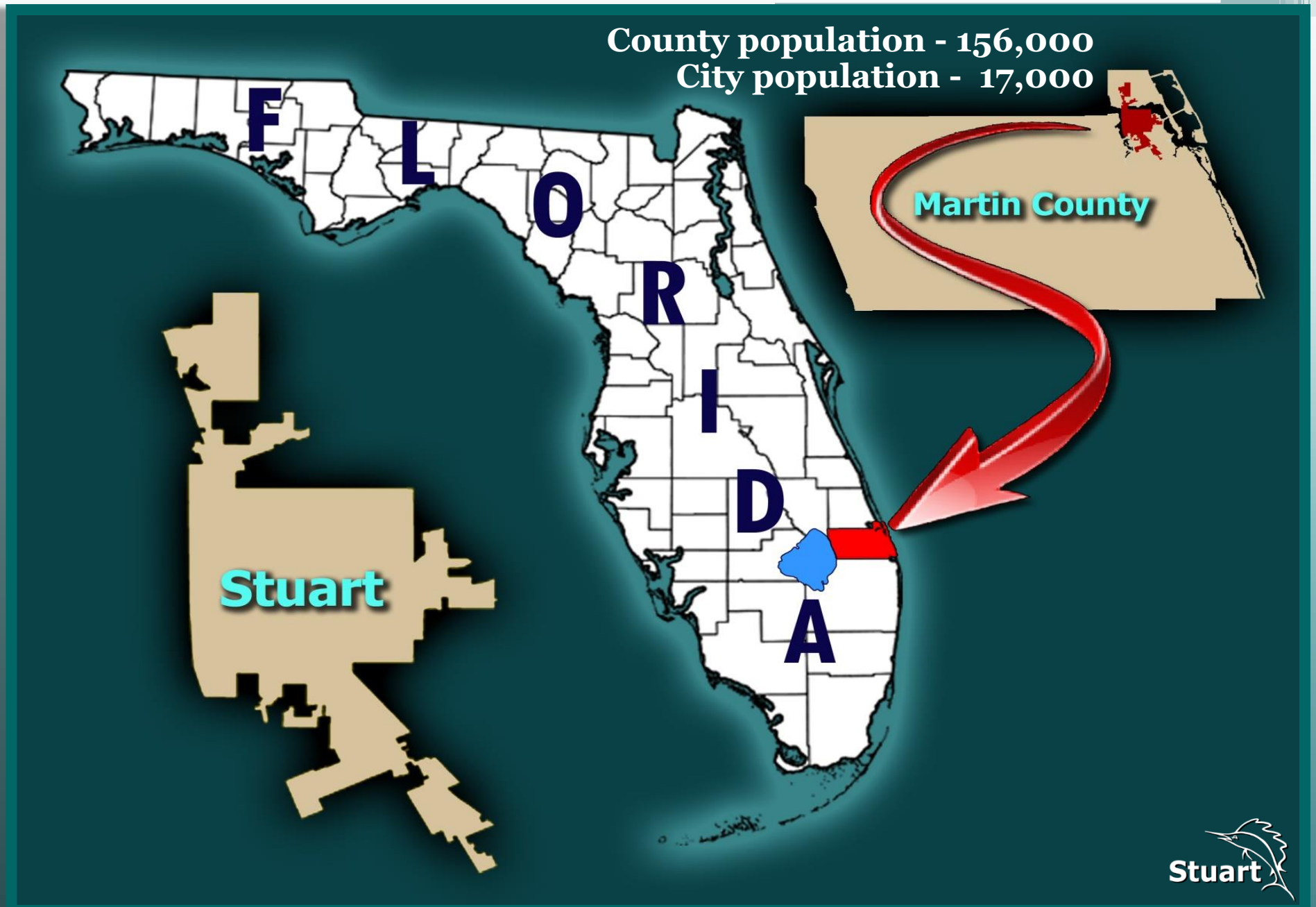
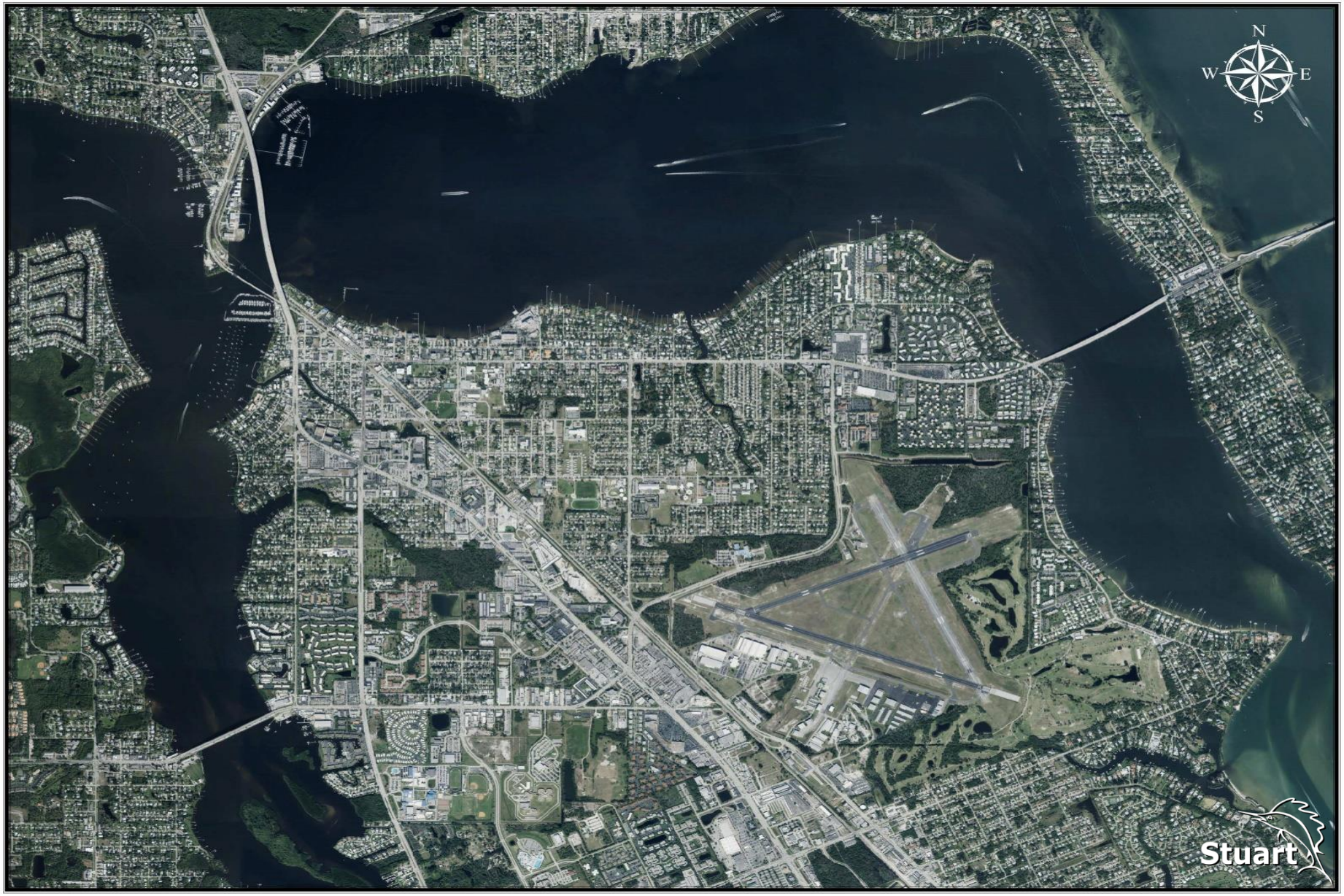
CITY OF STUART, FLORIDA

