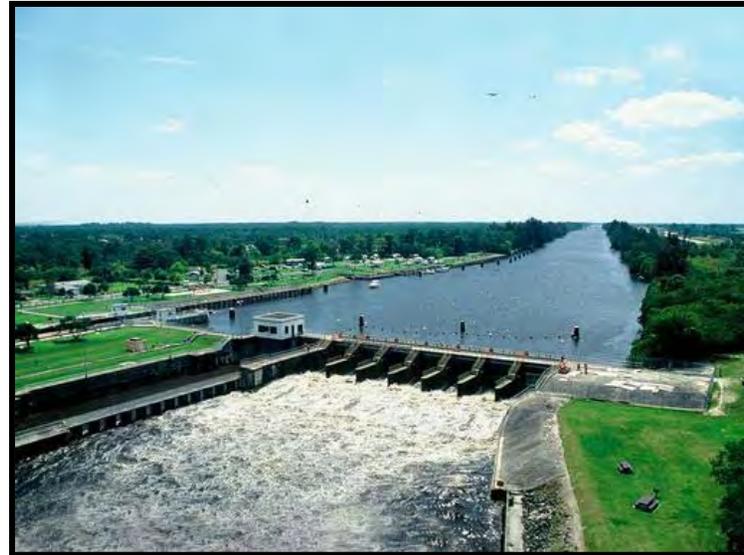


# The Clean Water Act and the Central and South Florida Project Canals

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Kevin Carter

South Florida Water Management District



U.S. Environmental Protection Agency's  
Nutrient TMDL Workshop  
New Orleans, Louisiana  
February 15-17, 2011



## Purpose of Presentation

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- Describe the Central and South Florida (CS&F) Project:
  - History and Purpose
  - Current and Future Comprehensive Everglades Restoration Plan Goals
- Describe State and Federal TMDL Programs in relation to Freshwater Canals
- Describe Current EPA Numeric Nutrient Criteria Development for Freshwater Canals
- The Hillsboro Canal will be our 'test case' to walk through these three current events in South Florida watershed management

# South Florida Water Management District

- Regional governmental agency responsible for:

- flood control
- water supply
- water quality
- environmental restoration

- 16 counties, from Orlando to the Florida Keys



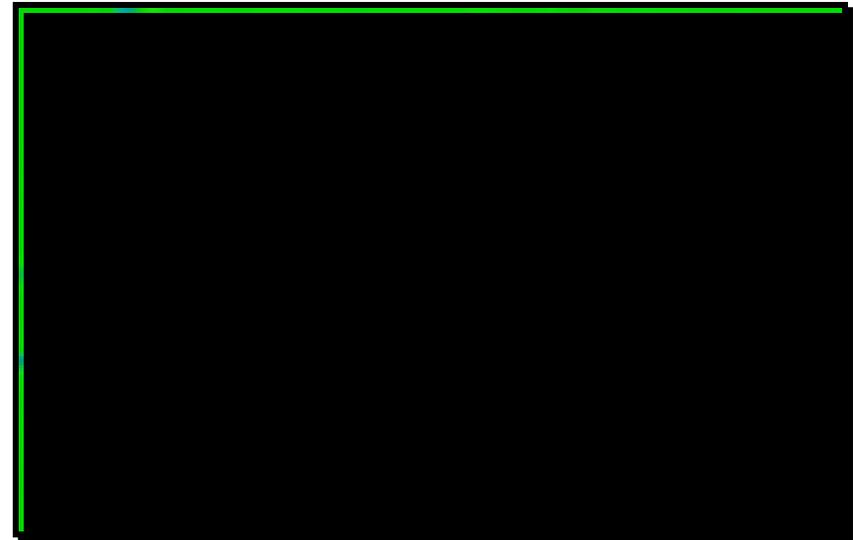
## South Florida History

- By 1917, four primary canals had been dug from Lake Okeechobee to the Atlantic:
  - e.g., Hillsboro Canal
- By 1940, the lake was diked and opened to the Gulf and Atlantic:
  - Canals became the backbone of water movement and control



# Historic Problems for Water Management in South Florida

- Flood Control:
  - 1926/1928: Lake Okeechobee levee failed
  - 1947: Hurricane & regional flooding
- Water Supply:
  - 1931 – 1945: Lower East Coast saltwater intrusion threat identified
- Environmental Impacts:
  - Marshes over-drained in dry years and extensive areas of peat were burned
  - Watershed connections altered



