

Springs Restoration Projects for Kings Bay/Crystal River

Sean King, Ph.D.

Springs & Environmental Flows



Southwest Florida
Water Management District



Issues & Drivers

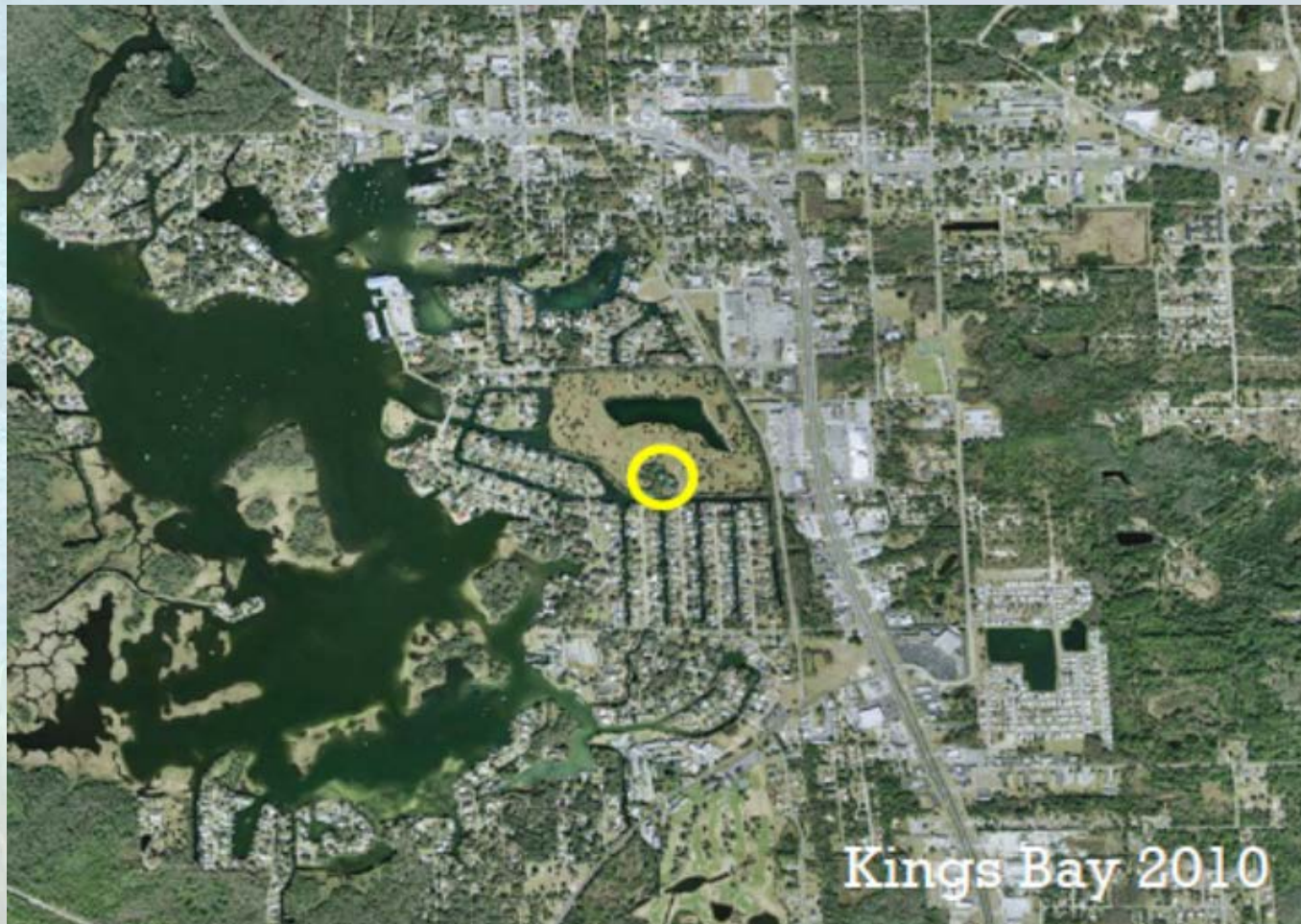
- Spring Flow
- Nutrients
- Invasive Species
- Salinity
- Manatee Grazing
- Recreation