Watershed Planning and Improvement Program

POPPLETON CREEK

SESWA SPRING SEMINAR
March 31, 2017
Atlanta, Georgia


County population - 156,000
City population - 17,000
F L O R I D A
Martin County
Stuart
Stuart


N
W
E
S
Stuart

City of Stuart History

- In 1994 the City established a stormwater utility.
- August, 1995 Sam starts new job.
- Tropical storm event in October 1995 resulted in City wide flooding.
- October 17 – 11.45”

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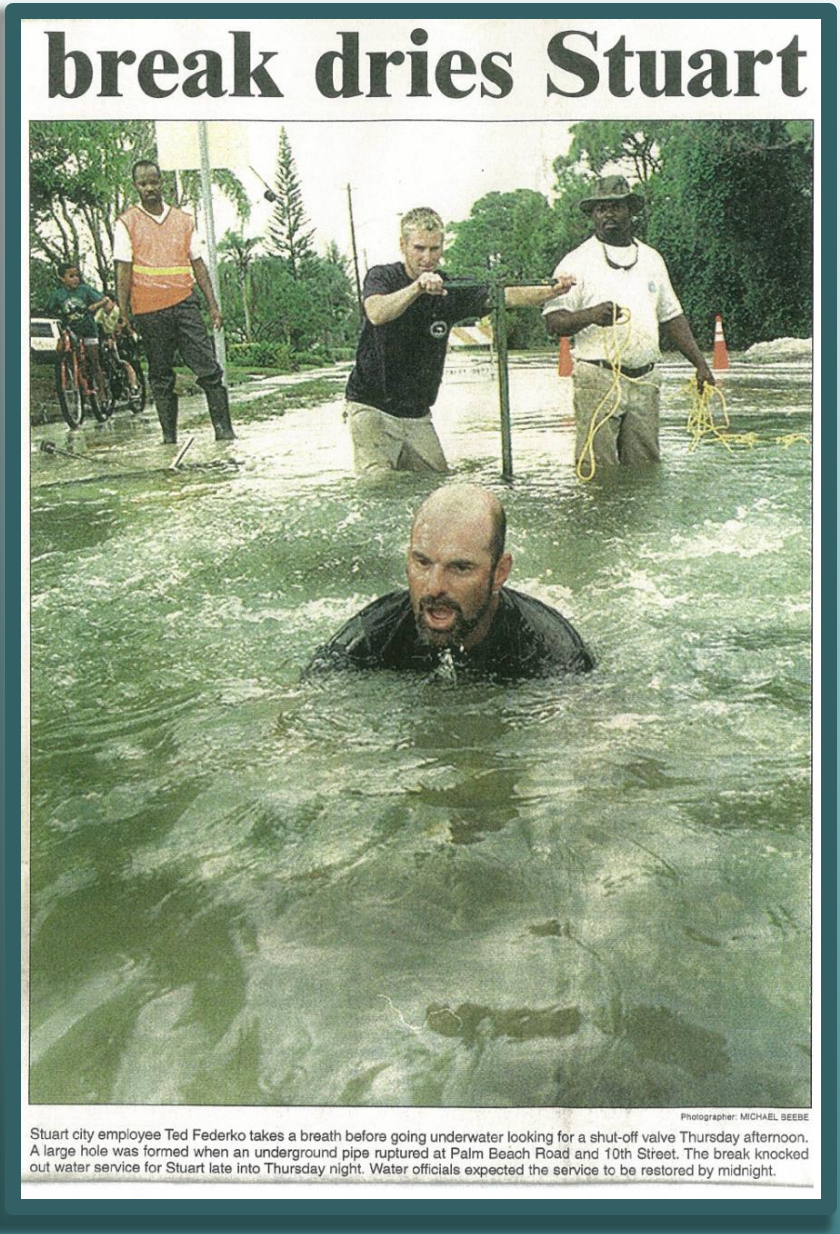
City of Stuart History



break dries Stuart

Photographer: MICHAEL SEEBE

Stuart city employee Ted Federko takes a breath before going underwater looking for a shut-off valve Thursday afternoon. A large hole was formed when an underground pipe ruptured at Palm Beach Road and 10th Street. The break knocked out water service for Stuart late into Thursday night. Water officials expected the service to be restored by midnight.

