avoidance of all wetland impacts is not always possible, compensatory mitigation provides a mechanism by which wetland functions can be gained through wetland restoration, enhancement or creation – offsetting the unavoidable impacts and loss of functions elsewhere.

In the mid-1990s State and Federal rules were developed to allow for the regulated use of mitigation banks to provide compensatory mitigation, streamlining permitting through

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FSA Presentation - Not all Ponds are Created Equal



Key Marco CDD Promoting Efficient Use of Water



WETPLAN - Watershed Education Training - Ponds, Lakes And Neighborhoods



PEOPLE & PROJECTS: ON THE MOVE



Gary Muller, AICP joined our team as a principal planner. For the last 21 years he was self-employed as an urban planning consultant specializing in rezonings, site planning, subdivision design, site feasibility studies, and expert witness testimony.



Billy Saum, E. I. joined our team as a utilities engineer intern. He will manage and support projects requiring hydraulic modeling, water distribution, wastewater collection, and irrigation systems design.



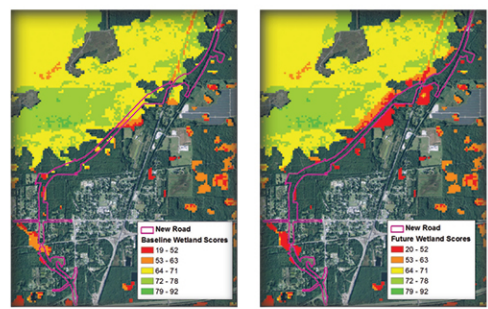
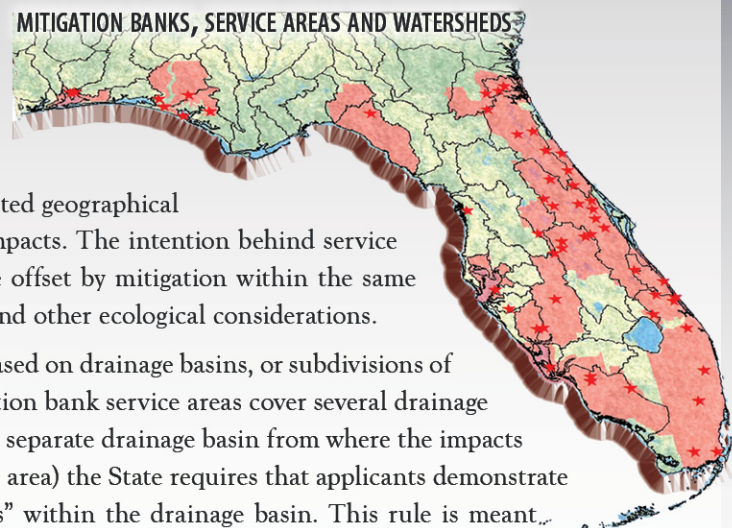
Staci Thomas has recently become a Qualified Stormwater Management Inspector through the Florida Department of Environmental Protection Stormwater Erosion & Sedimentation Control Inspector Training Program.

the use of existing mitigation credits. The use of mitigation banks is now typically encouraged and favored over onsite mitigation because the banks provide a mechanism for protecting regionally significant wetlands. Florida now has over 80 mitigation banks – each with a permitted geographical service area within which their wetland credits may be used to offset impacts. The intention behind service areas is to ensure that the functions lost from a particular area will be offset by mitigation within the same region, these service areas are typically based on watershed boundaries and other ecological considerations.

The State of Florida also regulates mitigation banks on a smaller scale based on drainage basins, or subdivisions of watersheds, there are around 90 drainage basins in Florida. Most mitigation bank service areas cover several drainage basins. However, when proposing to use mitigation credits generated in a separate drainage basin from where the impacts will occur (even when the impacts are within the mitigation bank service area) the State requires that applicants demonstrate that the mitigation will not result in “unacceptable cumulative impacts” within the drainage basin. This rule is meant to provide further assurance that wetland mitigation will not result in the loss of critical functions within these smaller geographic areas, and as the rule states will not result in the “proverbial straw that breaks the camel’s back” regarding water quality or wetland functions in the basin.

The state rule provides minimal guidance as to how an applicant can demonstrate that a mitigation plan will not result in unacceptable cumulative impacts. Dependent on the project location and type, it is up to the reviewers of one of the state regulatory agencies – either one of the Water Management Districts or the Department of Environmental Protection – to determine if the requirements of the rule have been met. To date the agencies do not have a consistent approach to making this determination. The Johnson Engineering environmental group has successfully worked in cooperation with two of these agencies, the South Florida Water Management District and the St. Johns River Water Management District, to develop Geographic Information Systems (GIS) models that along with other analyses have been used to meet the regulatory requirements.

