



Lake Seminole Sediment Removal Project

Kelli Hammer Levy, Director, Pinellas County Public Works

September 18, 2020

Lake Overview and History

```
graph TD; A[Lake Overview and History] --> B[Dredging Overview]; B --> C[Design- Bid Process and Lessons Learned]; C --> D[Construction and Lessons Learned]; D --> E[Summary];
```

Dredging Overview

Design- Bid Process and Lessons Learned

Construction and Lessons Learned

Summary



Lake Overview



- **684 Acres**
- **Average Depth: 5.5 Feet**
- **Controlled Lake Level**
- **Primary Uses**
 - Fishing
 - Boating, jet skiing
 - Water skiing
- **Public Water Access**
 - Lake Seminole Park

Lake History

- **Arm of Long Bayou**
- **Tidal Estuary**
 - Mangroves
 - Salt marshes
- **Upland landscape:**
 - Orange Groves
 - Pasture Land
 - Sparse residential
- **Freshwater from Long Creek**
- **Receiving water: Boca Ciega Bay**



Lake History

- **Created in mid-1940's**
 - Irrigation for orange groves
 - Potable water source
- **1940-1950 Land use**
 - Low density residential
 - Agricultural
- **Created by**
 - Impounding arm of Long Bayou
 - Flooding existing mangrove and salt marsh systems



Lake History

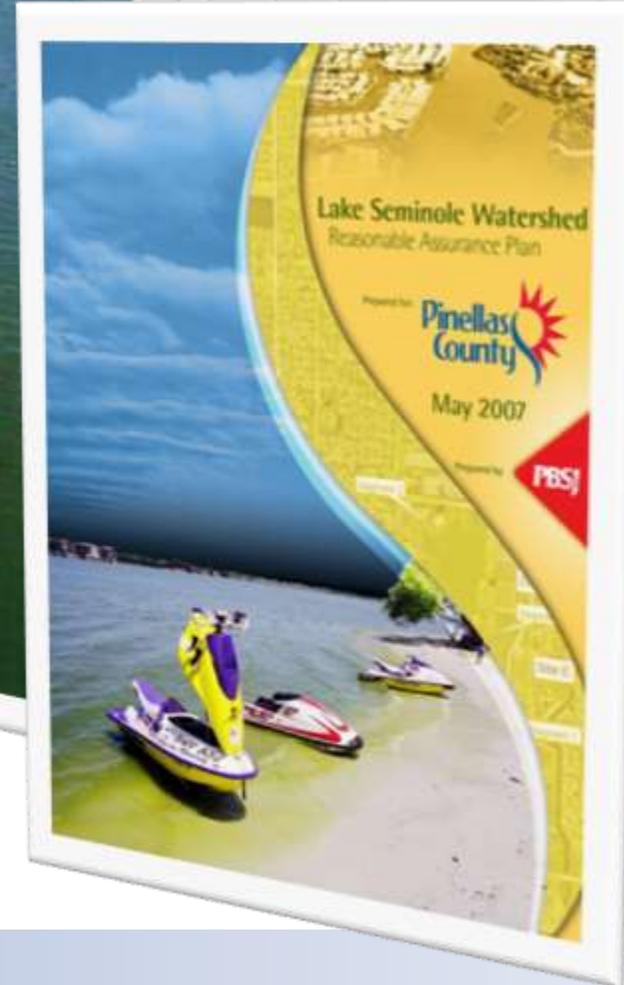
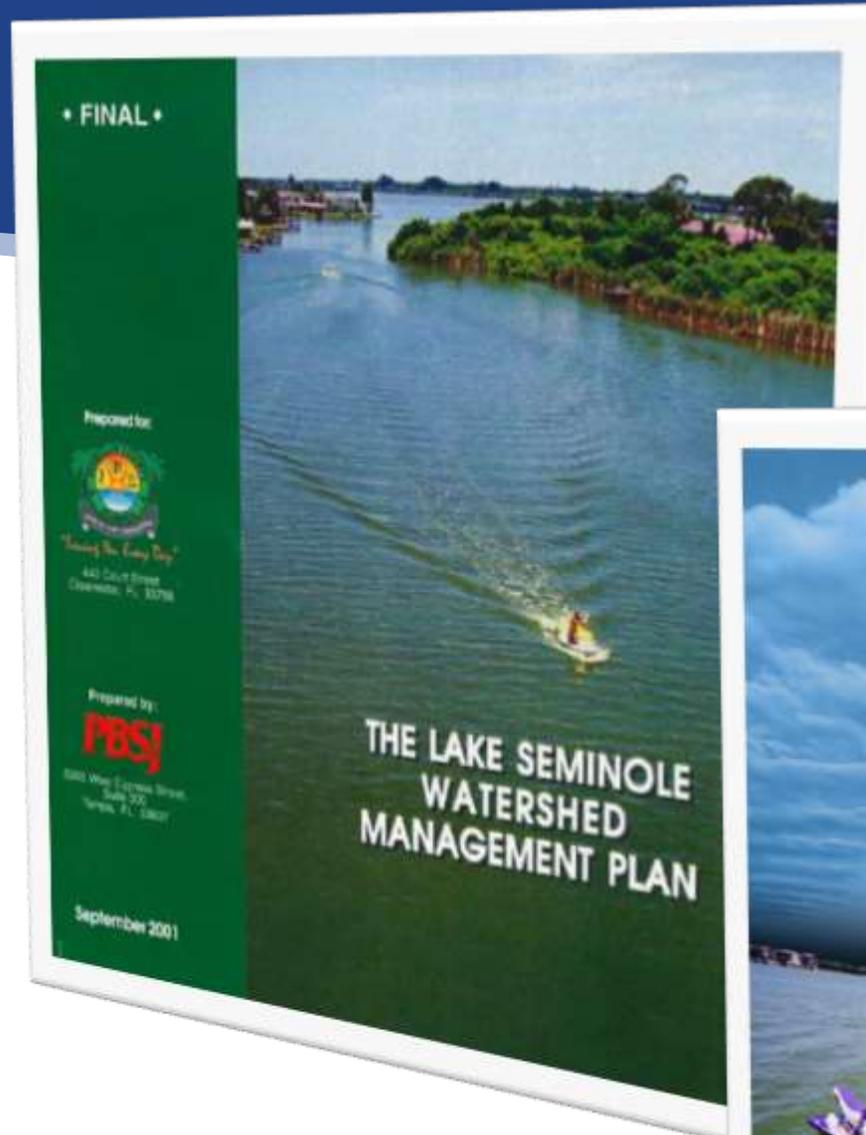
- **1970-1980 Land use**
 - High density residential and commercial
 - Pre-stormwater regulations
- **1976 Lake Seminole Bypass Canal created**
 - Increased lake residence time
- **Mid to late 1980's**
 - Highly eutrophic
 - Hydrilla and cattail dominated
 - Loss of sport fishery