A major Water Main break led to …

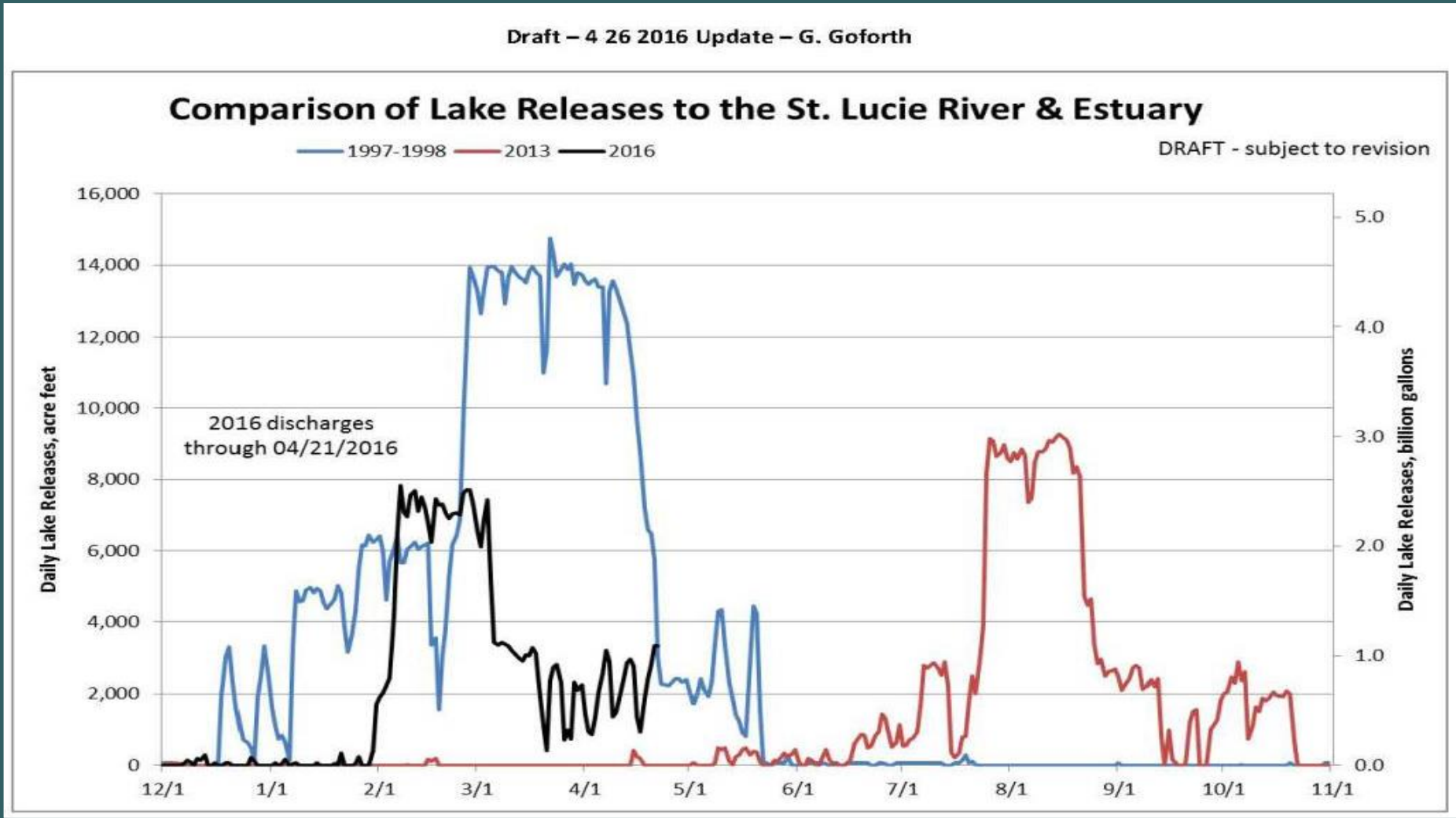
a GIS data collection project for utilities infrastructure in the mid 90's

Note: Reaction to disaster = $

Stuart

City of Stuart History

- April 1998: Extensive fish kills in St. Lucie River tied to discharges from Lake Okeechobee and local stormwater runoff.



City of Stuart History

- August 1998: St. Lucie River Initiative, not-for-profit group, commissioned and donated Poppleton Creek Basin Study to the City, showing where and how much water quality treatment could be constructed to meet modern standards for the entire basin.
- Nov 1998: Martin County voters approved “Healthy Rivers” referendum (one-cent sales tax for three years; approx. $6 mil.)
- 1999: State legislature funded the St. Lucie River Issues Team of Local volunteers managed by SFWMD for “turn dirt” stormwater projects.
- Note: Reaction to Disaster = $

Stuart

City of Stuart History

- 1999: City obtained grants from Florida Communities Trust (Haney and Poppleton Creeks) to purchase native lands and Issues Team for project construction.
- 2000: Local engineer and surveyor volunteers delineated watersheds in and connected to City and donated Master Watershed Map to City.
- 2000: City created The Watershed Planning Task Force and adopted the Planning and Improvement Program.
- FACT: Sam does not recognize political boundaries

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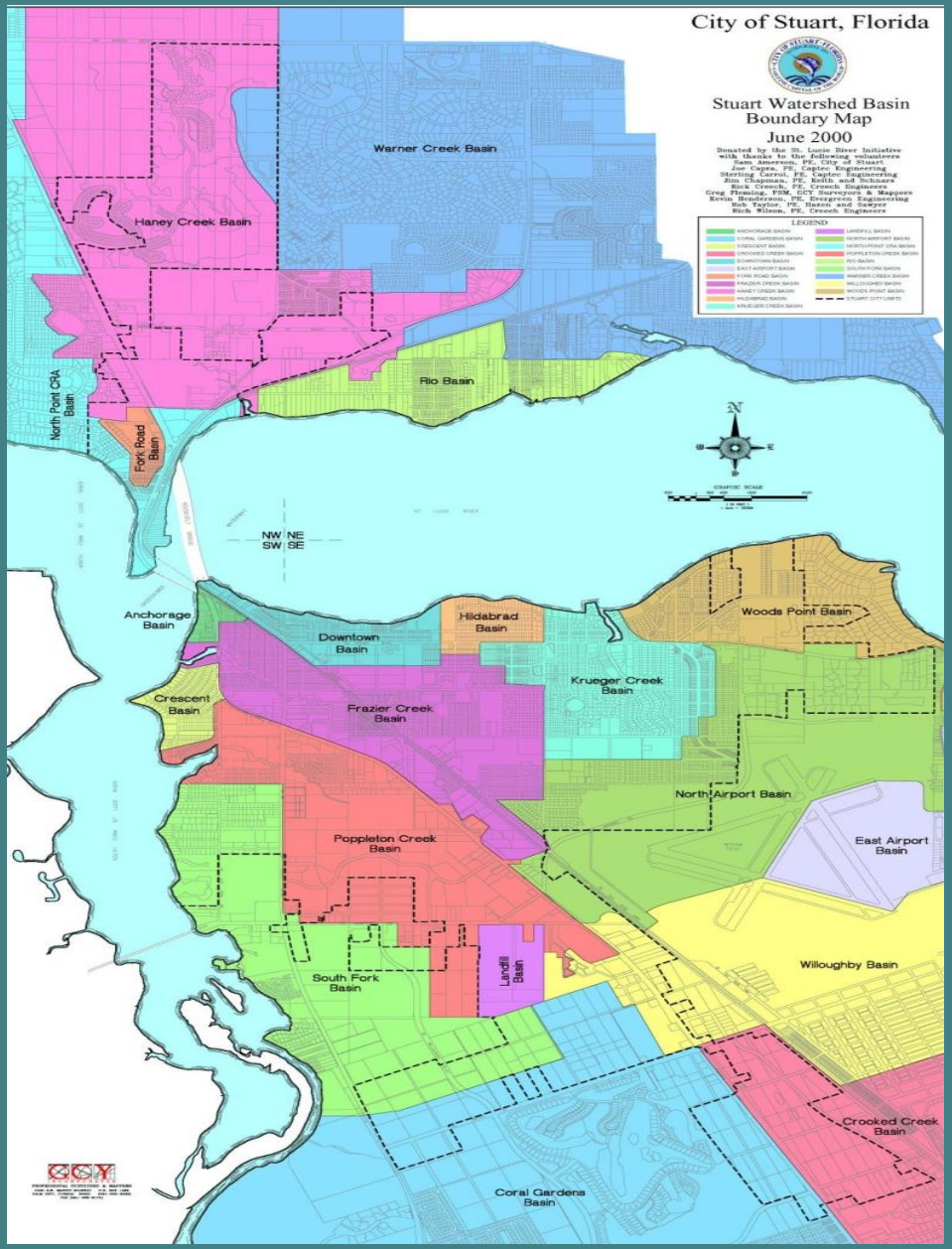

