



# Restoration Projects Prioritization - Part 1

WRAC Meeting

November 7, 2013

Temperince Morgan, Director, Office of Everglades Policy & Coordination

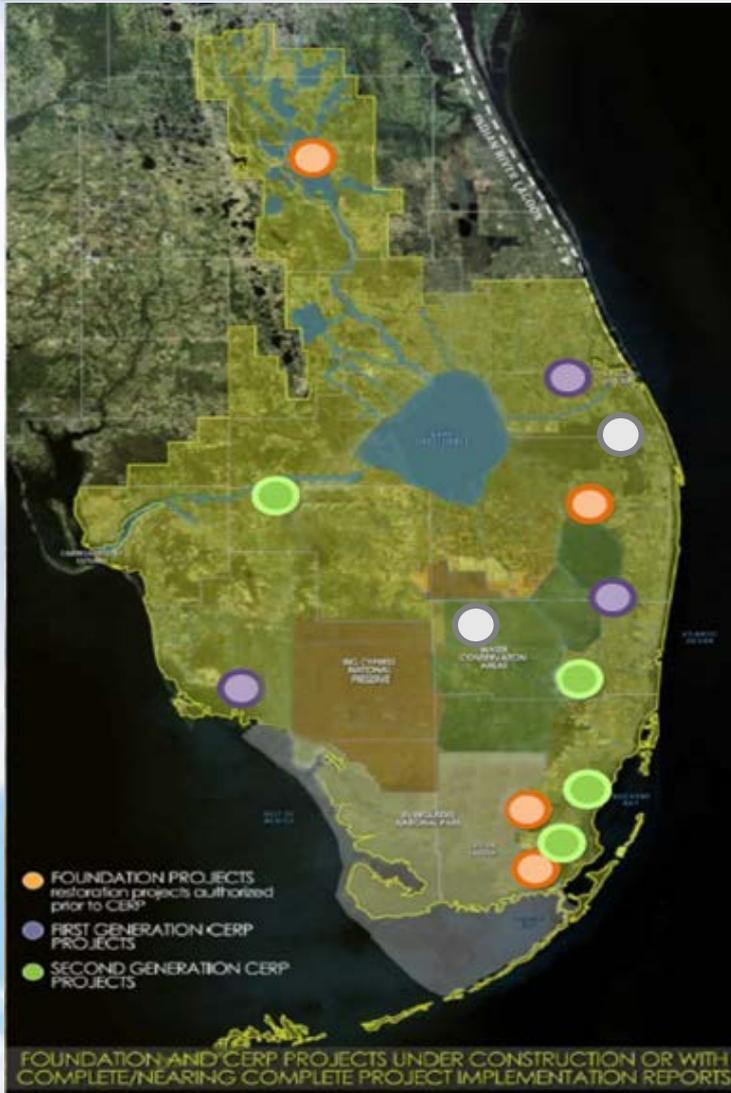
# Restoration Projects Prioritization

- Part 1 - Overview of Federal Restoration Projects
  - Pre-CERP Foundation Projects
  - CERP
- Part 2 - Overview of State Restoration Projects
  - Everglades Long Term Plan/Restoration Strategies
  - Northern Everglades
- Part 3+ - Discussion of obligations and priorities

# Presentation Overview

- Pre-CERP Foundation Projects
- Comprehensive Everglades Restoration Plan (CERP)
  - The Restudy
  - First Generation Projects
  - Second Generation Projects
  - Third Generation Projects

# Federal Restoration Projects



## Pre-CERP Foundation Projects

- ▶ Kissimmee River
  - ▶ C-111 South Dade
  - ▶ Modified Water Deliveries
- } Nearing Completion

## 1<sup>st</sup> Generation CERP

- ▶ Picayune Strand
  - ▶ IRL-South
  - ▶ Site 1 Impoundment
- } Under Construction

## 2<sup>nd</sup> Generation CERP

- ▶ C-43 Reservoir
  - ▶ Broward County WPA
  - ▶ C-111 Spreader Canal
  - ▶ Biscayne Bay Coastal Wetlands
- } Pending Authorization

## 3<sup>rd</sup> Generation CERP

- ▶ Central Everglades Planning Project
  - ▶ Loxahatchee River Watershed Restoration Project
- } Project Planning