Lake History



- **1989 Pinellas Resolution**
 - Urges development of long-term management plan
 - Lake Seminole Advisory Committee
- **Study and Planning Efforts:**
 - **1991** *Diagnostic Feasibility Study*
 - **1999** *Sediment Removal Feasibility Study* (2006 update)
 - **2001** *Watershed Management Plan (WMP)*
 - **2007** *Reasonable Assurance Plan*



Lake History

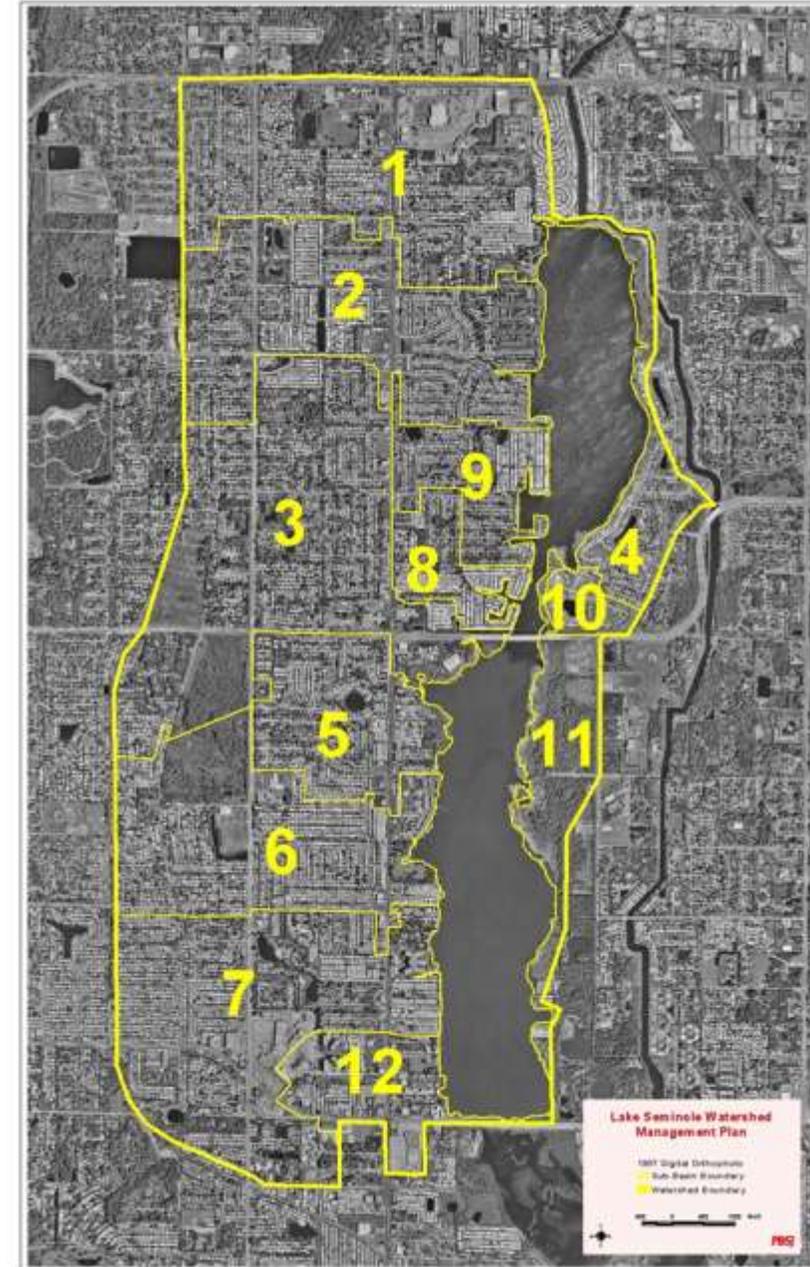
- **WMP Recommended Structural, Management, Legal, and Policy Improvements**
- **Structural Improvements**
 - ✓ Excavate tussocks from shoreline areas
 - ✓ Restore priority wetland and upland habitats
 - ✓ Install stage and flow measurement instruments on the outfall control structure