City of Stuart Watershed Basin Boundary Map June 2000

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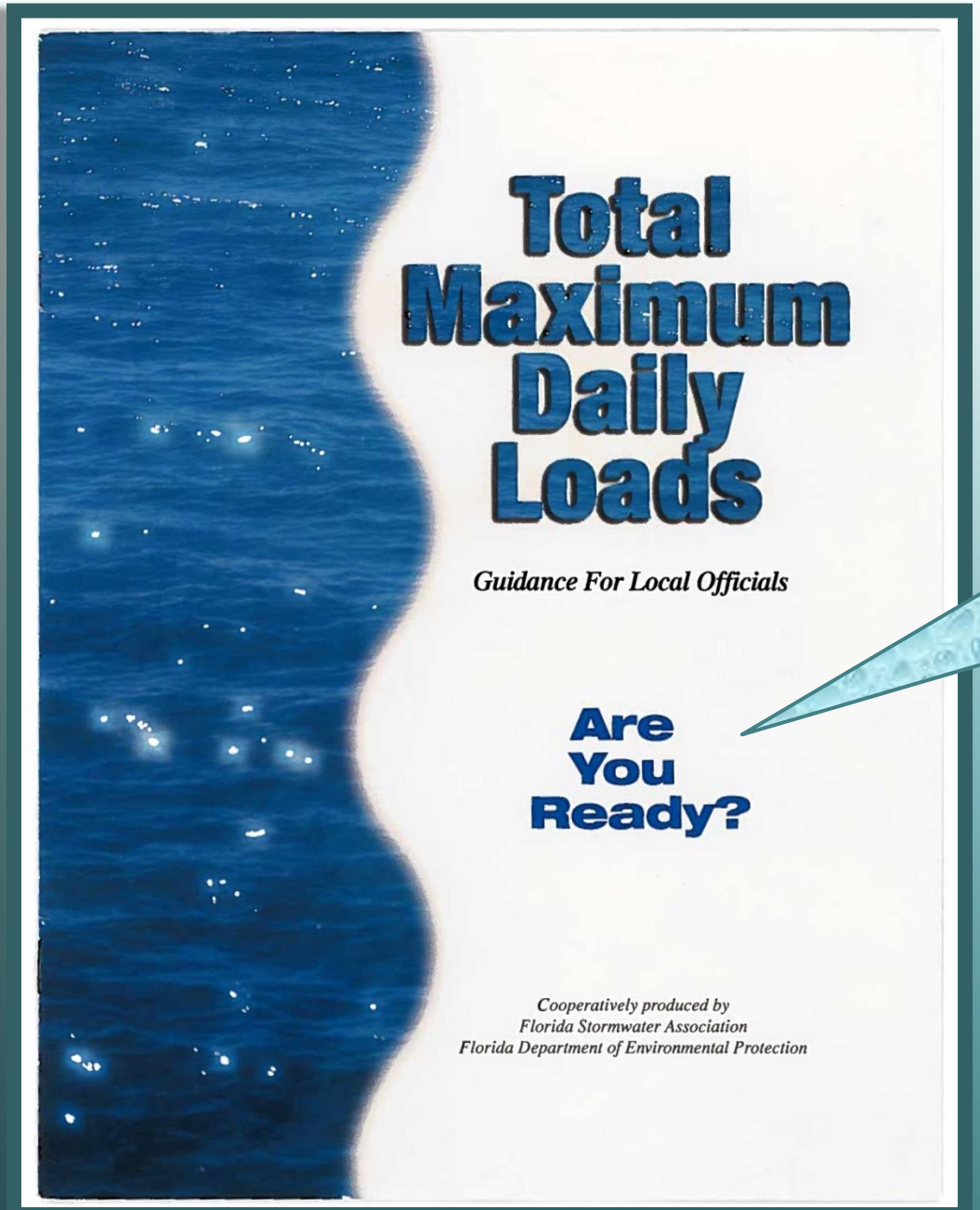

Probably Not!