Kings Bay Development



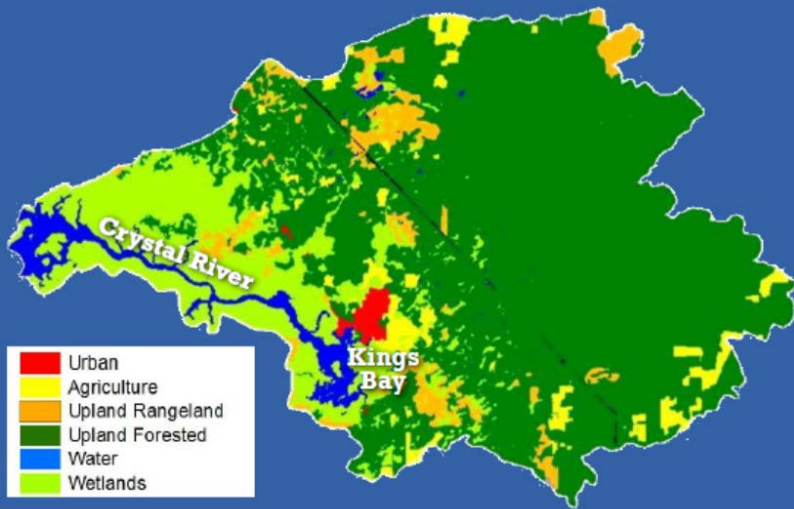
Kings Bay Development



Springshed Development

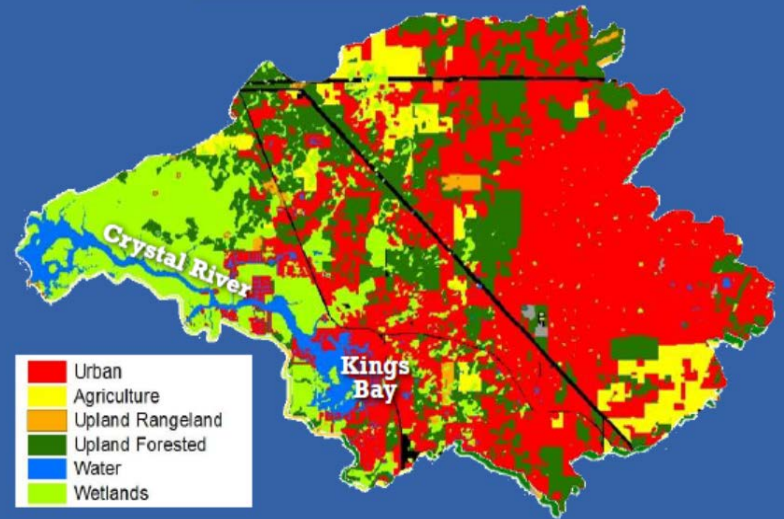
Land-use Change

1944 Crystal River Watershed Land-use



Land-use Change

2010 Crystal River Watershed Land-use



Springs are Unique and Complex

Visibility = 248ft

Nitrate = 2.34mg/L



Visibility = 29ft

Nitrate = 0.18mg/L



Springs Management Activities

- ✓ Restoration
- ✓ Minimum Flows and Levels
- ✓ Monitoring & Research
- ✓ Land Acquisition
- ✓ Education & Outreach



Restoration

- Water quality and quantity
 - Stormwater retrofit projects
 - Treatment wetlands
 - Water reuse projects
 - Agricultural BMPs
 - Conservation programs
- Aquatic habitat
 - Revegetation
 - Living shorelines
 - Algae and muck removal