Lake History

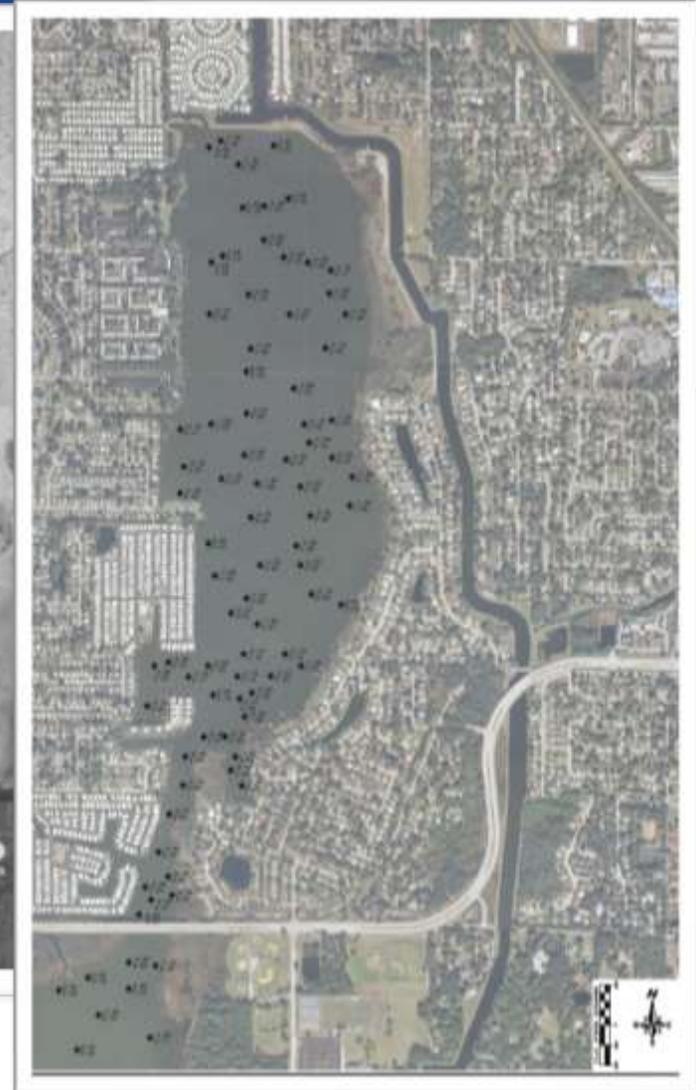
- **Structural Improvements**

- ✓ Construct regional stormwater treatment facilities in priority sub-basins.
- ✓ Divert Seminole Bypass Canal flows to reduce residence time.
- Dredge organic silt  sediments from submerged areas. **#1 RANKED PROJECT**



Dredging Project Overview

- **Hydraulic Dredging of >900K CY Organic Sediments**
- **Nutrients**
 - 416 tons of TN
 - 77 Tons of TP
- **Minimal Sediment Quality Concerns**
- **OFW**



Dredging Project Round 1

- **Traditional**
 - Design, Bid, Build
 - Base bid + 1 option
- **Provided County land for staging operations.**
- **Contractor responsible for disposal.**
- **47 participants in pre-bid conference.**



Dredging Project Round 1



- **Budget ~\$18M**
- **Lowest bid ~\$69M**
- **Interviewed contractors**
 - Why didn't you bid?
 - If you did bid what were the biggest hurdles?
 - **#1 – Sediment disposal.**
 - **#2 – Construction schedule and operating hours.**
 - **#3 – Design constraints.**

**IF AT FIRST
YOU DON'T
SUCCEED,
CALL IT
VERSION 1.0**

Dredging Project Round 2



- **Traditional – Same as round 1**
- **2 Step Bid Process**
 - Qualifications
 - Bid
- **Modified plans and bid package based on questions received**
- **Modified permits**
 - Allowed for disposal of coarse materials in historic borrow areas (beneficial reuse).
 - Modified operational hour restrictions.
 - Prequalified and approved sediment disposal sites.

Dredging Project Round 2



- **Budget ~\$18M**
- **Lowest bid ~\$38M**
- **Interviewed contractors**
 - #1 – Timelines too short.
 - #2 – Allow for alternative site design/process.
 - #3 – Modify permits to allow for alternative sediment disposal options.

**IF AT FIRST
YOU DON'T
SUCCEED,
CALL IT
VERSION ~~1.0~~
2**

Dredging Project Round 3

- **Modified Design-Build**
 - Provided all upfront technical work.
 - Provided all permits; willing to modify based on successful proposal.
 - Provided design plans for use of County properties, but not required.
 - Contractors were free to propose an alternate plan.



Dredging Project Round 3

- **Budget ~\$18M**
- **Lowest bid \$18.6M**
 - Includes ~\$600K in design/permitting of revised approach.
- **Gator Dredging**
 - Proposed use of Dredge Material Management Area (DMMA).
 - Required new design and permit modifications.
 - All sediment stays onsite.



Dredging Project Round 3

- **Redesign and Permit Modifications**
 - ~1 year to complete
 - Environmental Impacts
 - Floodplain compensation
 - Gopher Tortoise relocation
 - Tree survey and mitigation plan (County Policy)
 - Additional elements
 - Groundwater monitoring
 - Seepage meters
 - Onsite stormwater for future site use