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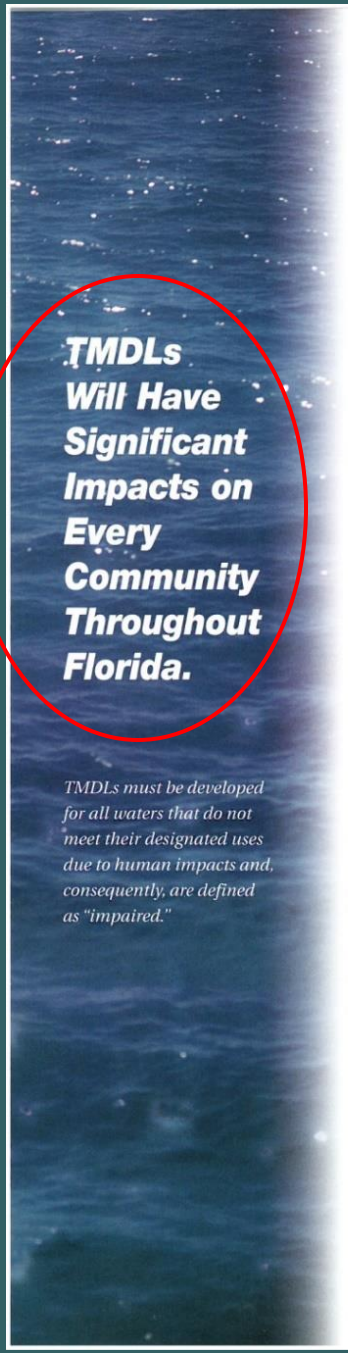

What is the TMDL Program?

The Total Maximum Daily Load (TMDL) Program is a federally required water quality program administered by the Florida Department of Environmental Protection (DEP) under the Florida Watershed Restoration Act (Section 403.067, Florida Statutes).

Through the program, DEP works closely with affected stakeholders to determine how to reduce targeted pollutant loadings to restore the legally designated uses (e.g., drinking water, fishing, swimming, shellfish harvesting) of the polluted waters.

What are TMDLs?

A TMDL is the maximum amount of a pollutant that a waterbody can receive and maintain its designated uses. A given waterbody may have several TMDLs - one for each targeted pollutant (phosphorus, coliforms, nutrients, etc.).

Under the Florida Watershed Restoration Act, TMDLs must be developed for all waters that do not meet their designated uses due to human impacts and, consequently, are defined as "impaired." The primary sources of these human-induced impairments are pollutants in urban stormwater, agricultural runoff, and permitted industrial and municipal wastewater treatment plants.

A TMDL, or a waterbody's assimilative capacity, is scientifically derived, typically using existing monitoring data and water quality models or empirical relationships between the pollutant load and the waterbody's response. The final TMDL provides a margin of safety that accounts for uncertainty in the analysis.

What distinguishes the TMDL Program from other state water quality programs?

The issues that the TMDL Program addresses are not new. Nonpoint sources, such as stormwater and agricultural runoff, and point sources, such as industrial wastewater outfalls, have created water quality concerns in Florida for decades and have been addressed in various ways.

However, the TMDL Program does bring something new to existing local, regional, and state water quality protection efforts by establishing water quality targets, or actual pollutant load limits, that indicate how much of a pollutant a lake, river, stream, or estuary can absorb and maintain its designated use. Before establishing these targets, DEP identifies the location, nature, and degree of impairments; the pollutants of concern; and, as much as possible, the pollutant sources.

In implementing the TMDL Program, DEP is taking an open, broad-based approach to local stakeholder involvement, a watershed management approach. The intent is to build on and strengthen local efforts to protect and restore water quality.

The TMDL Program will add emphasis to stormwater management.

What are the federal and state laws governing TMDLs?

Section 303(d) of the Clean Water Act (33 United States Code) requires states to identify impaired waters and the pollutants causing the water quality impairment. The state must then establish a TMDL for each identified pollutant.

Though these federal requirements were enacted in the early 1970's, they were not implemented in most states until citizen and environmental groups filed a number of successful lawsuits in the mid-1990's.

In Florida, DEP prepared a planning list in 1998 of potentially impaired waters (the 1998 303(d) list) and submitted the list to the U.S. Environmental Protection Agency (EPA). In 1999, the settlement of a lawsuit in Florida against the EPA by EarthJustice resulted in a consent decree that established a thirteen-year schedule for EPA to complete TMDLs for certain waters on Florida's planning list.

Later in 1999, the Florida Legislature passed the Florida Watershed Restoration Act, establishing the framework and requirements for implementing a state TMDL Program. The Act directed DEP to adopt by rule (the "Impaired Surface Waters Rule") a scientific methodology to determine whether a waterbody is indeed "impaired," and required DEP to adopt TMDLs by rule.

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TMDL
MS4
LRG
EPA
SSR
NOI
DUC
NNC
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Field Testing the Use and Classification System of Waters in Tallahassee

2006

Stuart

Is the Franklin Boulevard ditch fishable and swimmable?

2006

Stuart

- Creeks flow northerly - Groundwater flows to tide

Poppleton Creek

Objectives:

- Land Acquisition

1. Kiplinger Parcel, 26 Acres (Florida Communities Trust-1999)
2. Summit Parcel, 3.5 Acres (1-Cent Sales Tax-2000)
3. Thomas Parcel, 12 Acres (1-Cent Sales Tax 2000-2003)
   a) Discovery of Environmental Contamination From Flower Farm
   b) Eminent Domain Action – Unwilling Seller

- Dredging and Habitat Reconstruction

- Water Quality/Prevent Salt Water Intrusion/Stage-Up Groundwater

1. Construct 6.5 Acre Lake (Wet Detention)
2. Construct 128 LF Weir; Maintain Tailwater with High Discharge at Low Head

- Public Access and Passive Recreation

1. Open Area and Trail
2. Pavilions and Kiosk
3. Restrooms
4. Dog Parks
5. Model Yachting

- BMP Performance Monitoring

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11/27/2007
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07/14/2008

