Project Name: Floating Island Stormwater Retrofit Project
Project Sponsor: Collier County Natural Resources Department
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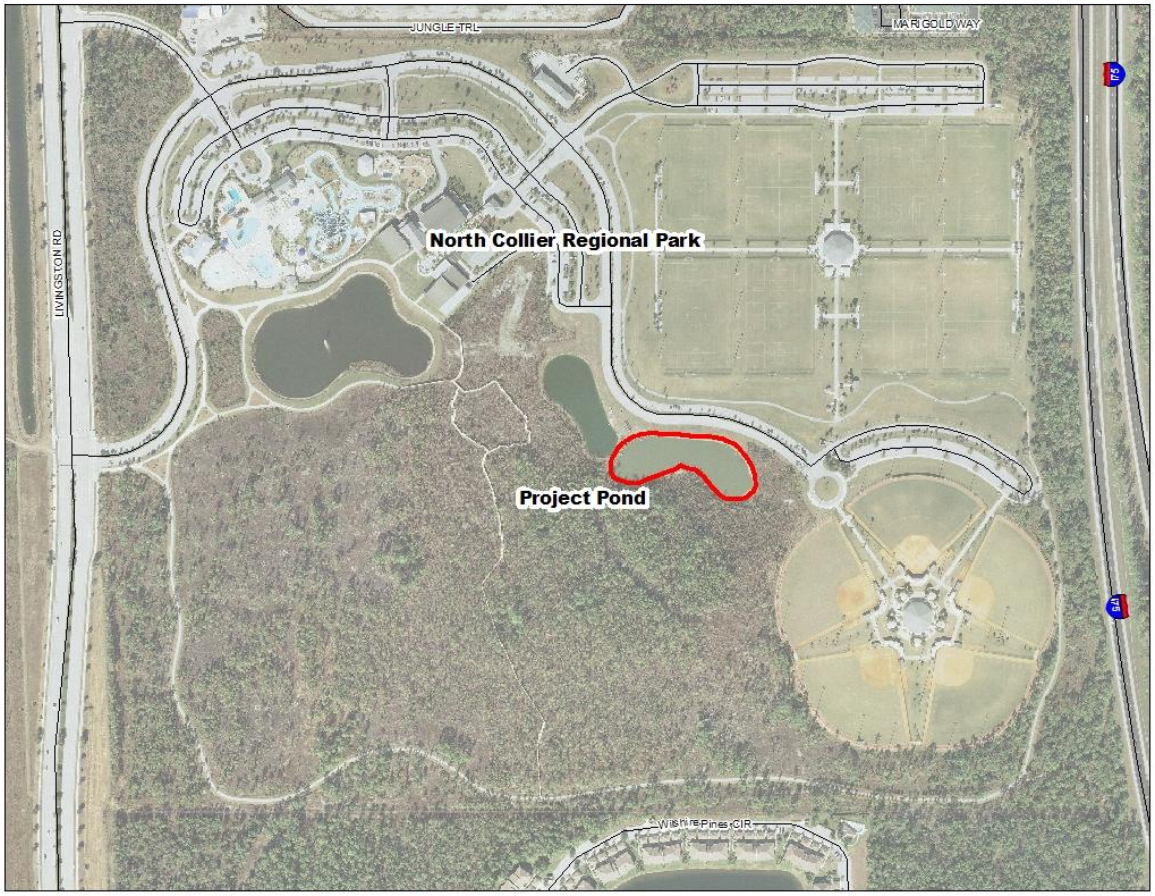
Project Type according to the Allowable Uses for RESTORE Act Funds:

- *Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region*
- *Workforce development and job creation*
- *Infrastructure projects benefitting the economy or ecological resources, including port infrastructure*

The Board of County Commissioners has adopted Guiding Principles relating to project proposals:

1. *Projects provide positive environmental and economic benefits, including job creation.*
2. *Projects are consistent with local government comprehensive plans and community priorities.*
3. *Projects incorporate other funding partners to fully leverage grant resources.*
4. *Projects meet the funding criteria set forth in the RESTORE Act.*
5. *Projects selected will be diverse and address all our community's eligible needs, including coastal and ecosystem restoration and development, flood protection, and tourism promotion.*