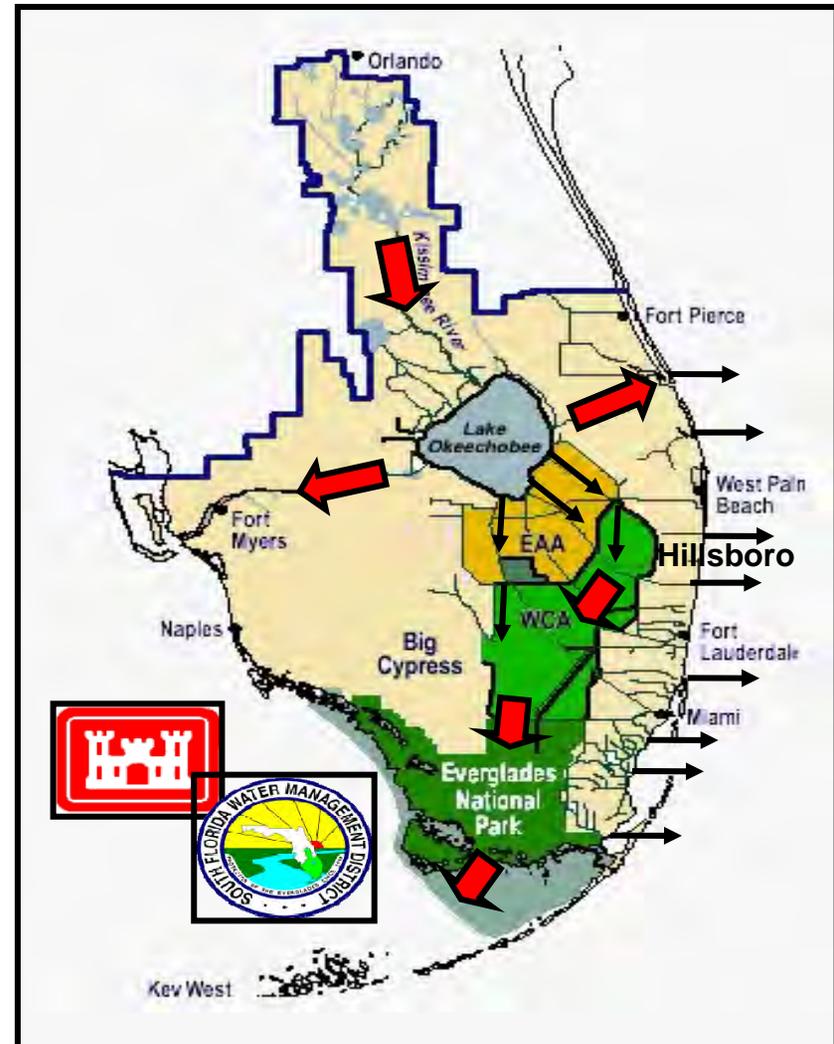
## 1947 Hurricane Season



State of Florida requested federal assistance to build a regional system to allow better water management.

# The Central and Southern Florida Project

- C&SF Project for Flood Control and Other Purposes:
  - Authorized in 1948
  - Constructed between 1950s and 1970s
- Operated in accordance with US Army Corps of Engineers (USACE) criteria
- Now the South Florida Water Management District



# Comprehensive Everglades Restoration Plan (CERP)

- On July 1, 1999, the Secretary of the Army and the State of Florida presented the Plan to Congress
- Approved by Congress as the Framework for Everglades Restoration in the Water Resources Development Act of 2000 (WRDA-2000)



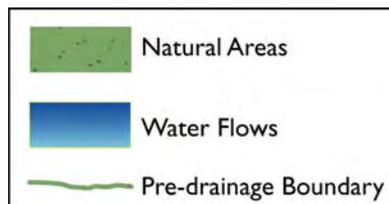
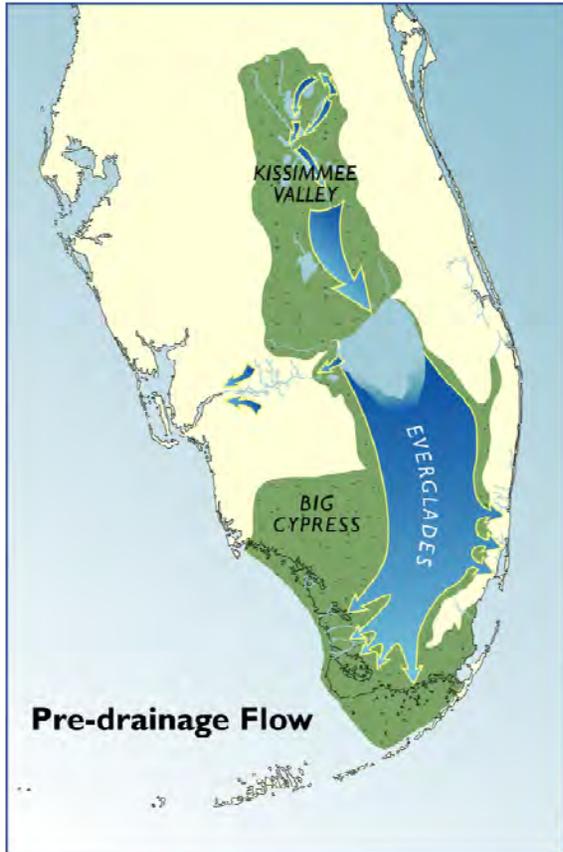
*Rescuing an Endangered Ecosystem:  
The Plan to Restore America's Everglades*



*The Central and Southern Florida  
Project Comprehensive Review Study  
(The Restudy)*

*July 1999*

# CERP: The Goal



## CERP: The Primary Components

- Includes 68 components to be implemented over 35 years
- Features include:
  - Aquifer Storage & Recovery
  - Operational Changes
  - Removing Barriers to Sheetflow
  - Reuse Wastewater
  - Seepage Management
  - Stormwater Treatment Areas
  - Surface Water Storage Reservoirs