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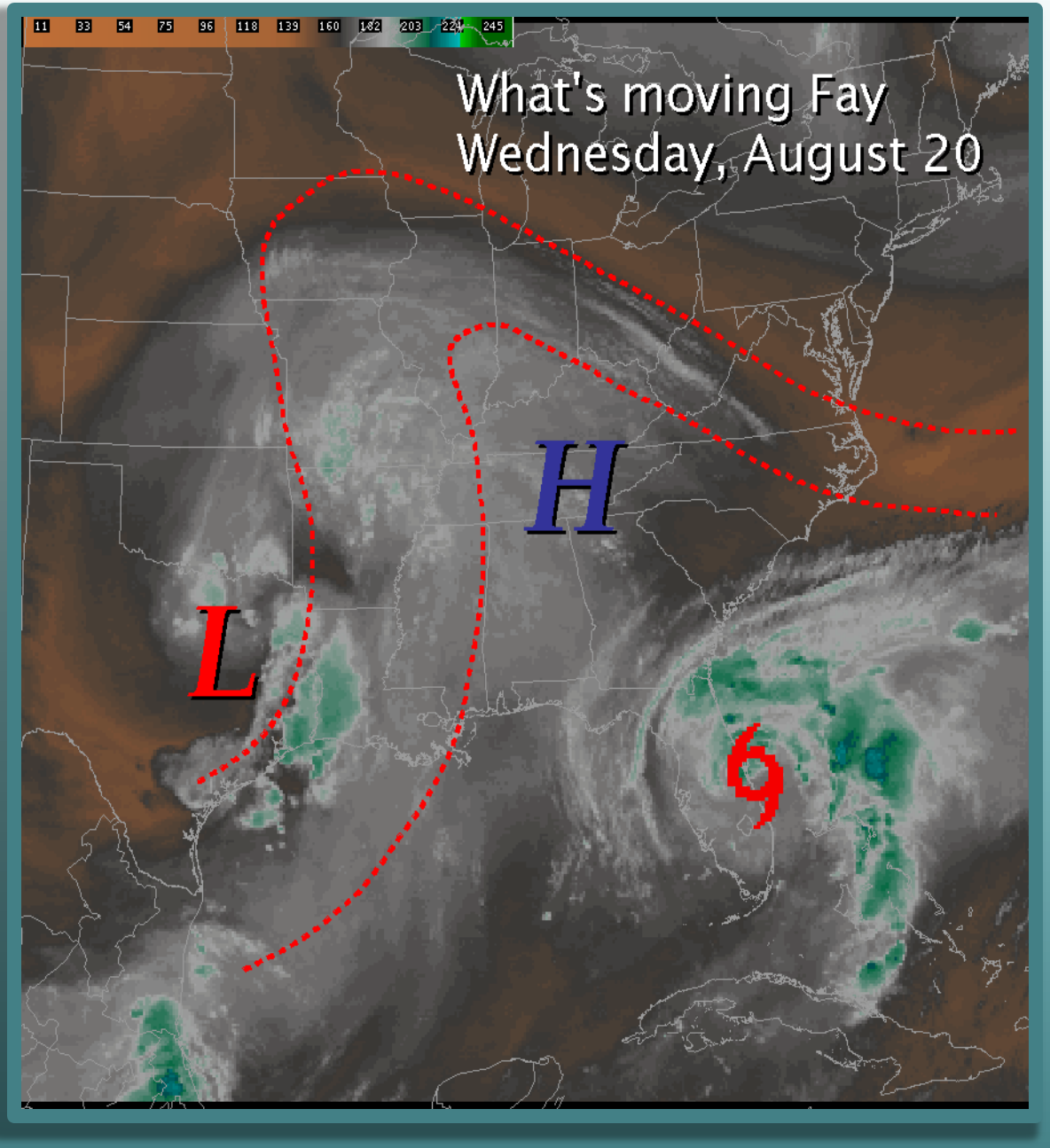

8/20/2008

Rainfall = 11.29”

Total August = **18.44”**

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Tropical Storm Fay - MHW = 1.10 NGVD Weir = 6.00 NGVD

8/18/2008

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8/25/2008

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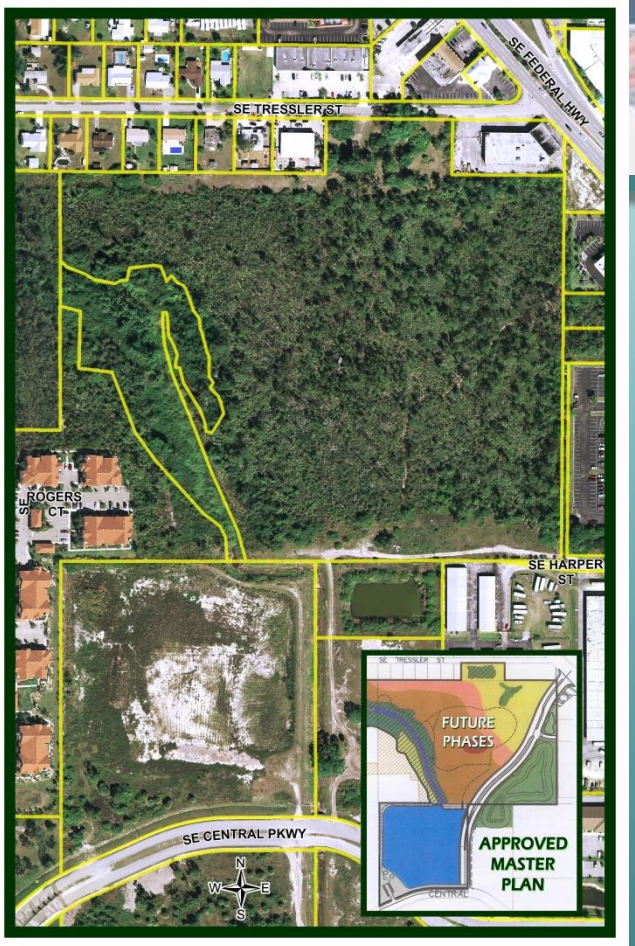

POPPLETON CREEK PARK INFORMATION

Poppleton Creek Park is a trailhead for a self-guided tour of rare and endangered habitats such as sand pine scrub, scrub flatwoods, and wetlands including the stormwater treatment lake and Poppleton Creek tidal floodplain. The lake is designed to capture stormwater from the watershed and detain it for groundwater recharge and water quality treatment prior to its release into Poppleton Creek and the St. Lucie Estuary. The preserved uplands, lake and Creek floodplain together provide more than 50 acres of wildlife habitat and are part of the City of Stuart's Watershed Protection Program.

The development of Poppleton Creek Park has been made possible through a variety of funding sources: the City of Stuart, St. Lucie River Issues Team, Florida Communities Trust and the Florida Department of Environmental Protection (FDEP) have all played a role in providing this important natural area to the citizens and visitors of our region.