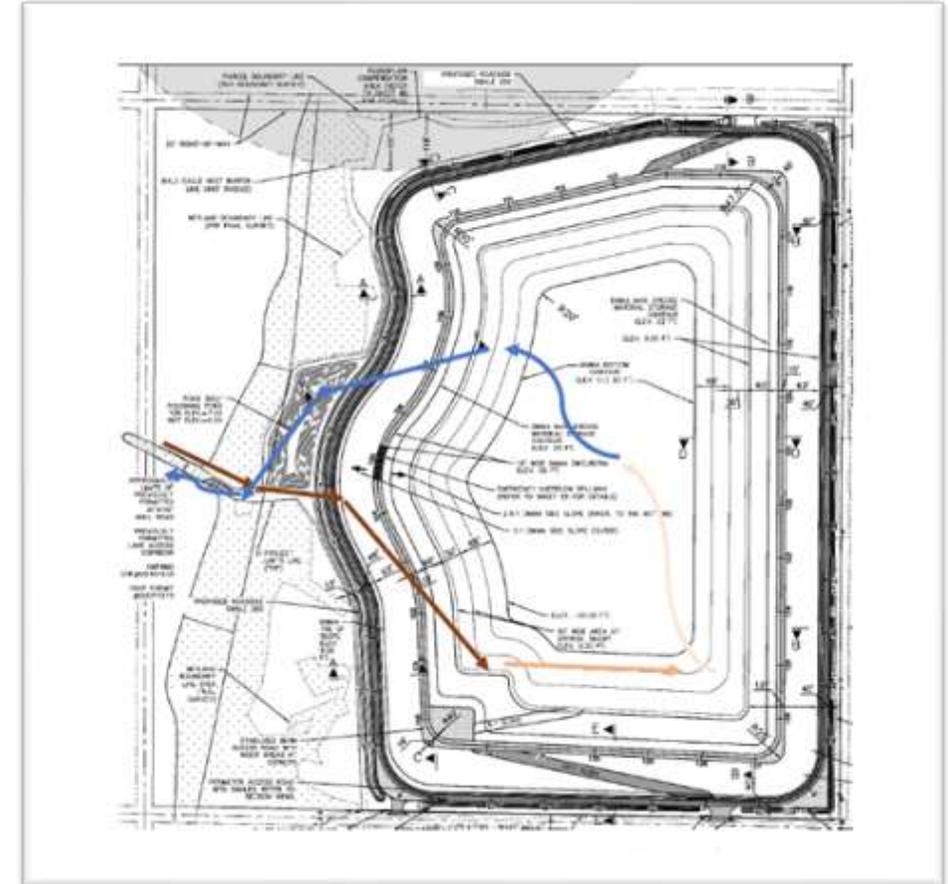
Lessons Learned

■ Design

- Be transparent with Stakeholders
- Do not be too narrow in design options
- Do not conduct bathymetric mapping too early
- Complete in-depth sediment analysis