# Pre-CERP Foundation Projects



# Kissimmee River Restoration Project

# Kissimmee River Restoration (KRR) Purpose and Authorization

- Purpose
  - Kissimmee River Channelization
    - Completed between 1962 and 1971 to improve navigation
    - Resulted in pronounced negative environmental impacts to the river/ floodplain
  - KRR - Restore ecological integrity by restoring 40 miles of meandering river and more than 12,000 miles of wetlands through the design and construction of physical project features coupled with application of optimized hydrologic conditions
- Authorization
  - Authorized in 1992 Water Resources Development Act (WRDA)
    - 50/50 Capital Cost Share - Federal/ State
      - USACE: Design, engineering and construction
      - SFWMD: Land acquisition and restoration evaluation
    - O&M Cost Share – 100% SFWMD
  - Project Cooperative Agreement (PCA) signed in March 1994

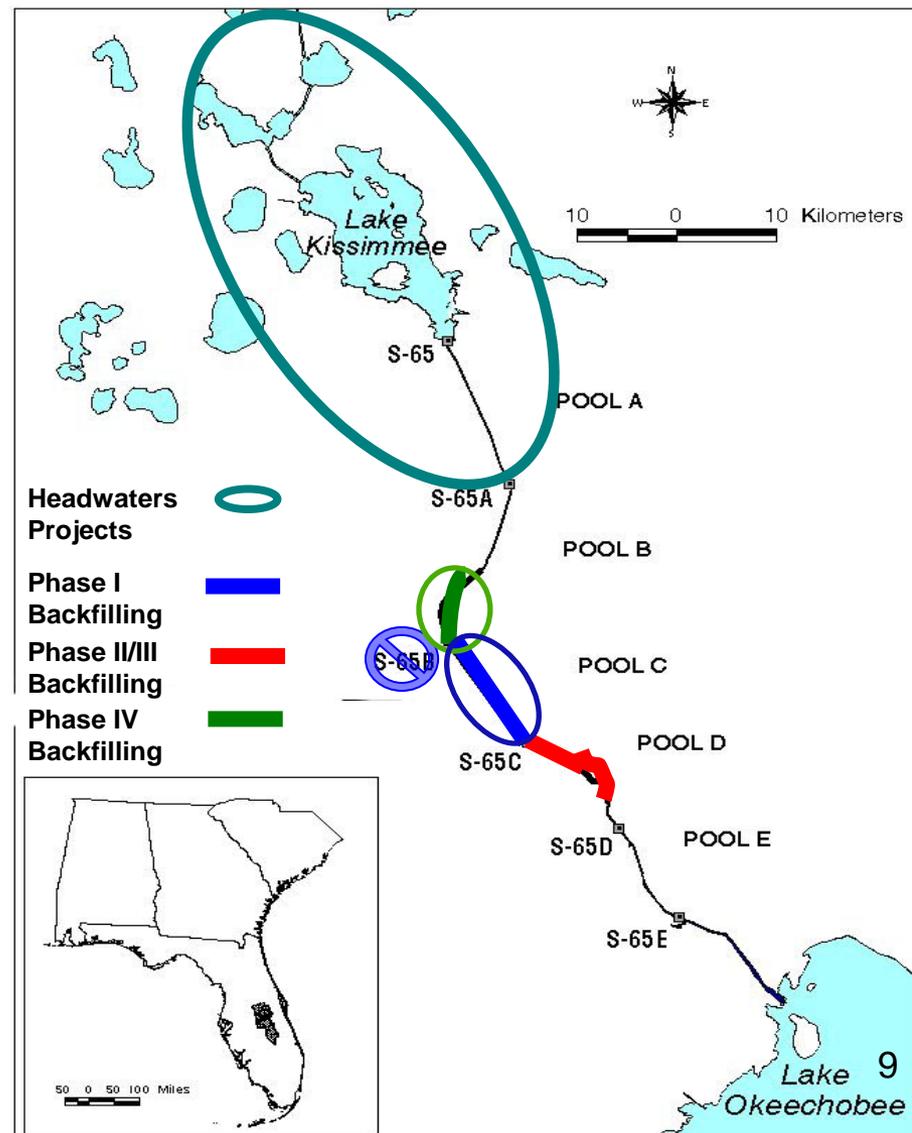
# Kissimmee River Restoration Project (1994 – 2013) Components



- Acquire lands needed in the historical river floodplain
- Remove 2 large water control structures
- Backfill 22 miles of canal
- Recarve 9 miles of remnant river channel
- Reconnect 45 miles of river channel
- Rehydrate 26,500 acres of river floodplain
- Restoration Evaluation Program to evaluate project success