CITY OF STUART · FLORIDA · INCORPORATED 1914 · SAILFISH CAPITAL OF THE WORLD

FLORIDA COMMUNITIES TRUST

St. Lucie River Issues Team

DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA

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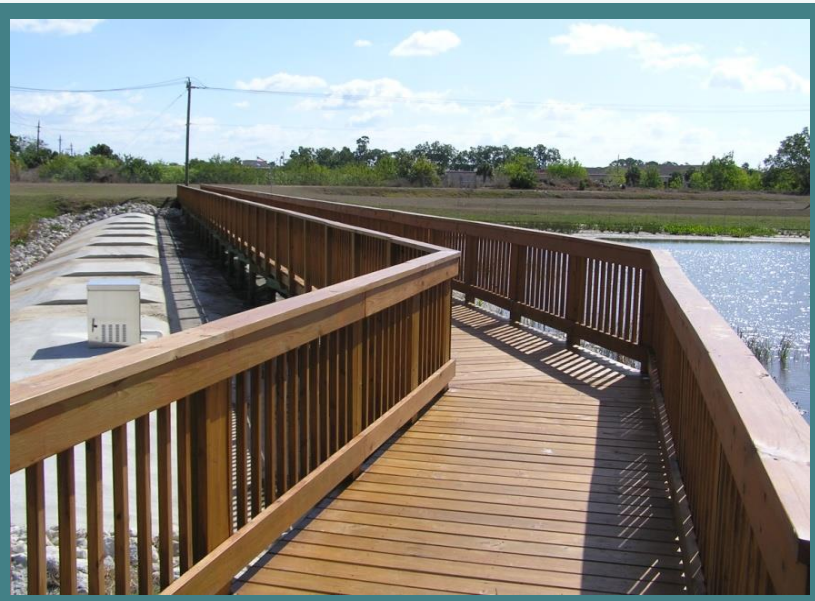