# Getting the Water Right for CERP Requires: Quantity, Quality, Timing and Distribution

Quantity

Q

Quality

Q

T

Timing

D

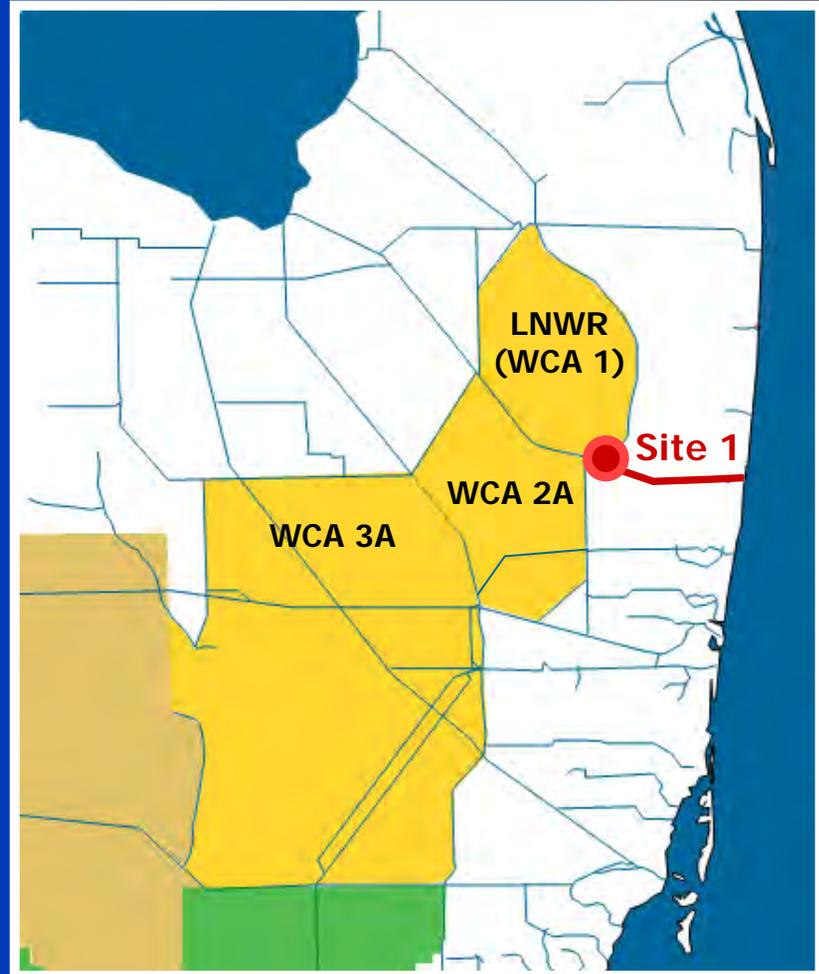
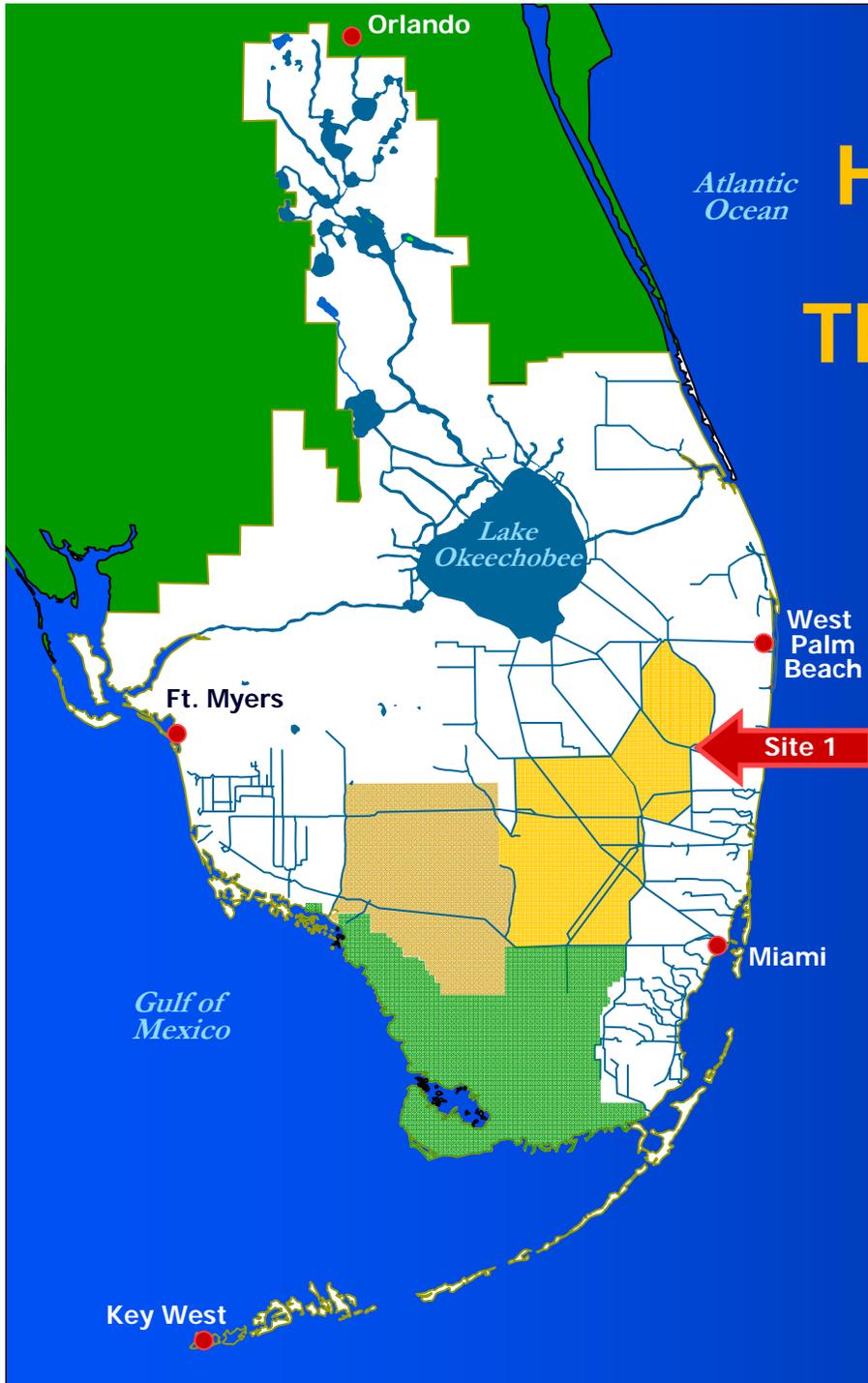
Distribution