Project location:



Background:

Wet detention ponds are the primary stormwater treatment method in southwest Florida due to our high ground water table and the high cost of land. There are currently upwards of 4,000 wet detention ponds in Collier County and the number will grow with our population. Most of them receive stormwater from urban landscapes that carry nutrients as their main pollutant. Some nutrients are removed by aquatic plants. However, most neighborhood ponds are maintained to keep aquatic vegetation to a minimum due to property owner preference. With minimal aquatic vegetation present, bluegreen algae can dominate the water column and cause fish kills. Although the County as an ordinance that requires littoral zone planting and maintenance, many older ponds were in existence prior to the development of this ordinance and are not subject to its requirements. Furthermore, the lake banks are at such a steep slope that littoral zone plantings are nearly impossible due to seasonal water level fluctuations.

Floating wetland islands show promise as a management practice that removes nutrients from the ponds and are a potential retrofit to the original pond design. They float on the fluctuating water surface and so benefit from year round root contact with the water, which presumably allows a greater survival rate and thus, increased nutrient removal. To complete the nutrient removal cycle the matured plants must be replaced, which is anticipated to be the largest cost of maintenance. Other maintenance costs such as the impacts of wildlife and their tropical storm survivability are unknown and need to be quantified as part of an evaluation of their cost efficiency.

As an operator of a Municipal Separate Storm Sewer System (MS4), which is potentially subject to pollutant load reduction goals in reaction to TMDLs, it is in the County's interest to find retrofit structural best management practices for reducing pollutants within the MS4 facilities and to share our findings with private stormwater pond owners, many of which discharge to our MS4 or directly to waters of the state. Finding economical non-pesticide alternatives for pond management with maximum nutrient removal is a long-term goal.

Objective:

The County seeks to retrofit a stormwater wet detention pond with floating island area(s) with the objectives of: 1) evaluating their ability to remove dissolved nutrients, including their cost efficiency; 2) evaluating their effectiveness for suppressing algal growth to a level that avoids the use of copper sulfate; and 3) informing property owners, managers and landscape maintenance companies on the benefits they offer, if any.

This project aligns with the non-structural initiatives (best management practices) for the County's Watershed Management Plan and the County's National Pollutant Discharge Elimination System (NPDES) MS4 permit.

Project:

A County stormwater detention pond that receives storm runoff from a residential area that has historic maintenance records, including cost of maintenance. The pond will have a history of algae problems and have easy access for the public. The one identified for purposes of estimating the project cost and meeting these parameters is 1.5 acres. The size of the floating island will increase

over time to span the ranges identified by manufacturers and literature. Thus, beginning with a minimum size of 4 percent of pond surface water area, floating island coverage will increase by 3 percent per year to the maximum of 10 percent by year 3. Monitoring will include: rainfall, water levels, quarterly surveys of pond vegetation and wildlife; monthly photo documentation of the same areas and features, monthly water monitoring for dissolved oxygen, temperature, specific conductance, pH, secchi depth, total phosphorus, ortho-phosphorus, nitrate, nitrite, nitrate/nitrite, total kjeldahl nitrogen, chlorophyll-a, phaeophytin, turbidity, total suspended solids, and copper. Annual reports will be produced that include photos, vegetation and wildlife surveys, water quality data, number of customer contacts and lake management activities with cost.A project brochure will be developed for public distribution. The project will be highlighted on the County's website.

Total Cost:

Project Funding Activity	RESTORE Act Funding Request	Matching Contribution	Match Source
Floating Islands Total	$55,000		
Educational Components		$2,000	Collier County
Monitoring		$60,000	Collier County
Reporting		$10,000	Collier County
Project Administration		$5,000	Collier County
Total:	$55,000	$77,000	
Total Project Cost:	$132,000		

Suggested implementation timeline:

Baseline monitoring will begin one month after notification that RESTORE funds have been awarded and continue for eleven months before installing the first floating island. Monitoring will continue for 3 more years. The last annual report will be completed within 6 months of the monitoring period for a total project time span of 4.5 years.