City of Crystal River to Duke Energy Reclaimed Water Project



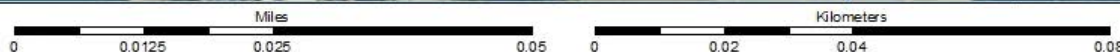
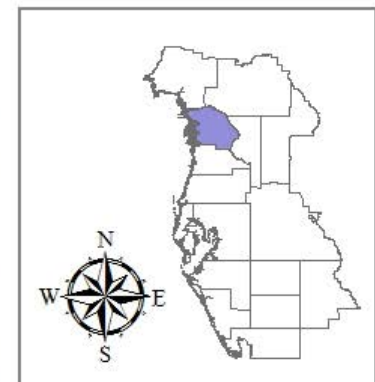
Hunter Springs Water Quality Improvement Project



W453 Hunter Springs Water Quality Improvement Project

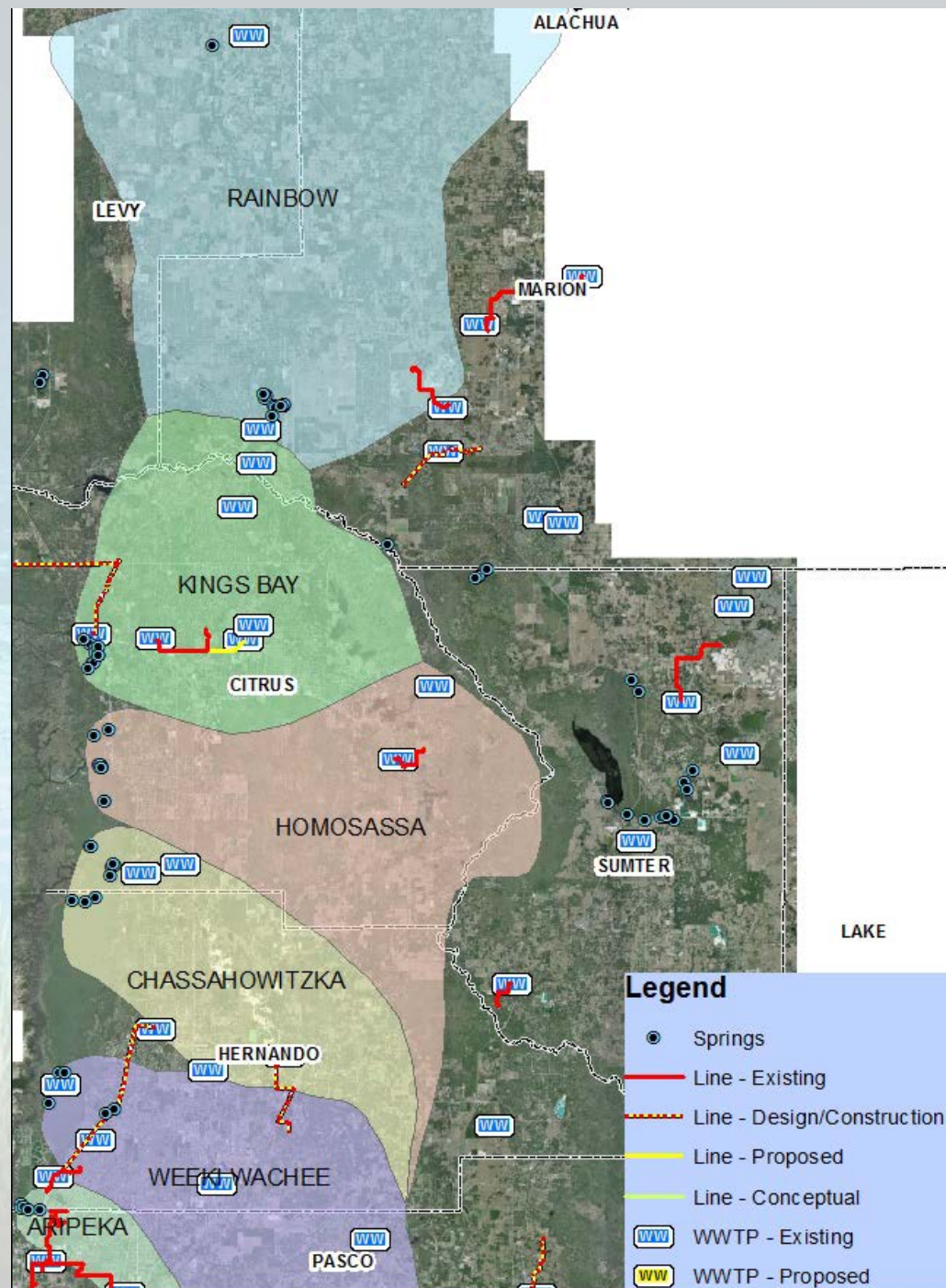
Legend

- Force_Main
- Existing_Pond