*These aspects of water are linked*

*Sustainable management requires their integration*

*Canals are the means to that end in South Florida.....*

# CERP Component in Hillsboro Canal Basin: Site 1 Impoundment, The Fran Reich Preserve



# Site 1 Impoundment: Primary Purpose

- Improve Hydro-periods and Hydro-patterns:
  - Loxahatchee National Wildlife Refuge (Water Conservation Area 1)
  - Estuarine reaches of Hillsboro Canal and Intracoastal Waterway
- Capturing and Storing excess freshwater currently discharged to tidal waters

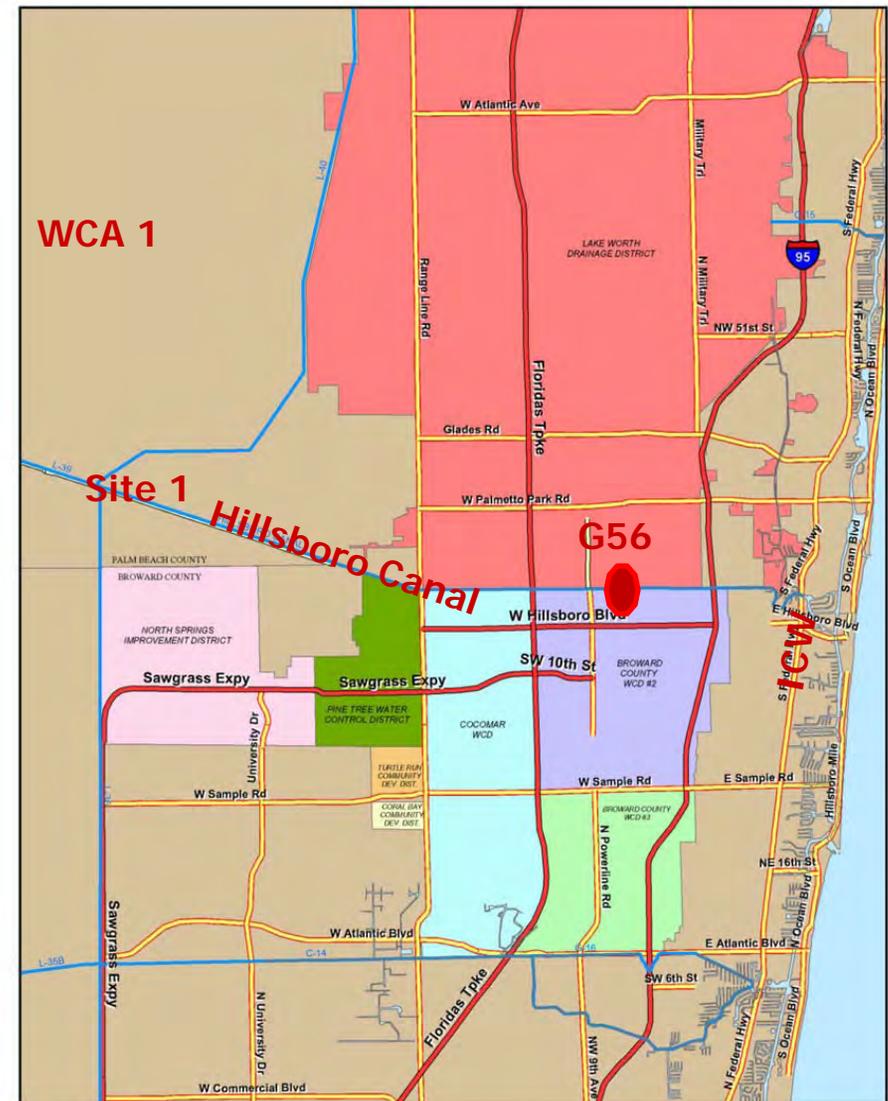
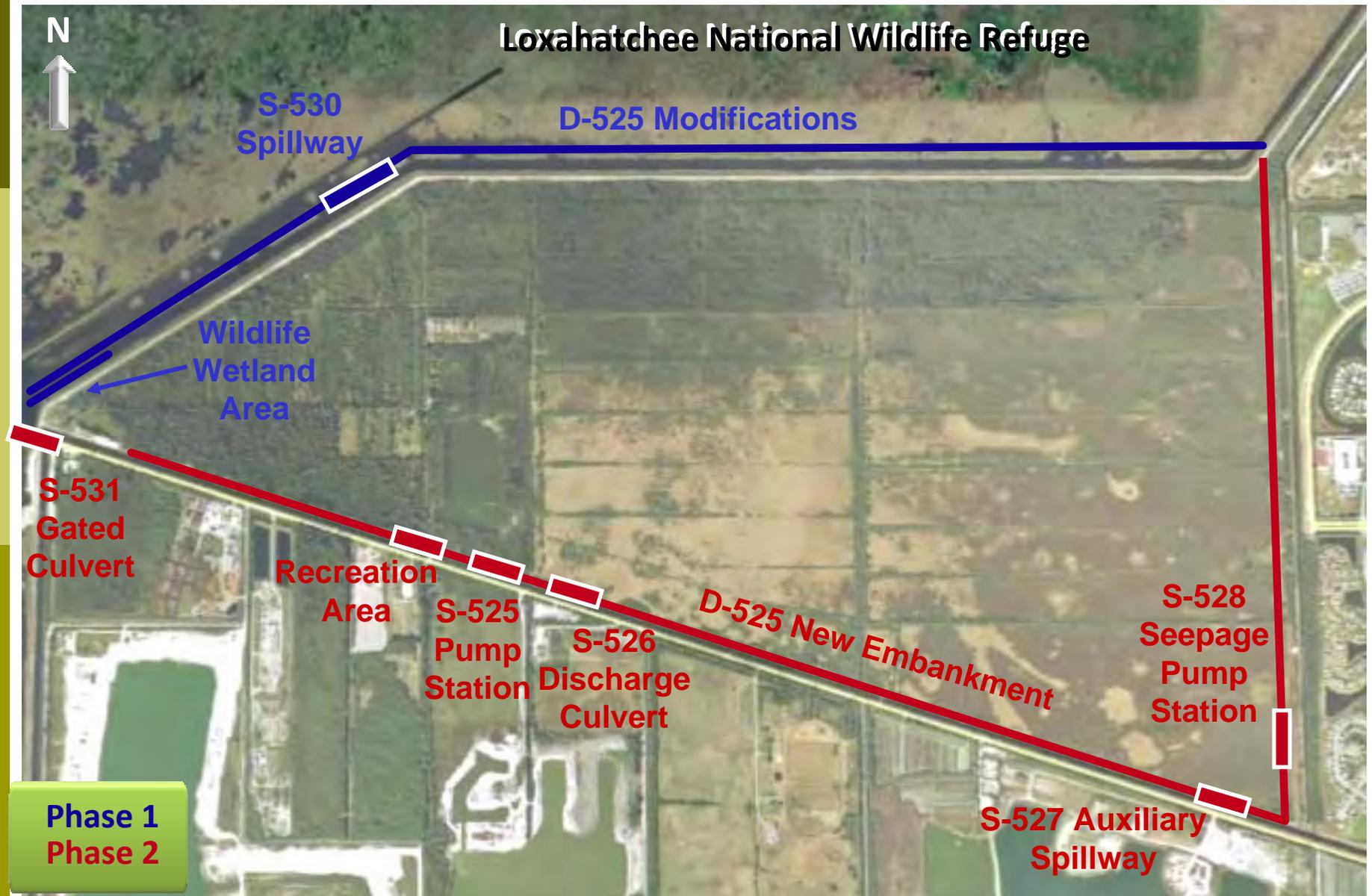


