

Surface Water Improvement and Management (SWIM) Program

Mary Szafraniec
Resource Management Department
Environmental Scientist
January 24, 2007

SWIM Act – 1987

- ◆ Degradation of the State's Surface Waters
- ◆ Loss of Associated Natural Systems

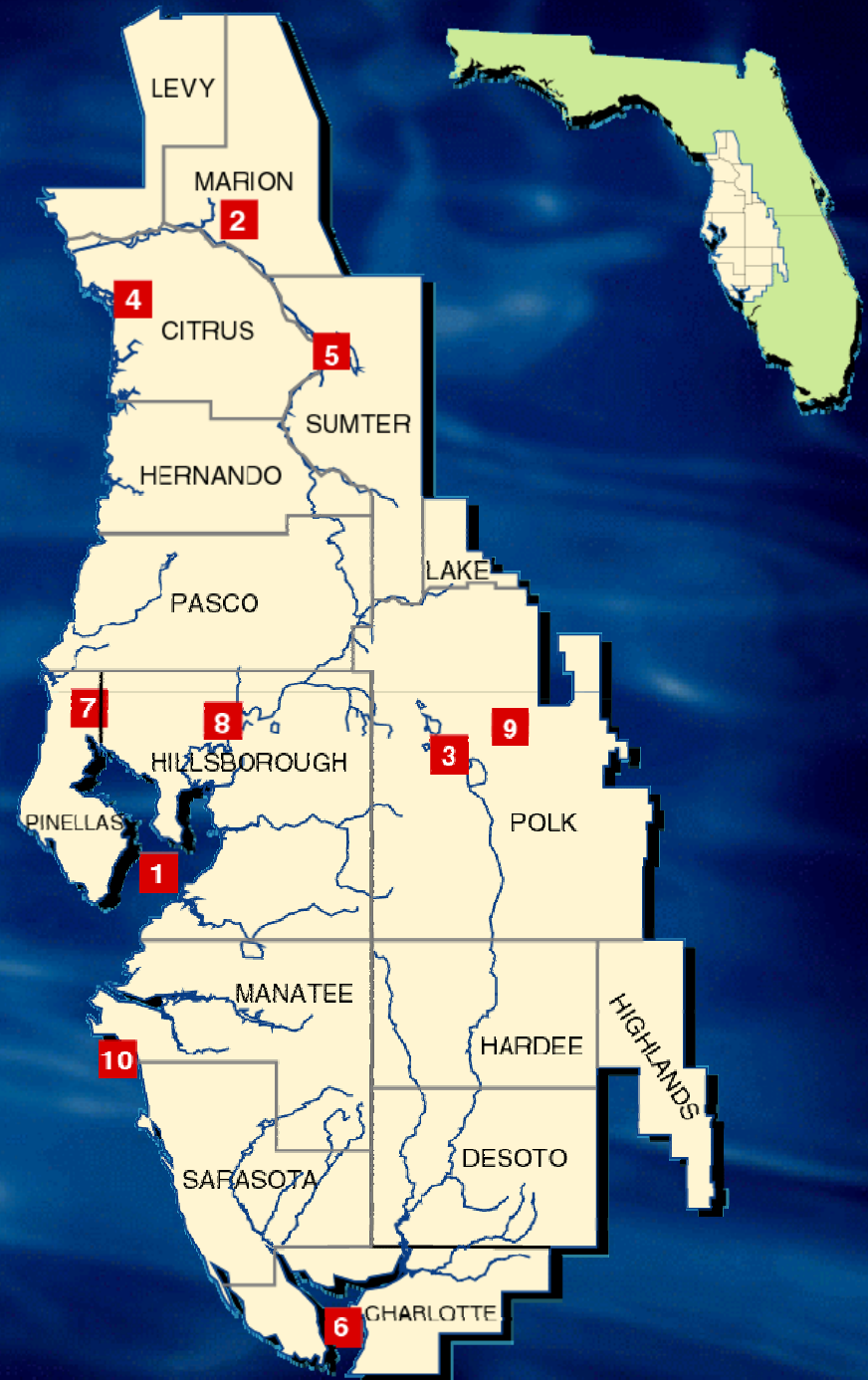
Legislation Requires Water Management Districts :