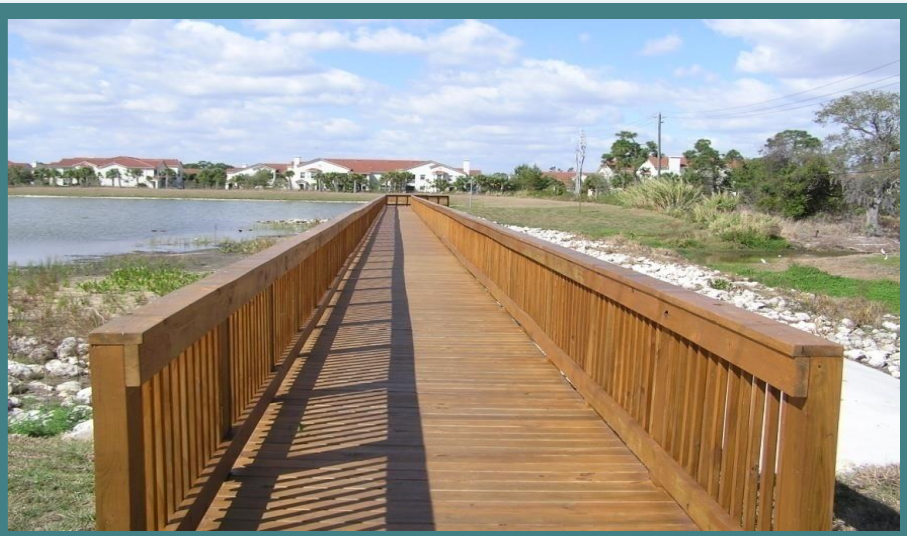

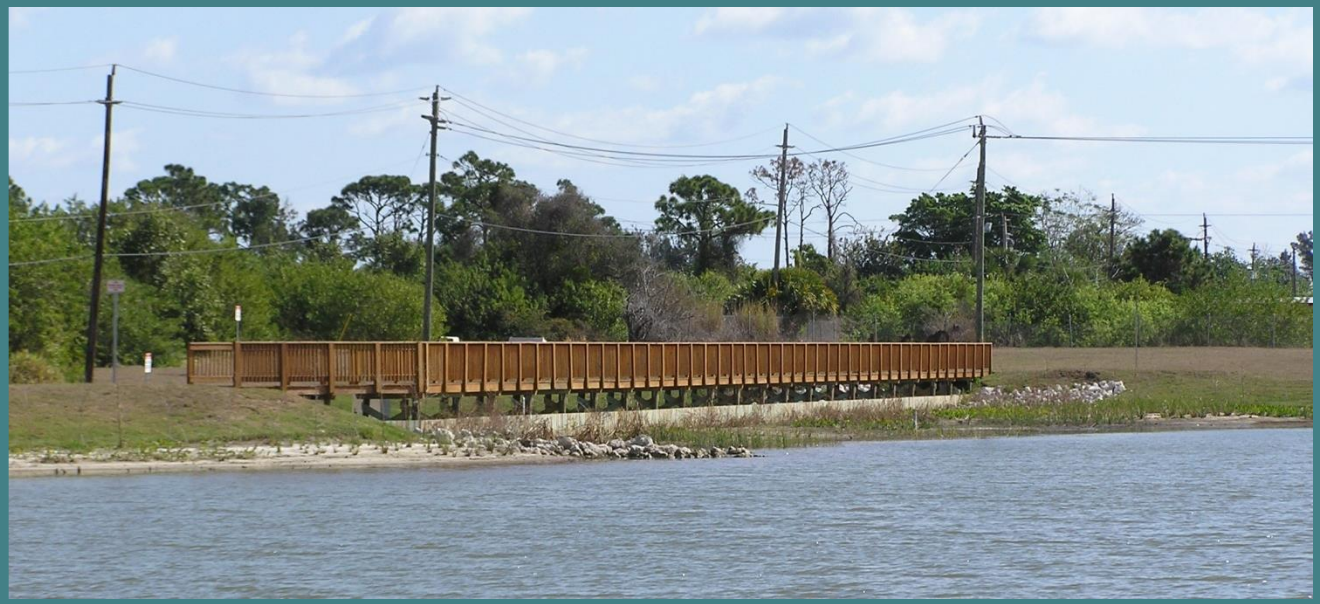

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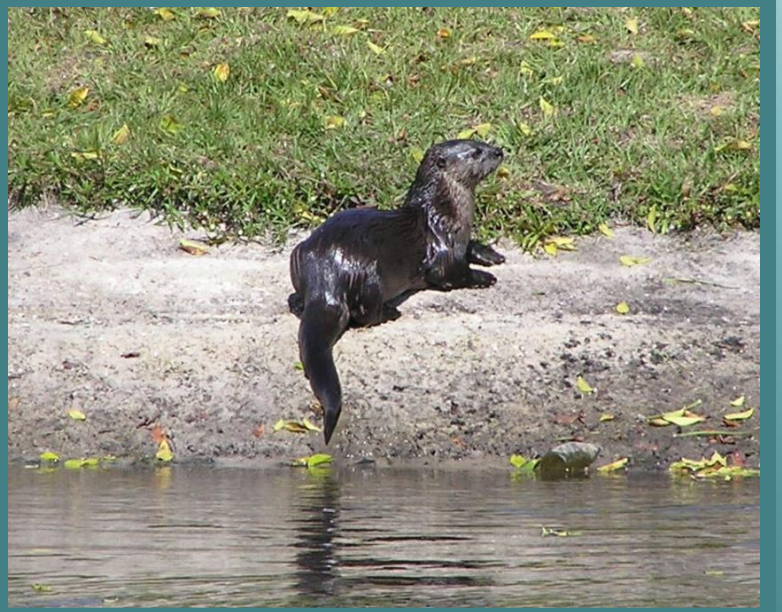

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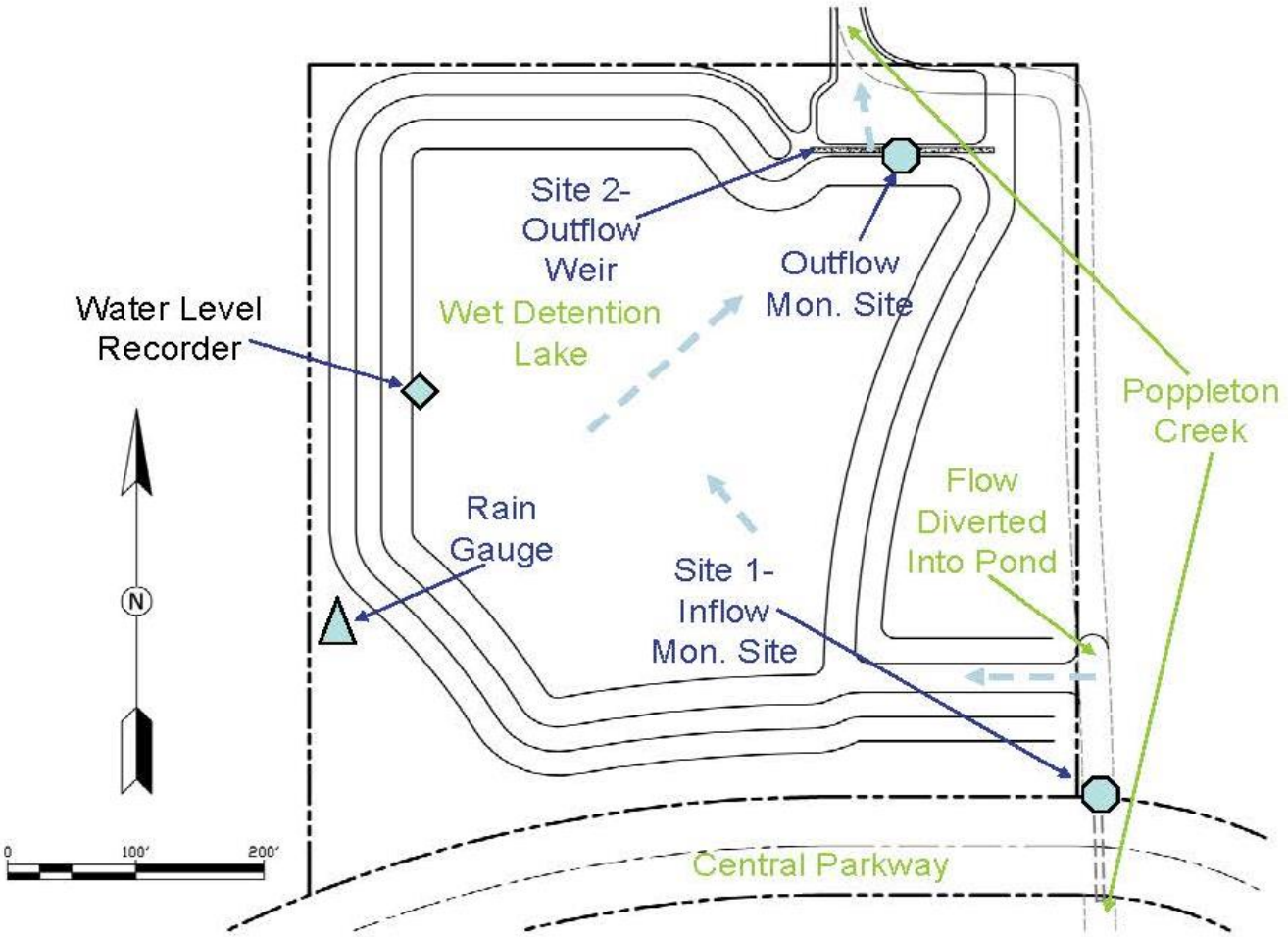
FIGURE A-3

PROPOSED MONITORING LOCATIONS FOR THE POPPLETON CREEK WET DETENTION POND



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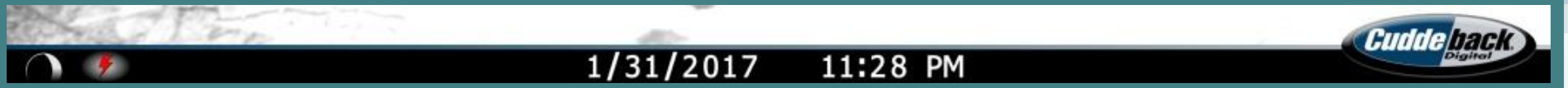
BMP EFFECTIVENESS

Weir Discharge Concentration	0.556 mg/l TN	0.017 mg/l TP
Lake Inflow Concentration	1.017 mg/l TN	0.134 mg/l TP
Removal Efficiency	45%	87%

These are remarkable nutrient removable efficiencies, and while unlikely to be fully representative of multi-year data sets, suggest the post-retrofit project will be well within TMDL standards for the St. Lucie Estuary.

COMPARISON OF AVERAGE ANNUAL LOADING RATES

FDEP Published Estimates	1.822 Kg/Ac TN	0.422 Kg/Ac TP
Actual Calculated	0.430 Kg/Ac TN	0.013 Kg/Ac TP
% of FDEP	24%	2%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