Figure 2.1 Drainage Districts Draining to Hillsboro Canal Project Area

North Springs Improvement District - Task 5  
Hydraulic Evaluation of Hillsboro Canal

# Site 1 Impoundment, Fran Reich Preserve



## TMDLs in Florida: The Federal Level

- 27 states where USEPA is under court order or agreed in a consent decree to establish TMDLs if states do not establish them

(<http://www.epa.gov/owow/tmdl/lawsuit.html>)

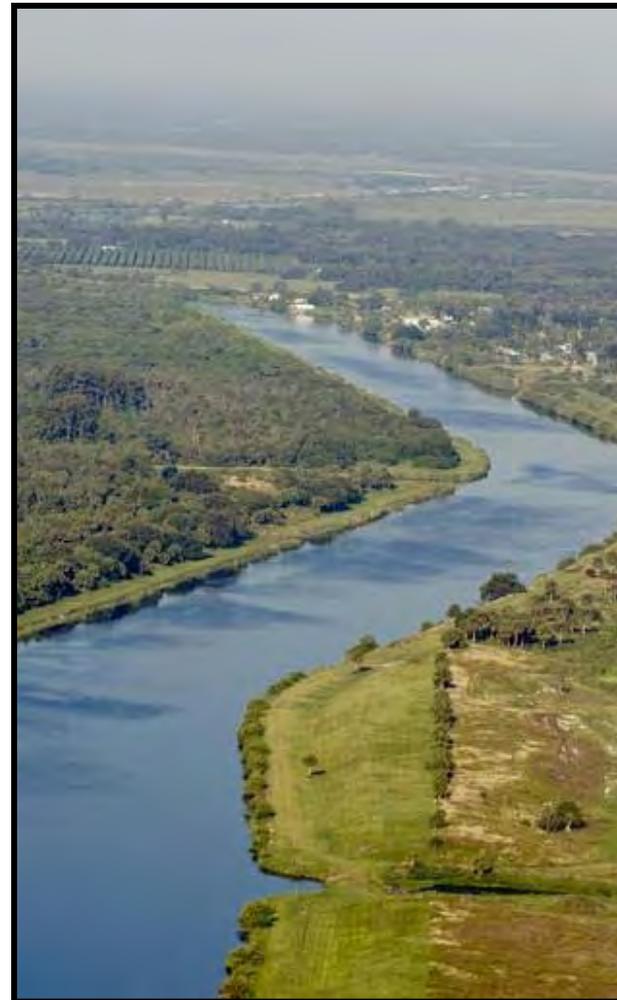
- In Florida, a consent decree laid out a 13 year schedule for USEPA to set TMDLs for a list of impaired waters if Florida did not (Florida Wildlife Fed'n, Inc. v. Browner, No. 4:98CV356-WS, N.D. Fla., Tallahassee Division, Apr. 22, 1998)