- Land_Acquisition
- Existing_Site





Springs Coast Wastewater Treatment Wetland Project



FARMS Program — Springs Coast

Goal: To reduce groundwater use and nutrient loading within springsheds



Restoration

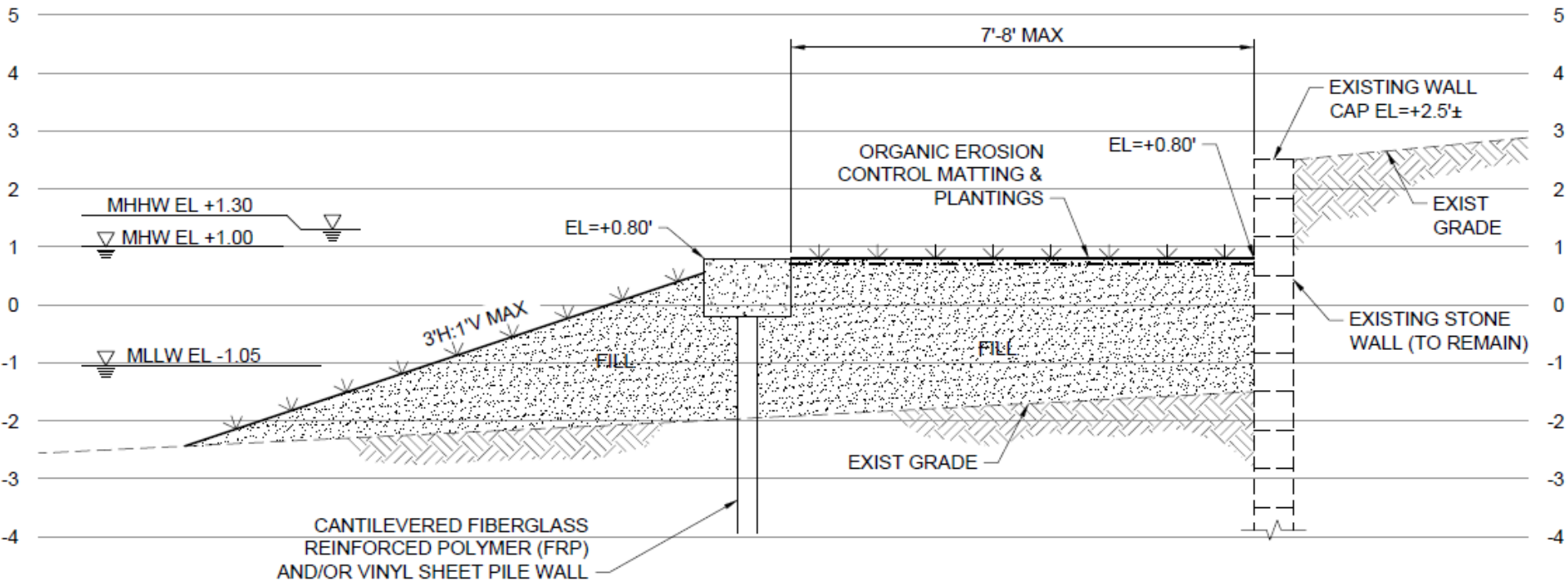
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Hunter Springs Park Living Shoreline