The GIS models were developed to provide a quantitative, non-biased, repeatable method of valuing wetland functions for the entire drainage basin where the project impacts will occur. The model uses an array of publicly available data to quantify wetland functions associated with five factors that the state rule requires to be considered. The model is run to evaluate baseline conditions, and then to evaluate future conditions assuming mitigation occurs out of basin for the proposed project and future like impacts. The final report submitted to the water management district clearly addresses every component of the state rule, providing the permit reviewers the data needed to support a decision to allow out of basin mitigation.

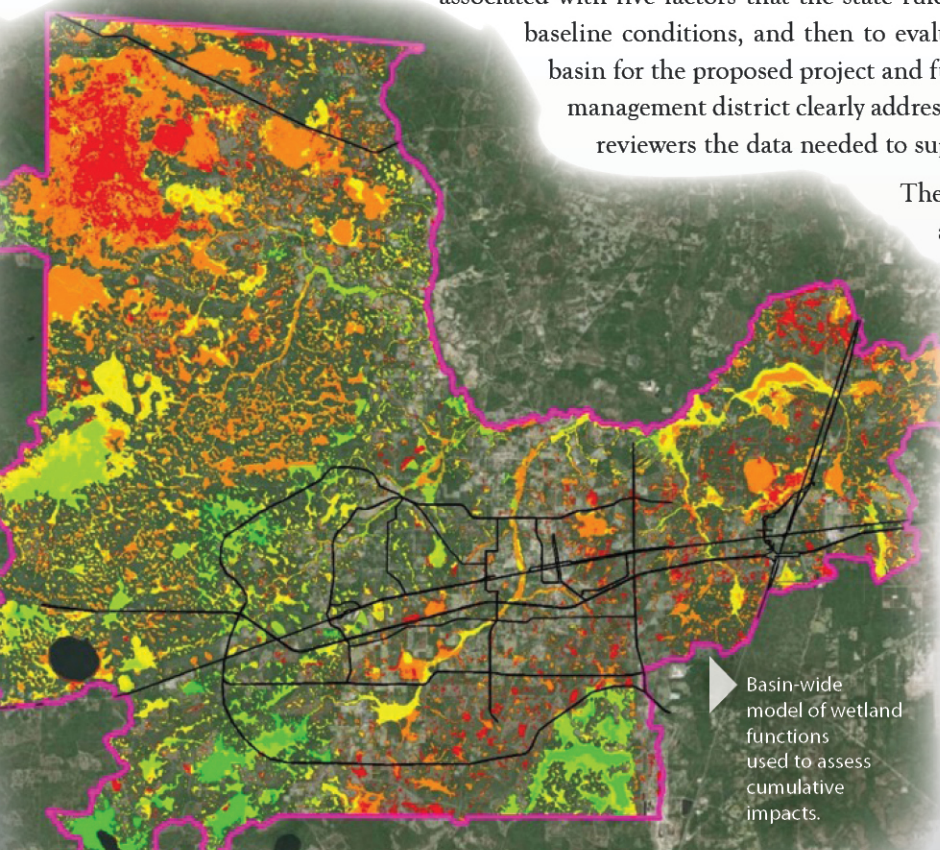


Modeling was used to quantify changes to wetland functions by comparing baseline conditions to future conditions.

The use of this methodology most recently provided the assurance needed by the St. Johns River Water Management District to allow for the sale of credits from Longleaf Mitigation Bank for a large Florida Department of Environmental Protection (FDOT) project. Without this assurance the FDOT would have been required to buy credits from the one bank that is located within the drainage basin. The competitive bidding process between the banks resulted in a significant cost savings to the FDOT of \$1,750,000.

The Johnson Engineering environmental group is passionate about using the best available science and data to help our clients meet regulatory requirements, and to provide regulators with the information they need to make informed decisions.

For more information, contact Jaime Boswell at (239) 461-2442 or mkt@johnsoneng.com.



Basin-wide model of wetland functions used to assess cumulative impacts.

NOT ALL PONDS ARE CREATED EQUAL

Johnson Engineering team members Mike Lohr, P.S.M. and Kim Arnold, P.G., along with Sarasota County Environmental Manager John Ryan, presented at the 2015 Florida Stormwater Association (FSA) conference held June 17-19. The team presented their findings from studies of wet detention pond discharge behavior.



The presentation focused on the ongoing study of discharge frequency at 25 sites located across Sarasota County, and touched on lessons learned from the Long Term Discharge Study conducted in conjunction with Bonita Bay Group and the Florida Department of Environmental protection from 2007-2012.