- ◆ To maintain a list of priority water bodies
- ◆ To develop and implement plans and programs for the improvement of the priority surface water bodies

Southwest Florida Water Management District

Surface Water Improvement and Management Priority Water Bodies

- 1 Tampa Bay**
- 2 Rainbow River**
- 3 Banana Lake**
- 4 Crystal River/Kings Bay**
- 5 Lake Panasoffkee**
- 6 Charlotte Harbor**
- 7 Lake Tarpon**
- 8 Lake Thonotosassa**
- 9 Winter Haven Chain of Lakes**
- 10 Sarasota Bay**



Overview of SWIM Water Quality Monitoring Projects



Water Quality in Peace and Myakka Basins, Charlotte Harbor, and Lemon Bay

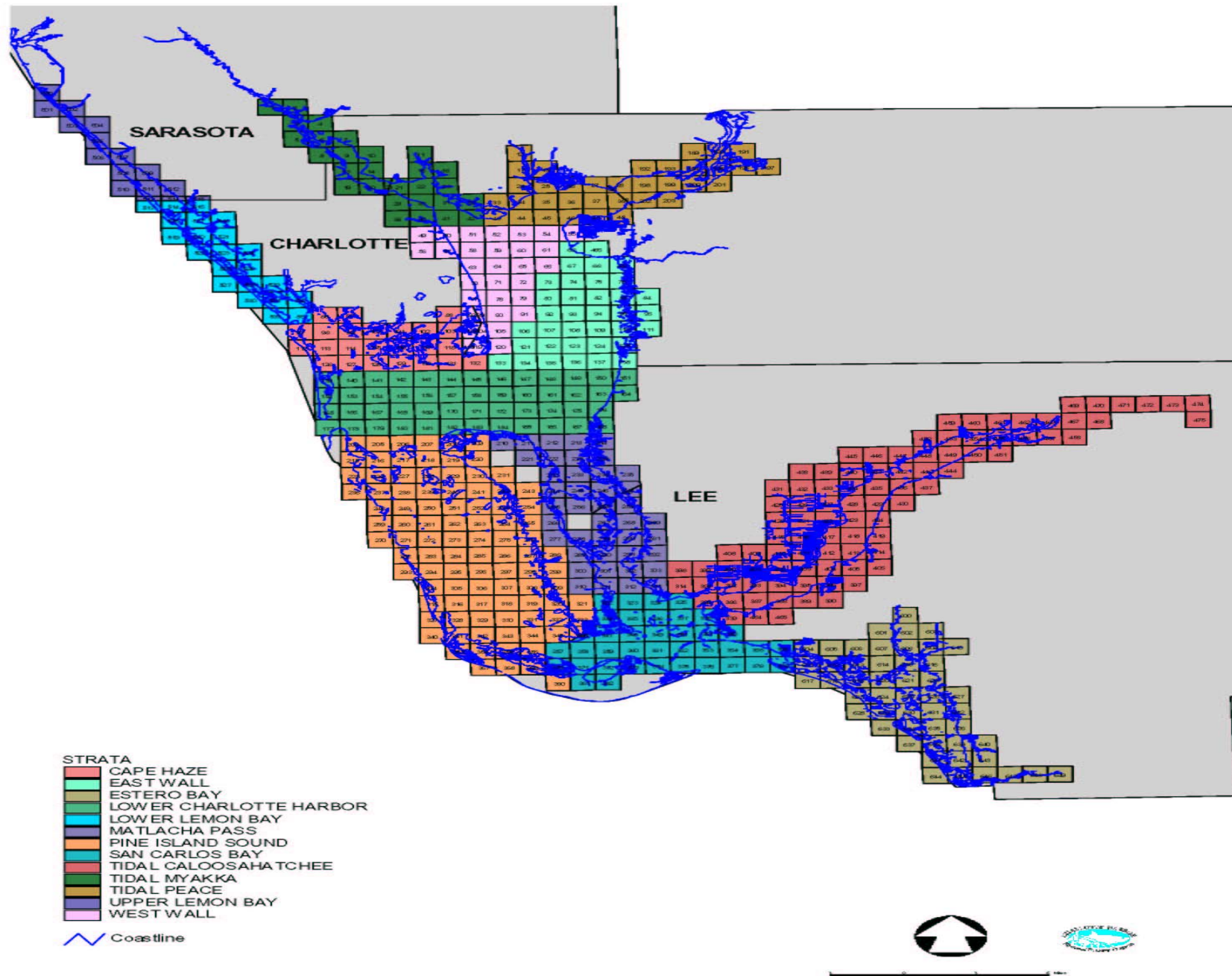
Purpose of Effort:

- ◆ To determine the quality of water throughout the harbor for the purposes of Total Maximum Daily Load development and temporal variability (trend) analysis.
- ◆ To establish a long-term database of water quality conditions within the estuary to provide essential data for planning and management purposes.

Water Quality in Peace and Myakka Basins, Charlotte Harbor, and Lemon Bay

- ◆ 25 samples are collected by the Florida Fish and Wildlife Conservation Commission on a monthly basis (began in 2001).
- ◆ Parameters include nutrients, turbidity, Chl-a, TSS, and in-situ field parameters.

COASTAL CHARLOTTE HARBOR MONITORING NETWORK



Frog Creek Hydrodynamic Modeling Study

The study concerns Frog Creek of the Terra Ceia ecosystem and three proposed intertidal lagoons that may be constructed off Frog Creek in an effort to significantly increase the amount of low salinity nursery habitats for the area.

Figure 1
Terra Ceia Aquatic and Buffer Preserves

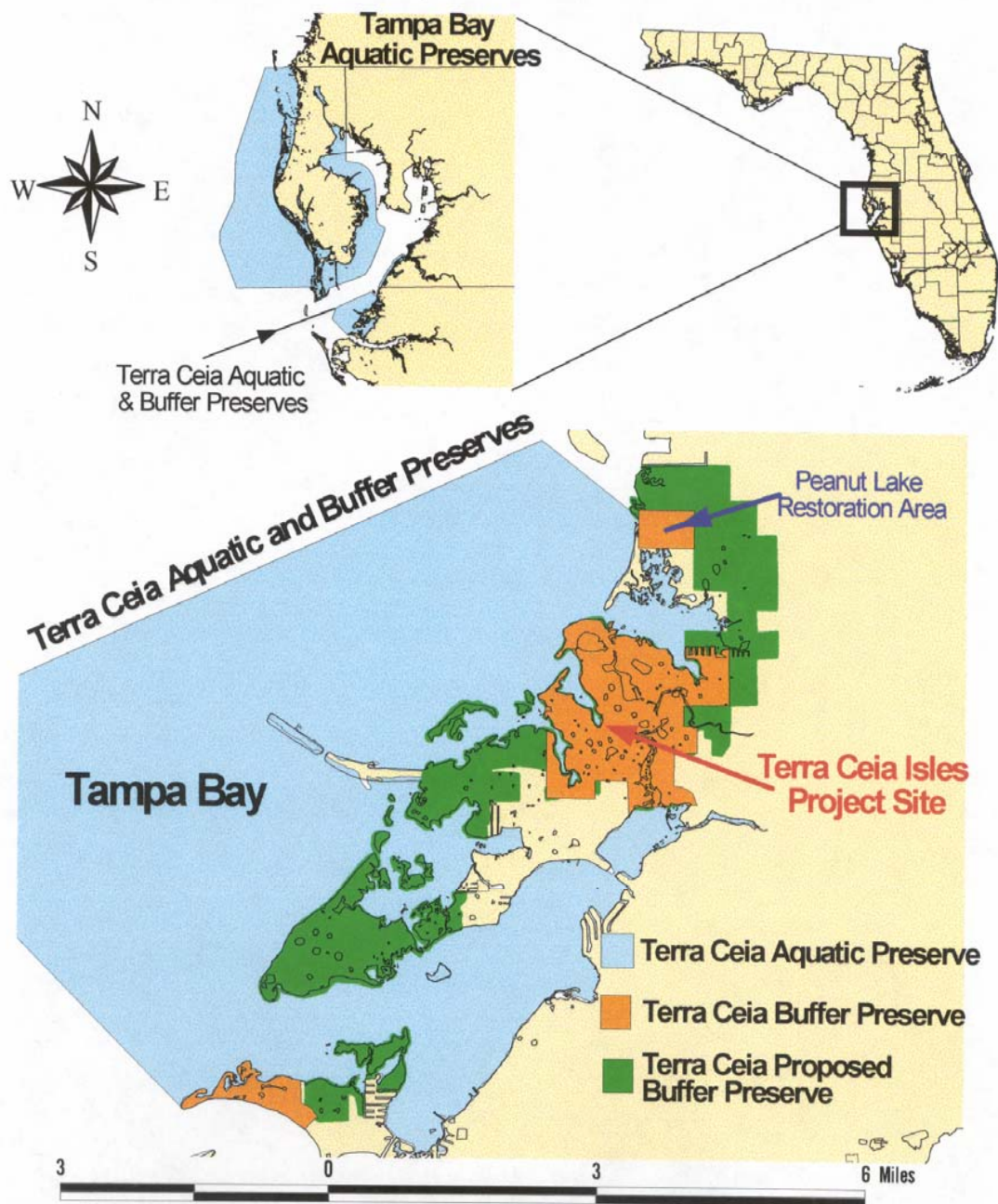


Figure 2. Frog Creek monitoring stations for creek modeling

Frog Creek Hydrodynamic Modeling Study

- ◆ Joint project with FDEP (Tampa Bay Aquatic Preserves) and the USGS.
- ◆ Data is necessary to develop, calibrate and run a hydrodynamic model that will assess what effects one to three (proposed) intertidal lagoons might have on existing salinity regime of Frog Creek.
- ✗ **If modeling predictions indicate that the existing salinity regime (and habitat values) will be significantly compromised by the addition of 1-3 lagoons, then 1-3 of the lagoons may not be built.**

Frog Creek Hydrodynamic Modeling Study

- ◆ Streamflow data is being collected by USGS every 15 minutes during an 18 month period (November 2005 through April 2007).
- ◆ FDEP continuous water quality monitoring (top/bottom temperature, top/bottom salinity) occurs every 15 minutes and will continue for 3 more months (May 2006 through April 2007).

Balm Road Marsh

The project involves the creation of a 29 acre floodplain marsh in south-central Hillsborough County designed to treat stormwater runoff from approximately 1,025 acres of upstream, active agricultural land prior to discharging into Bullfrog Creek and, ultimately, Tampa Bay.

Unnamed Street

McGrady Rd

Cody Dr

Bullfrog Creek at McGrady Rd.

Bullfrog Creek below Outfall (Balm Rd. Marsh)