Hunter Springs Park Living Shoreline



preliminary design



Hunter Springs Park Living Shoreline



Galveston Bay Foundation



Floating Wetlands

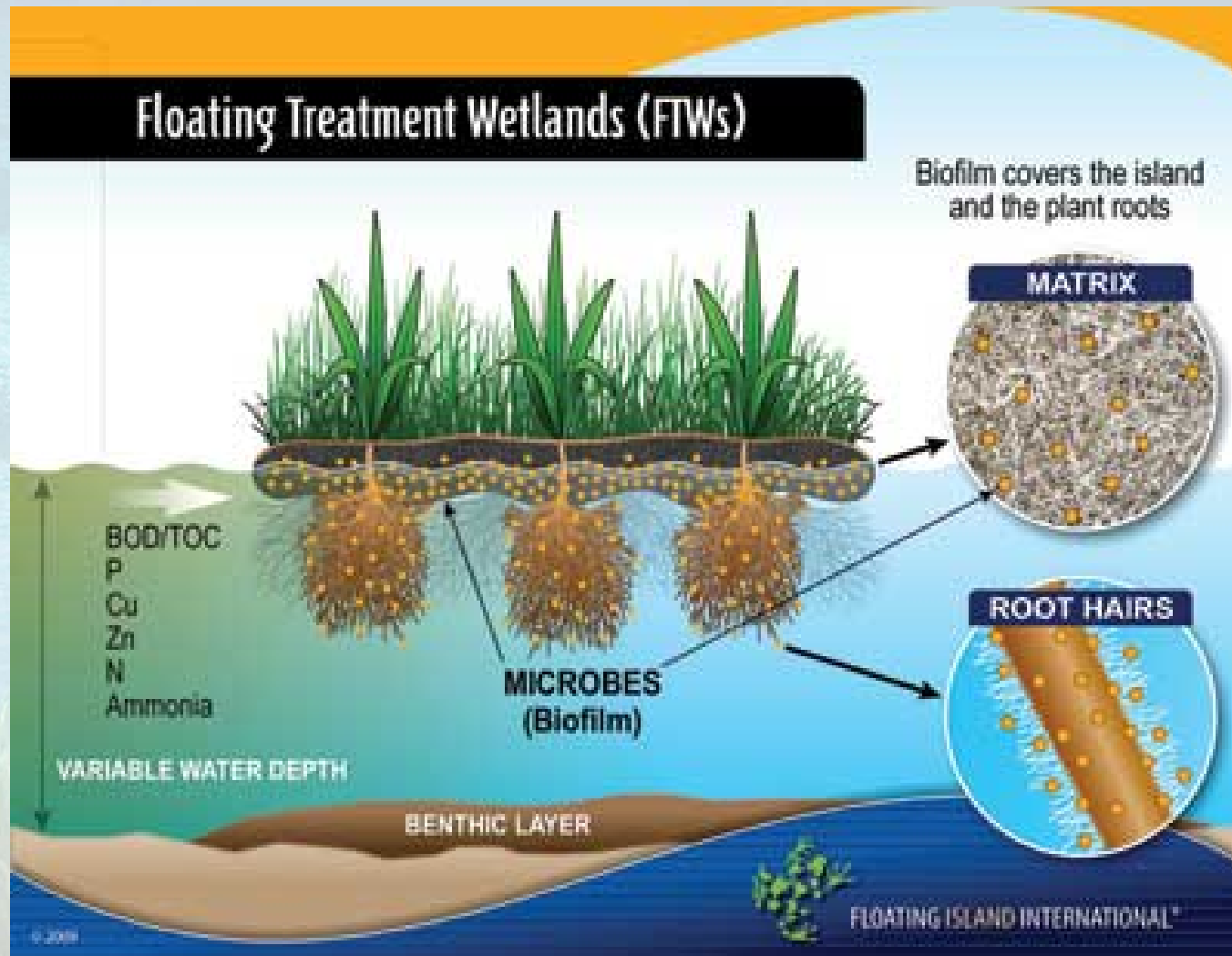


Floating Islands International

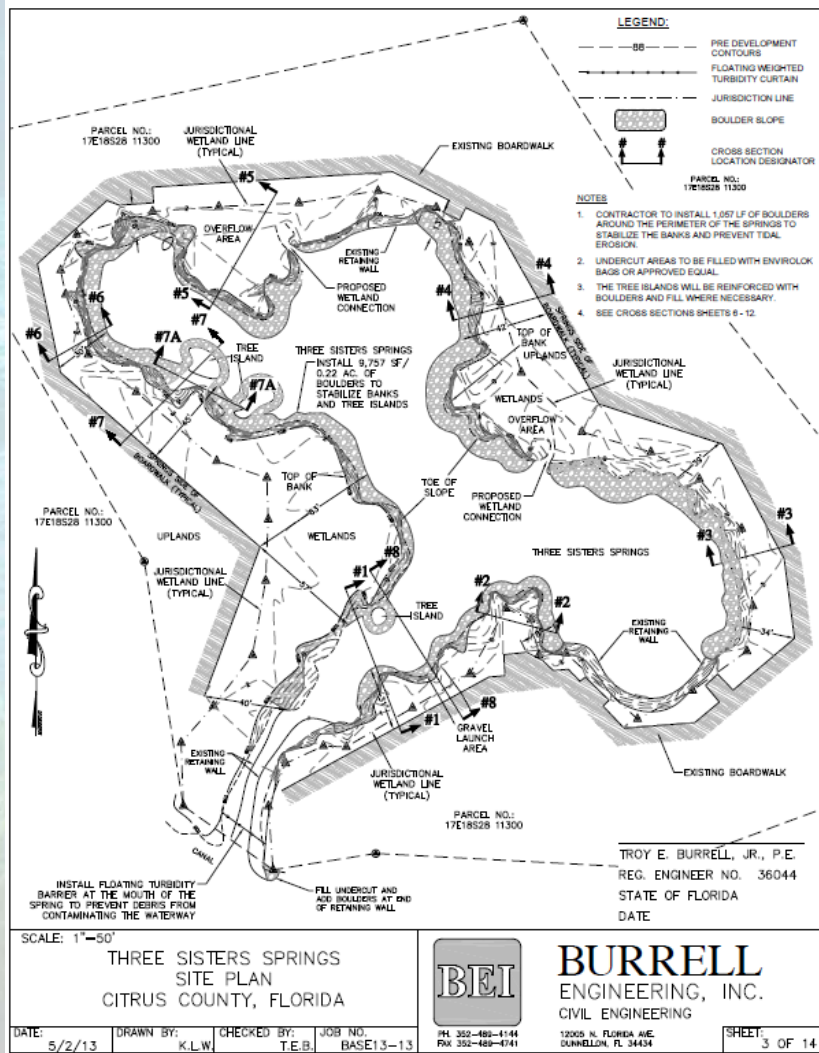


Tumblin Creek Stormwater Park
Gainesville, FL

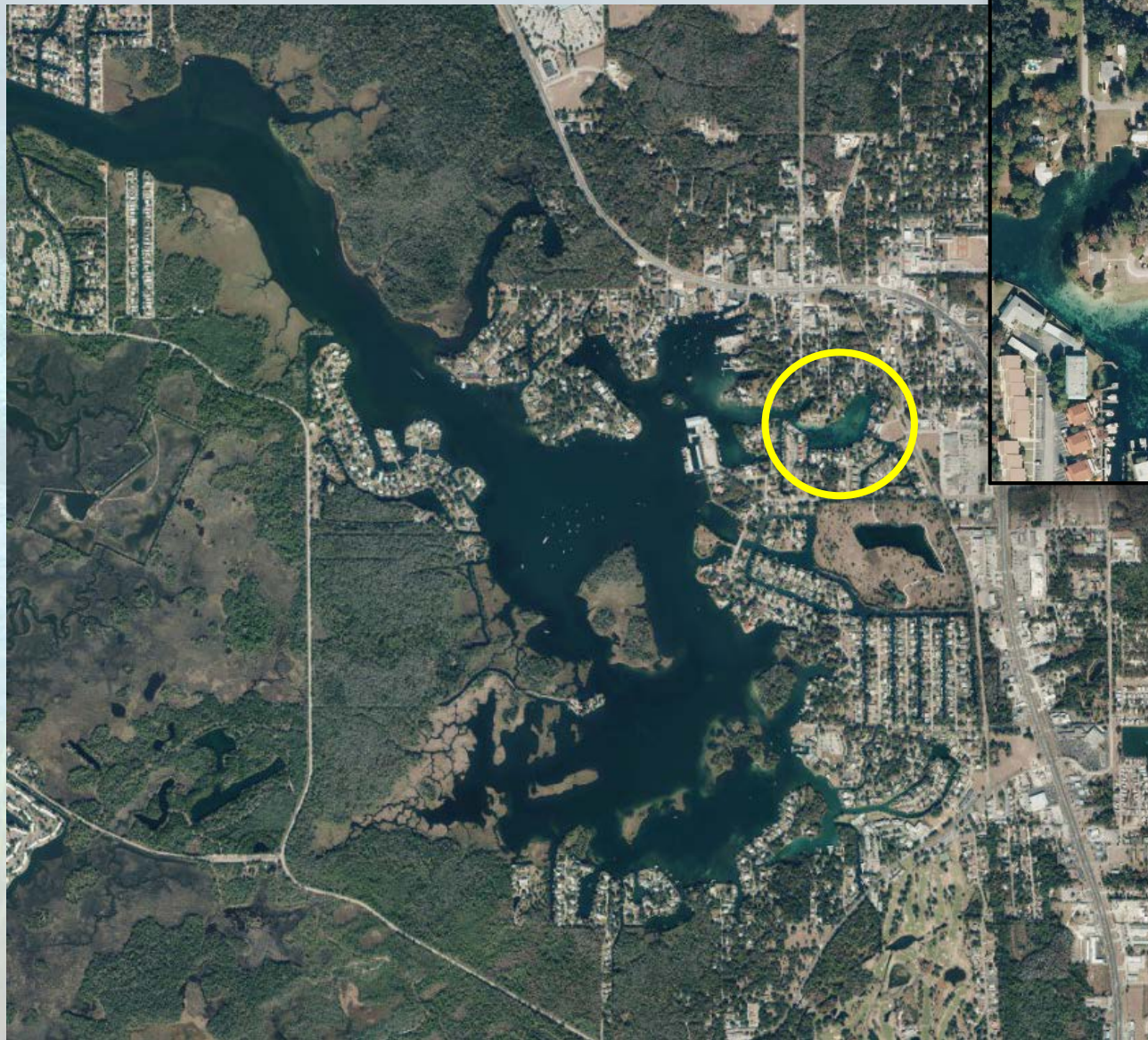