- Impaired waters may end up with a TMDL developed via EPA or by FDEP



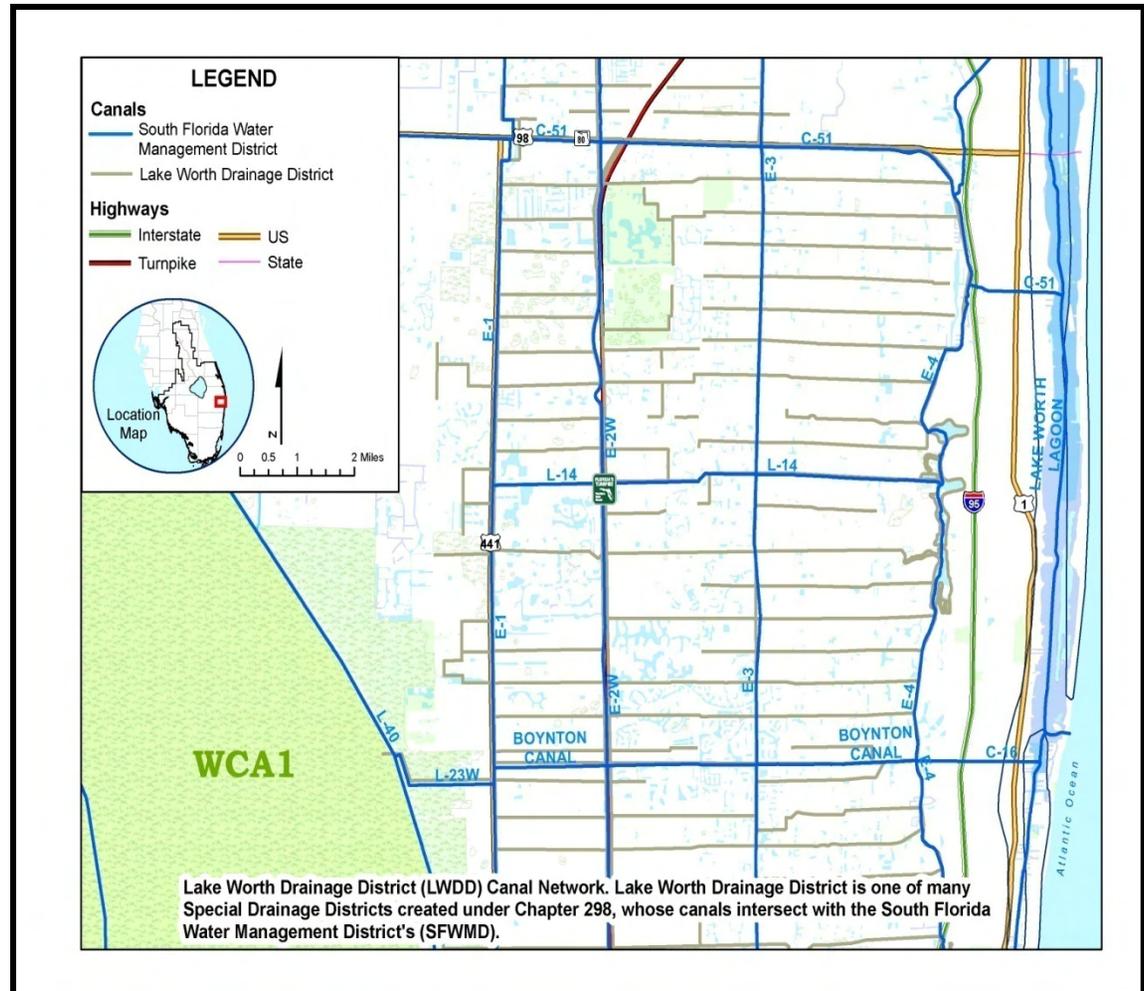
## TMDLs in Florida: The Federal Level

- 1998 303(d) list had over 40 canals within SFWMD listed for nutrients (not all CS&F Canals)
- Near half of canals on original list had TMDL due dates of 2010 and 2011
- Includes two segments of Hillsboro Canal upstream of Site 1 impoundment



## Other Canals in TMDL Assessments

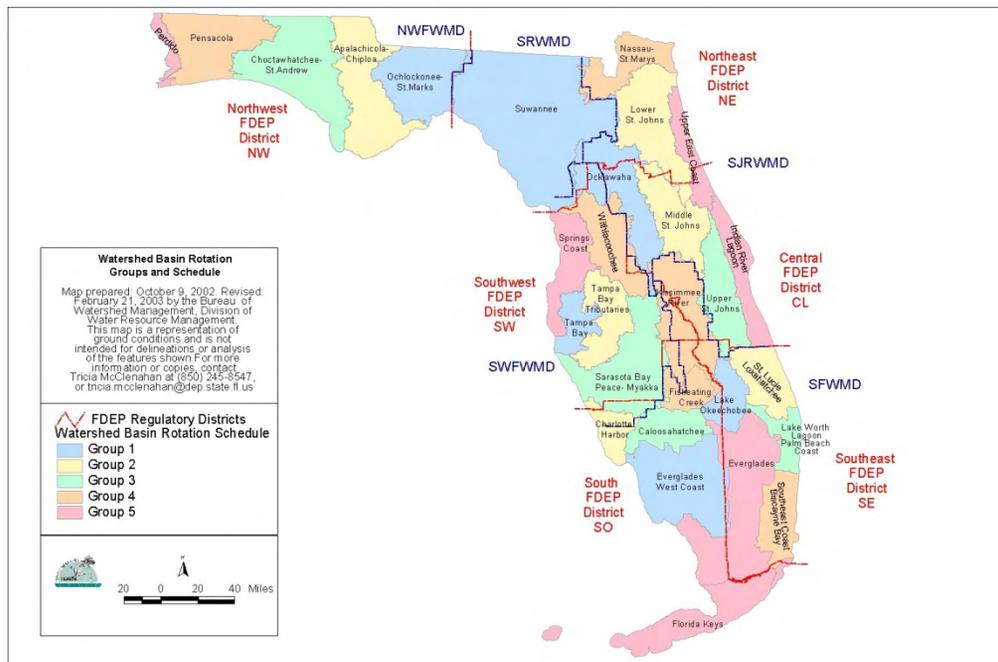
- Secondary and Tertiary Canals exist in between major CS&F Canals
- One example shown is Lake Worth Drainage District (eastern Palm Beach County)