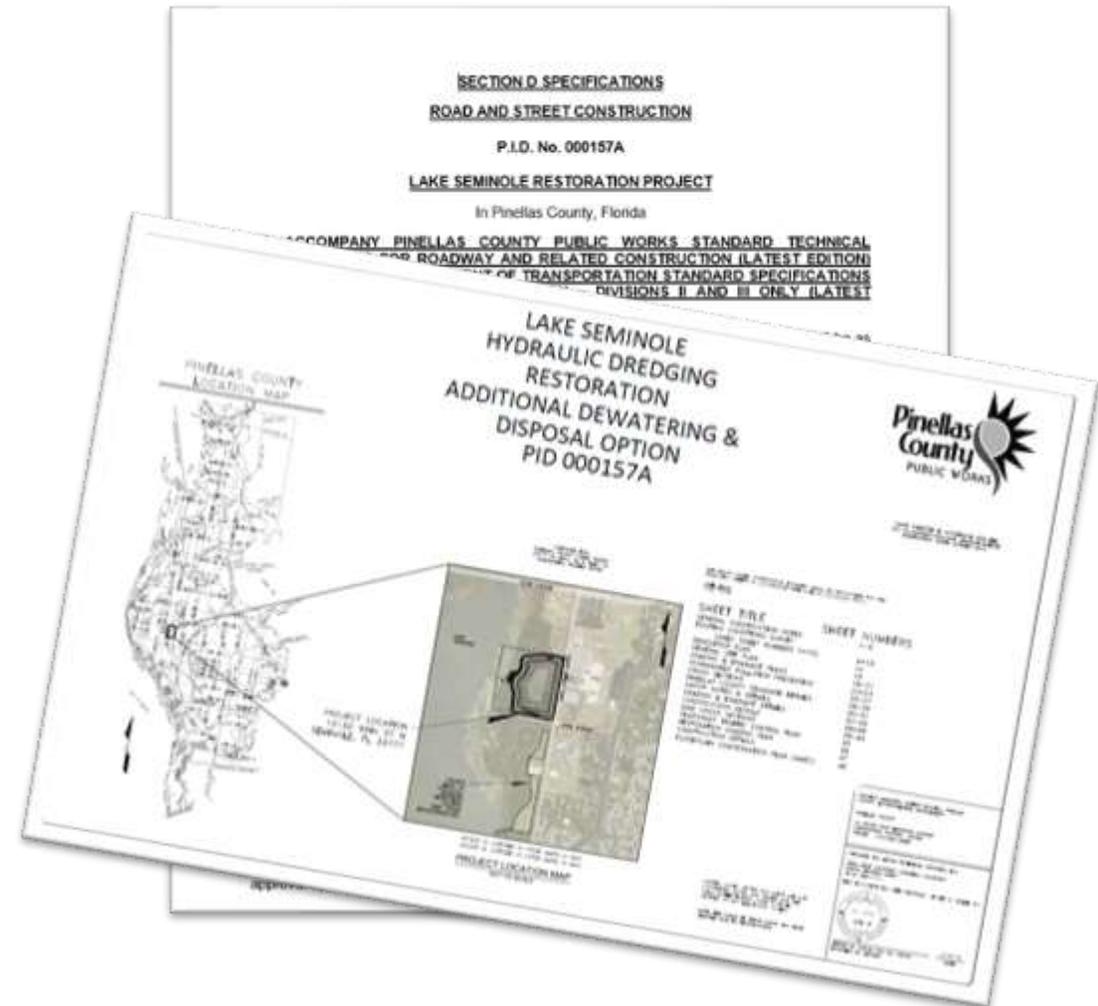
■ Permitting

- Meet with agencies early and check in often
- Get all the needed people in the room from the start
- Do not draw out the pre-application period
- Polymer approval was a challenge



Lessons Learned

- **Bid Process**
 - Maintain flexibility for contractor approach
 - Determine pre/post dredge survey specifications
 - Be careful of leading addenda questions
 - Make sure you have volume measurements methods determined



Construction

- **Gopher Tortoise relocation**
- **Land clearing**
- **Excavation and embankment construction**
- **Floodplain compensation area**
- **Polishing pond and lake discharge**



Lake Seminole Dredging

Learn how a dredging project in Lake Seminole in Pinellas County will help improve water quality.

YouTube Video can be found: <https://www.youtube.com/watch?v=VfN4XARc9tU>

Construction

- **Get to know the neighbors early**
- **Excavation and Embankment**
 - Watch for double dipping.
 - Design volume discrepancies
 - Review raw survey data and create your own topo
 - Know the contract specifications



Construction

- **FDEP approval of DMMA**
 - Dam Safety Plan
 - Operational Safety Plans
- **Dredge Start Up**
 - FDEP approval needed to move to full operations.
 - Small dredge area near DMMA to ensure requirements were met.



- **Dredge Operations**
 - Contractor elected to use two dredges to increase production.
 - Dredging work would be complete ~2 years early.
 - Maximizes contractor profit.
 - Reduces ongoing risks.
 - **BUT.....**



Construction

- **Dredge Operations**
 - Fines did not have sufficient time to settle out.
 - Contractor ended up with more coarse material to handle at once and no place to store it.
 - Led to a slow down of dredging with periodic shutdowns to create storage.