# Kissimmee River Restoration Project Status

- Acquire lands needed in the historical river floodplain
  - Nearly complete; \$250M invested
- Remove 2 large water control structures
  - S-65B removed
- Backfill 22 miles of canal
  - ~ 65% complete (Phases I and IV)
- Recarve 9 miles of remnant river channel
  - ~ 60% complete
- Rehydrate 26,500 acres of river floodplain
  - ~ 60% complete
- Restoration Evaluation Program through 2020
  - Evaluate environmental responses and use info for adaptive management



# Kissimmee River Restoration

1954



Looking south in the Phase I restoration area from the Oak Creek floodplain. This photo of the natural historic Kissimmee River and floodplain was taken in 1954 before the river was channelized.

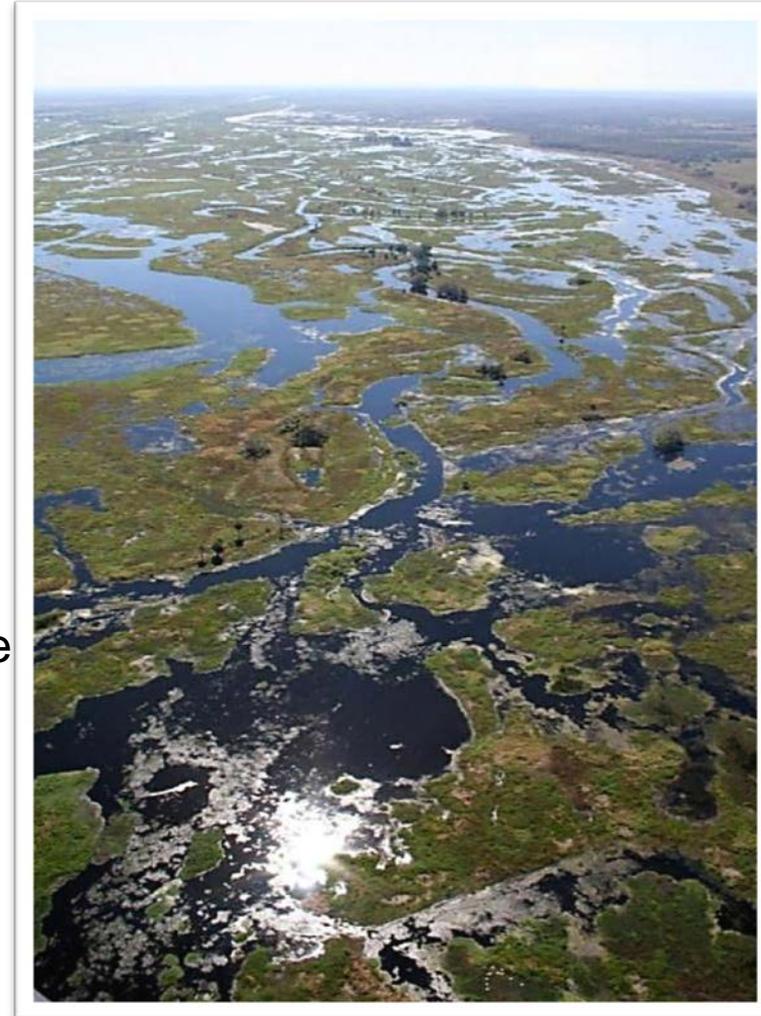
2013



Looking south in the Phase I restoration area from the Oak Creek floodplain from the same exact view as the previous historical slide.