Floating Wetlands



Three Sisters Springs Bank Stabilization Project



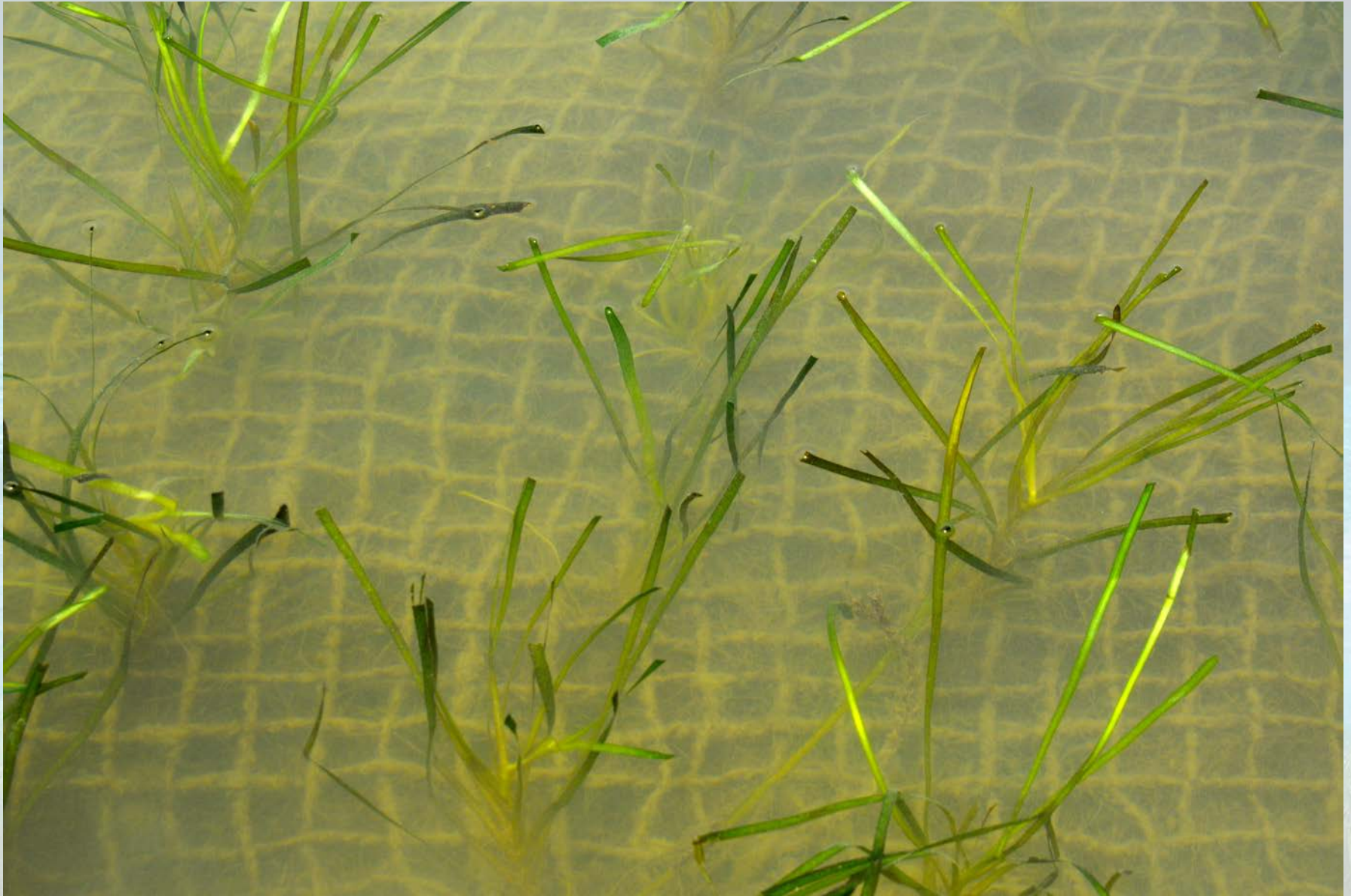
Kings Bay Revegetation Project



Hunter Cove

- Algae dominated
- Highest visibility
- Freshest part of the bay
- Highest likelihood of success











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