In keeping with the theme of the conference, “Integrating Water Resources,” the team highlighted the great variability in wet detention pond discharge behavior due to influences such as seasonal rainfall distribution, local hydrogeology, and irrigation practices. The findings encouraged stakeholders to consider how better understanding of site-specific conditions and management practices can improve wet detention pond design and function to more closely resemble natural discharge behavior. The authors hope improved knowledge of how wet detention ponds behave in practice will help water managers and stakeholders improve design criteria and identify optimal water quality improvement projects for Basin Management Action Plans (BMAPs) to aid in meeting Total Maximum Daily Loads (TMDLs).

For more information, contact Kim Arnold at (239) 461-2473, Mike Lohr at (239) 461-2404, or e-mail mkt@johnsoneng.com.

FLORIDA STORMWATER ASSOCIATION CONFERENCE

Engineers, scientists, managers, policy makers, and elected officials from throughout Florida came together June 17-19 to look for innovative and cost-effective solutions to common problems relating to stormwater management and finance at the annual FSA conference.

Johnson Engineering Environmental Scientist, Tim Denison was part of the FSA planning committee who helped organize the successful conference at the Sanibel Harbour Marriott. This year there were more than 250 attendees plus a sold out exhibitor hall which included 50 exhibitors.



KEY MARCO CDD PROMOTING EFFICIENT USE OF WATER

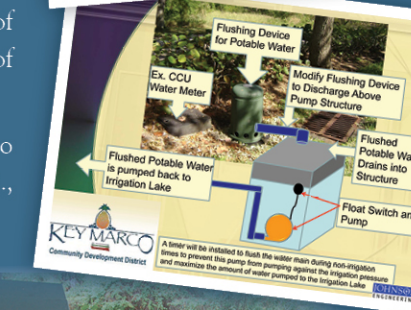
With the dry season over, Key Marco Community Development District (CDD) is reaping the benefits of a new pump station that captures normally wasted potable water, pumping it back to their lined irrigation pond for future irrigation use.

The seasonal lifestyle has the demand for potable water at Key Marco CDD low, at times causing the chlorine levels in water distribution lines to decay. In order to bring the chlorine levels back up to the required standard, the Collier County Water Sewer District (CCWSD) must flush volumes of water out of the system and replace it with chlorinated water. Each year, millions of gallons of water and thousands of dollars are lost during this process.

In a joint effort, Collier County, Key Marco CDD, CCWSD, and Johnson Engineering worked together to come up with a solution to recapture this water. Johnson Engineering’s Project Engineer, Erik Howard, P.E., P.S.M., designed a pump station that captures the flushed water into a lined irrigation pond.

Since the CCWSD is prohibited by law to provide free water, they are able to charge Key Marco for its use of the CCWSD’s flushed water monthly. It’s a win-win for all involved, as the CCWSD is recouping some of the value of the flushed water, and Key Marco CDD is purchasing it for less than they paid prior to supply the island with irrigation water. It is also a win for the environment because of the beneficial use of water that would have been otherwise lost. Efficient use of municipal potable water helps to defray future costs of water treatment facility expansions.

This project was a great opportunity to promote the smart and efficient use of water, thereby directly enhancing conservation efforts. For more information, contact Erik Howard, P.E., P.S.M., at (239) 461-2441 or mkt@johnsoneng.com.



Johnson Engineering engineer Erik Howard, P.E., P.S.M., and Kevin Carter from Dorrell Management Group perform a final walk through and test the system before final acceptance.

Outlook

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WETPLAN - WATERSHED EDUCATION TRAINING - PONDS, LAKES AND NEIGHBORHOODS

Most Southwest Florida residents who live on a lake or pond may not realize that their waterfront views are actually stormwater detention ponds built for runoff attenuation and treatment to improve water quality before discharging into the Gulf of Mexico. These ponds were actually carved out to supply soil for the foundation of the development, and reshaped to serve a dual purpose as aesthetic water treatment areas.

Homeowners may not realize how much maintenance is required to keep these ponds healthy. Common issues are shoreline erosion, odors, unsightly floating algal mats, and occasionally dead fish. The first step in preserving the aesthetics and the pond's value is learning about the basic concepts of pond function and maintenance so you can make informed decisions, even if you don't personally manage the stormwater treatment pond in your neighborhood.

WETPLAN is a great educational program that provides resources and information to anyone interested in improving and caring for their neighborhood lakes and ponds. The program provides workshops several times a year with a panel of experts to explain and answer questions about what you can do, what your neighborhood groups/associations can do, and what assistance is available from county and state agencies. Johnson Engineering is a proud partner of this program, providing our knowledge and expertise to help others understand how stormwater ponds work in your community.

If you would like to know more about how you can help, visit www.wetplan.org for more information. ■