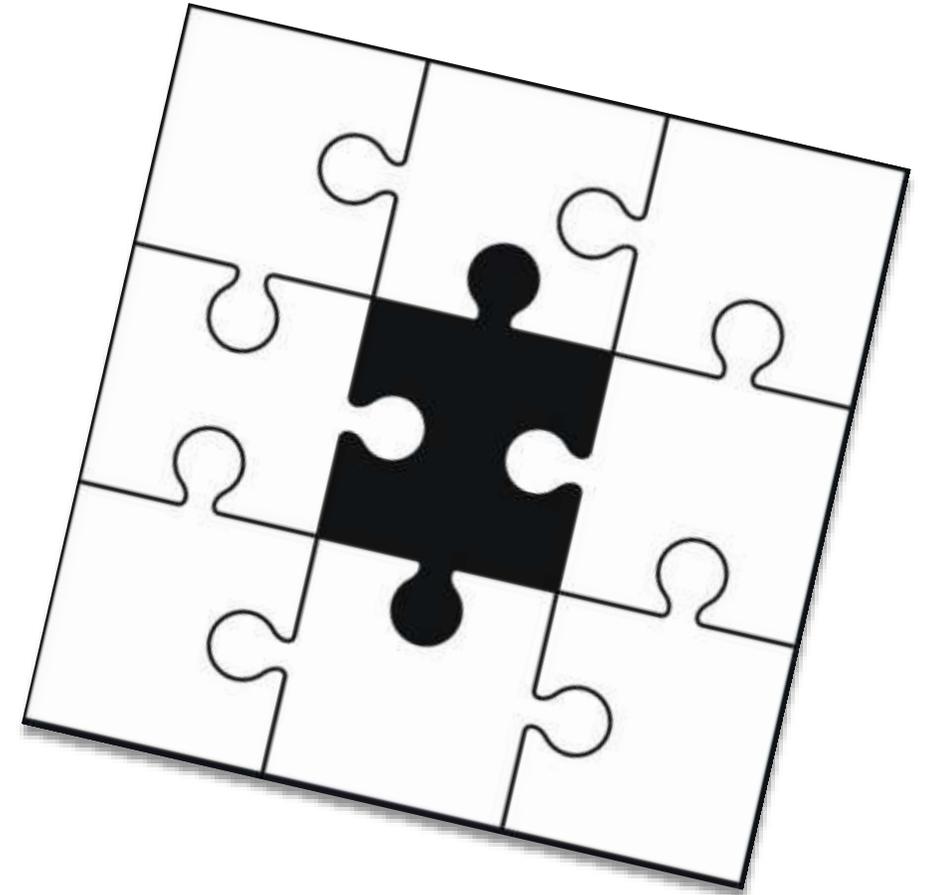
Construction

- **Other Challenges**
 - Citizen complaints/concerns
 - Contractor was blamed for issues not related to work
 - Boater safety
 - Weather



Lessons Learned (To Date)

- **Contract, permit and specifications cheat sheet**
- **Request monthly schedule updates**
- **Allow for value engineering**
- **Constantly engage/inform the public**
- **Persistence**



More to come!!

- **Complete the dredging operations.**
- **DMMA management and preparations for future use.**
- **Restoration of the staging area which will be incorporated into the adjacent park.**
- **Upland restoration including tree mitigation.**
- **Monitoring:**
 - Water quality both in lake and receiving waters
 - Vegetation Management/LVI

Summary



- **Understand the problem and the project goals and objectives**
 - Water quality and habitat
 - Navigation
 - Habitat creation
- **Design - Permitting**
 - Don't back yourself into a corner
 - Dredge projects are unique
 - Constant communication with permitting agencies

Summary



- **Construction**
 - Know your contract and specs
 - Document everything
 - Have experts available to review pay apps and analyze data independently
 - Stay in touch with residents and lake users

Questions

Kelli Hammer Levy

klevy@pinellascounty.org

<https://www.facebook.com/PinellasEnviroNews>

Photos and Videos: Gator Dredging, SWFWMD, Rob Burnes, Kelli Hammer Levy, and Pinellas County

Lake Seminole Restoration 2019–2023



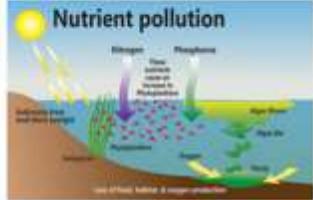
NOTICE TO LOCAL BOATERS

Dredging is underway in Lake Seminole

Please exercise caution near equipment (pumps, pipeline, barge, etc.). Travel slowly to minimize wake. Vessels and equipment will be lighted and marked according to Coast Guard regulations. Floating and submerged pipeline are being used. The location of equipment may change daily.

What's going on?
Lake Seminole is being dredged to remove muck from decades of stormwater runoff. This sediment is being transported to a dredge material management area.

Why dredge the lake?
Excess phosphorous and nitrogen are degrading the water quality in Lake Seminole by causing an increased growth of invasive plants and algae. The goal of this project is to remove more than 900,000 cubic yards of sediment from the lake's bottom. This will result in clearer lake water, a cleaner bottom, more fish, better habitat, and a more pleasing lake.



Nutrient pollution

Expected dredging completion: Oct. 22, 2022
Hours of Operation: 24 hours, 7 days per week
Names of Dredge Vessels: Miranda Joe, Jessie Marine Dredge
VHF Channels Monitored: 16 & 68
Project Superintendent: Richard Styron, (252) 725-7264
Project Manager: Bret Sepp, (727) 798-0238
Pinellas County contact: Rob Burnes, (727) 453-3149

The \$19 million project is funded by Penny for Pinellas, Southwest Florida Water Management District, Florida Department of Environmental Protection and the RESTORE Act.

For more information, visit www.pinellascounty.org/lakeseminolere restoration