# Florida's TMDL Program: The Florida Watershed Restoration Act

The Florida Department of Environmental Protection (FDEP) established a 5 phase process in 5 rotating basins (Florida Statutes 403.067)

- 1: Preliminary Evaluation
- 2: Strategic Monitoring, Assessment, and Listings
- 3: Development and Adoption of TMDLs
- 4: Development of Basin Management Action Plans (BMAP)
- 5: Implementation of the BMAP



## FDEP Phase 3: Potential TMDL Development for 2011



- Potential TMDLs in the SFWMD include CS&F Canals
- Hillsboro Canal located on the Lake Worth Lagoon/Palm Beach Coast Rotating Basin
- Deadlines for Year 2010 TMDLs will be September 30, 2011

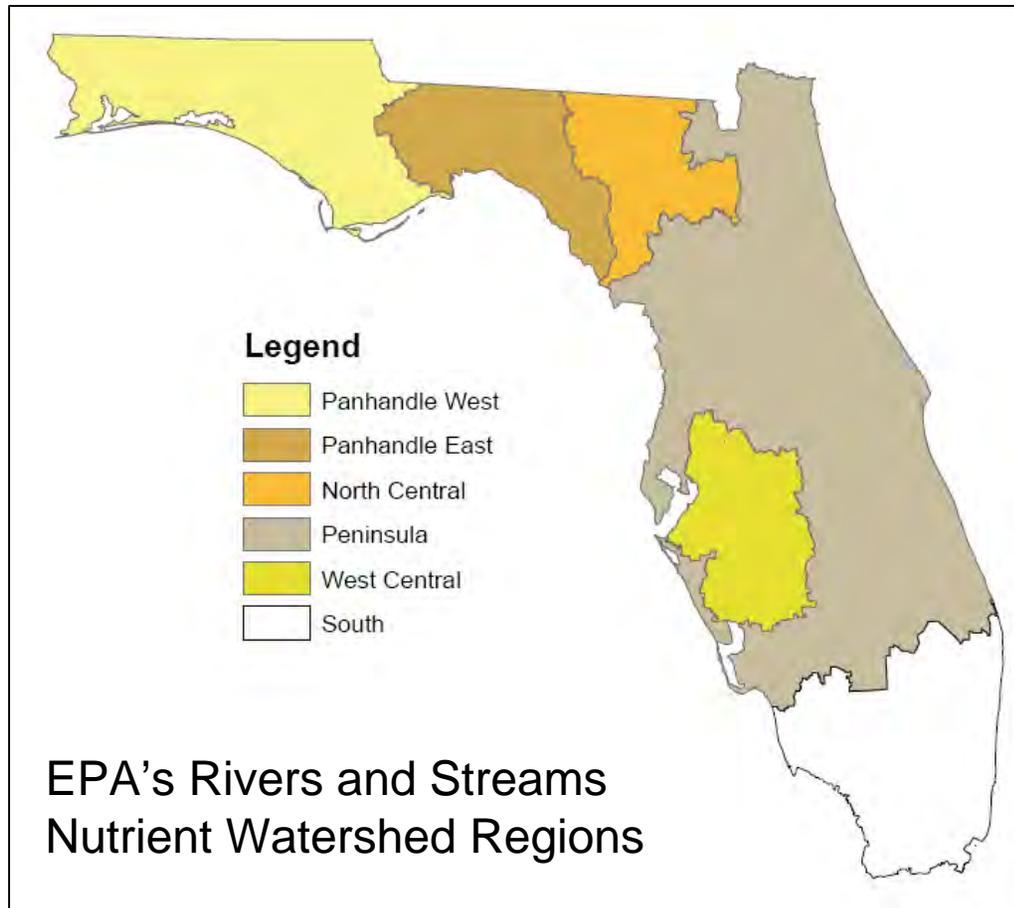
## Impaired Waterbodies (WBIDs) for potential TMDLs in 2011

- FDEP is currently compiling information for Lake Worth Lagoon/Palm Beach Coast (map)
- 7 of 9 canals impaired for nutrients from consent decree
- Hillsboro Canal (WBID 3264) determined impaired by FDEP's Impaired Water Rule, not consent decree



Map from FDEP's presentation October 6, 2010 Meeting Lake Worth Lagoon/Palm Beach County