Balm Rd

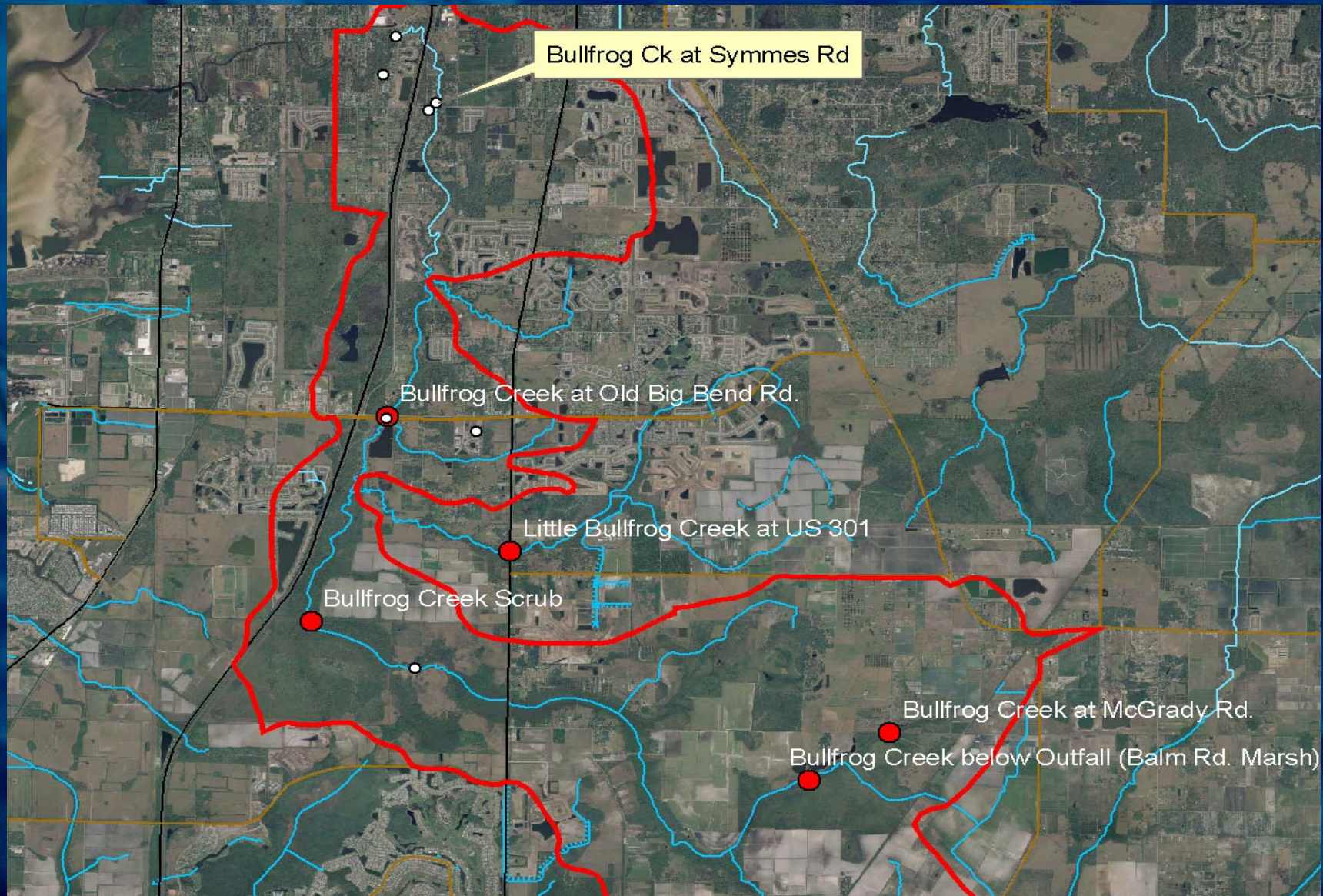


Balm Road Marsh

Purpose of Effort:

- ◆ The project goals are to attenuate sediment loading into the creek along with nutrient and chlorophyll reductions.
- ◆ Water quality sampling began in 1998 with 3 stations until 2001. A fourth station was added in 2001 and those four stations will be monitored until December 2007.
- ◆ The data will be analyzed to evaluate the improvement of water quality to Bullfrog Creek.

Balm Road Marsh



Sawgrass Lake Restoration Project

First component of project:

- This project involves the remediation and reclamation of spent lead shot and clay targets at Sawgrass Lake Water Management Area (St. Petersburg, FL)
- To examine the feasibility of reclamation and remedial action alternatives; and prepare Remedial Action and Improvement Plans.

Sawgrass Lake Restoration Project

Second component of project: Water quality improvement for discharges from Sawgrass Lake to Tampa Bay

- The objective of the project is to assess the contamination, sediments, water quality, and pollutant loading to Tampa Bay.
- Assess the effects of resuspension of lake sediments on Tampa Bay water quality, and quantify pollutant loadings to Tampa Bay through the lake outfall.

Sawgrass Lake Restoration Project

Parameters collected:

- Groundwater and Surface Water - Total and filtered lead and arsenic, hardness, and TDS.
- Soil and Sediment - Sieved - total lead and leachable lead; Unsieved – total lead, leachable lead, and Acid Volatile Sulfide (AVS) /Simultaneously Extracted Metal (SEM) (Bioavailable metal)
- Lake outfall samples - TKN, NH₃, NO₂ + NO₃, Ortho Phosphorus, Total Phosphorus, Chlorophyll a, Lead, Total Suspended Solids (TSS), VSS, Turbidity

Sawgrass Lake Property



General Location Map



McKay Bay-Eastshore Stormwater Retrofit

- McKay Bay-Eastshore Commerce Park is a newly constructed regional stormwater treatment facility, including a sediment sump and an alum facility, within an approximately 1,050 acre basin in the McKay Bay watershed in Hillsborough County.
- Land use in the basin includes commercial, residential, municipal and light industrial.
- The project will focus on water quality improvements in stormwater flowing through the property and discharging to the Tampa Bypass Canal and ultimately McKay Bay, one of the most degraded areas of Tampa Bay.

McKay Bay-Eastshore Stormwater Retrofit

Purpose of Effort:

- ◆ This project will demonstrate performance of the stormwater treatment system.
- ◆ Three storm events and two baseflow samples will be collected upstream and downstream of the treatment system, for a total of 10 samples.



727.520.8181
www.aerophoto.com

McKay Bay Stormwater Retrofit Alum Treatment Facility

Negative # 60609 251
Date 06.09.06

Lake Thonotosassa Refinement of Nutrient Budget and Specific Water Quality Targets

Purpose of Effort:

- ◆ To revise the basin-specific water quality targets for the contributing watershed, and review and refine the pollutant load reduction goals for the lake.
- ◆ Flow weighted and surface water samples will be collected from 1) Westside Canal prior to Pemberton Creek, 2) Pemberton Creek prior to Baker Creek, 3) Baker Creek at the inflow to Lake Thonotosassa, and 4) Lake Thonotosassa Outfall at Flint Creek.
- ◆ Data collection began in September 2006 and will continue for 12 months.

Lake Thonotosassa Refinement of Nutrient Budget and Specific Water Quality Targets

Parameters Collected:

- ◆ Bulk precipitation samples will be collected continuously from one site near the Lake.
- ◆ A minimum of 15 groundwater seepage meters will be installed in the Lake.
- ◆ A minimum of 50 sediment core samples will be collected.



Figure 2. Proposed Groundwater Seepage Monitoring Sites in Lake Thorntonsassa.

McIntosh Park BMP Evaluation

Purpose of Effort:

- ◆ The McIntosh Park BMP Effectiveness Assessment project will provide stormwater treatment for the Eastside Canal that drains the eastern side of Plant City, that eventually flows into the Hillsborough River and then into Tampa Bay.
- ◆ The project consists of three different stormwater treatment BMPs (sump, created wetland and alum injection) in succession.

McIntosh Park BMP Evaluation

Sampling protocol:

- Four (4) stations will be used for surface water monitoring: (1) BMP#1 inflow, (2) BMP#1 outflow, (3) BMP#2 outflow, (4) BMP#3 outflow to Eastside Canal.
- Twelve (12) storm-event and six (6) base-flow samples will be collected at each of the four sites.
- Near continuous field measurements will be conducted every hour at each monitoring station. Rainfall quantity and quality will be recorded along with streamflow data.
- Four (4) surficial wells are also sampled quarterly within the project.



727.520.8181
www.aerophoto.com

Enhanced Stormwater Treatment Wetland McIntosh Park

Negative # 60531 002
Date 05.31.06

McIntosh Park BMP Evaluation

The objective of this evaluation project is to determine the effectiveness of this BMP series to improve future estimates for nutrient load reductions and result in better management decisions in the future.



727.520.8181
www.aerophoto.com

Enhanced Stormwater Treatment Wetland McIntosh Park

Negative # 60724 200
Date 07.24.06

Contact Information

Mary Szafraniec - Environmental Scientist

Mary.Szafraniec@watermatters.org

Surface Water Improvement & Mgmt. Program

Resource Management Department

813.985.7481 Ext. 2206