# EPA's Numeric Nutrient Criteria (NNC) Schedule (as of January 2011)



- Lakes\* (final criteria December 2010; covers entire state)
- 5 Rivers and Streams regions (final criteria December 2010)
- South Florida Canals (under Scientific Advisory Board peer review; proposed criteria due November 2011)
- Marine Waters\* (under Scientific Advisory Board peer review; proposed criteria due November 2011)

\* Lakes and Estuaries/Coastal Waters have or may have Downstream Protection Values in rule

## NNC and Canals: An Abbreviated History

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- 2001: EPA releases Ambient Water Quality Criteria Recommendations for Nutrient Ecoregions nationwide; no final recommendations for Ecoregion 13 (South Florida Canals)
- 2003 – 2009: FDEP's Technical Advisory Committee unable to find sufficient science for ecological endpoints or NNC



## NNC and Canals: An Abbreviated History (cont.)

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- 2009: FDEP posts draft NNC for Florida's springs, lakes, rivers and streams; South Florida Canals listed as To Be Determined
- 2010: EPA and NNC for South Florida Canals
  - January: Original inland flowing waters proposed rule
  - June: EPA and litigants propose new timelines and announcement of Scientific Advisory Board peer review



## NNC and Canals: EPA's Scientific Advisory Board (SAB)

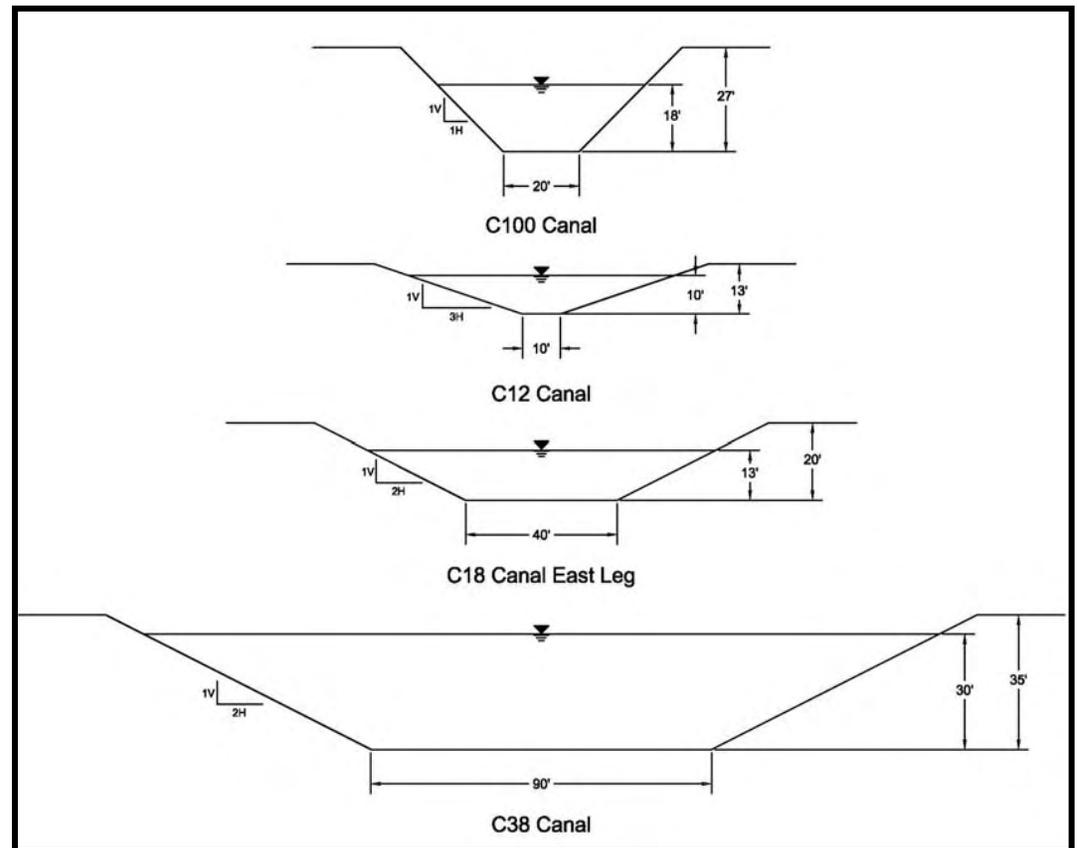
- "Nutrient Criteria for Florida's Estuarine and Coastal Waters, and Southern Canals - Methods and Approaches for Deriving Numeric Approaches"
- 18 panelists, primarily from academia, held 1<sup>st</sup> meeting Dec. 13<sup>th</sup> - 14<sup>th</sup> (2010) in D.C
- Draft SAB panel document posted January 2011, teleconference held February 2011

([http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr\\_activites/FL%20Estuaries%20TSD?OpenDocument](http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/FL%20Estuaries%20TSD?OpenDocument))



# SFWMD Canal Science Inventory Submitted to EPA and SAB

- Purpose was to determine current level of scientific information for canals:
  - Detailed operations and maintenance
  - Described water quality in different sub-regions
  - Found very limited information on canal ecology



## Looking Forward: Planned dates for TMDLs, NNC, and CERP for Hillsboro Canal

- September 2011: Proposed or Final EPA or FDEP Nutrient TMDLs for Freshwater Canals
- November 2011: Proposed EPA NNC for South Florida Canals
- August 2012: Final EPA NNC for South Florida Canals
- September 2012: Proposed or Final EPA or FDEP Nutrient TMDLs for Additional Freshwater Canals
- October 2012: Phase 1 for Site 1 Impoundment along Hillsboro Canal construction slated for completion (CERP component to restore the CS&F system)

## Discussion and Contact Information

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