# Kissimmee River Restoration Status

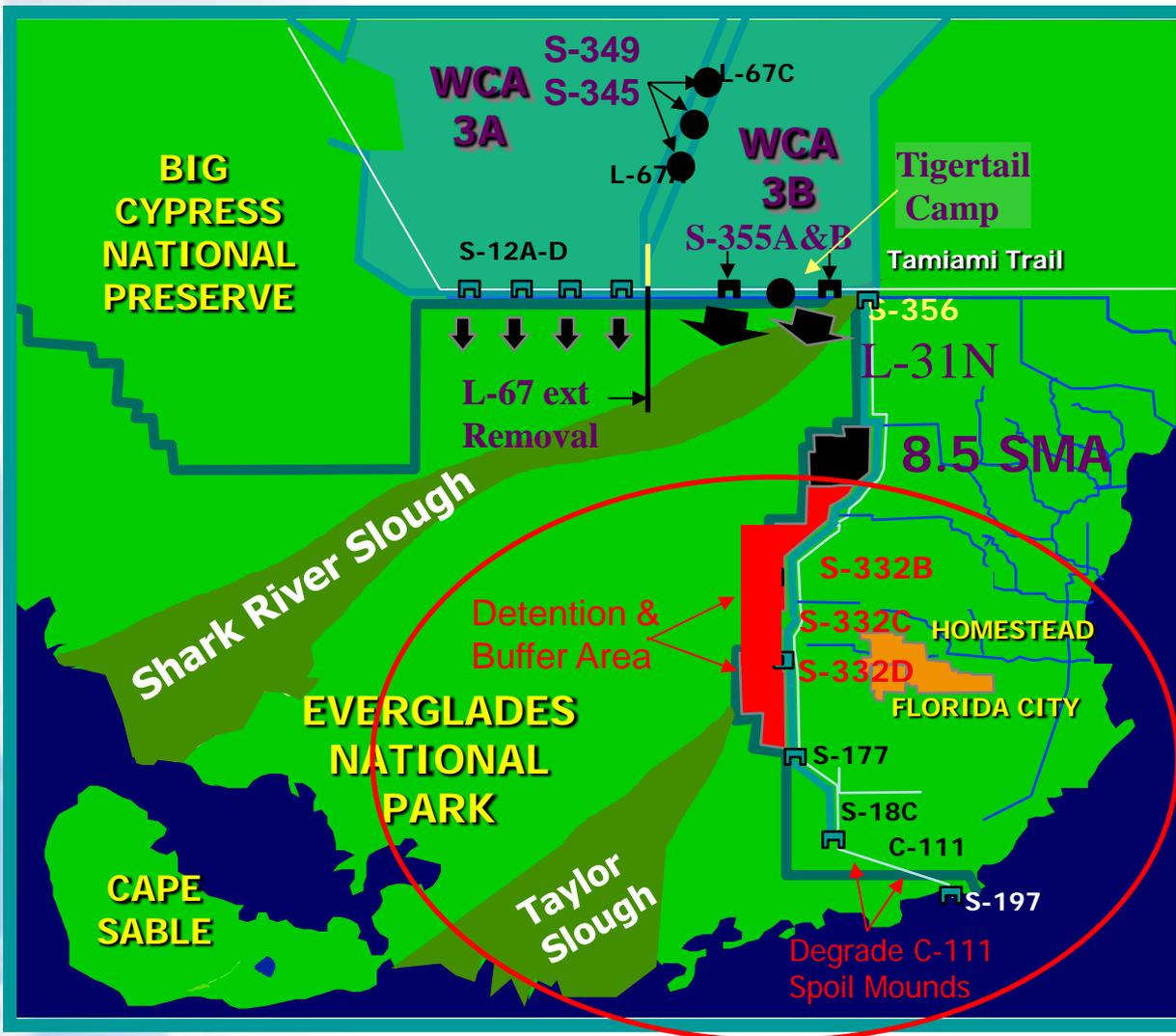
- Major features to be completed
  - Phase 2/3 Backfilling & remove S-65C
  - S-69 Weir
- Response by many ecosystem components on trajectory to target values
- Bulk of environmental benefits expected following
  - Construction completion
  - Implementation of new Headwaters Schedule
- \$780M estimated total cost
  - State/ SFWMD investment to date - \$345M
  - Federal investment to date - \$315M





# C-111 South Dade Project

# C-111 South Dade Project Overview



Goal is to restore more natural hydrologic conditions in Taylor Slough and the panhandle of Everglades National Park

# C-111 South Dade Project Authorization and Status

## ■ Authorization

- Originally authorized in Flood Control Act of 1962, amended in 1968
  - 80/20 Capital Cost Share - Federal/ State
- WRDA 1996 modified to 50-50 Capital Federal/ State and added new features
  - Assumption of excess land credits to cover local sponsor share
  - Federal decisions have diminished local sponsor land credits
- 60/40 O&M Cost Share - Federal/ State
- PCA signed in January 1995

## ■ Status

- 7 contracts have been completed, 2 are pending

# C-111 South Dade Project

**Contract #8  
Northern  
Detention Area**

**S-331 Command  
and Control  
Station**

**Detention  
Area**

**Temporary S-332B  
Pump Station**

**S-332D Pump  
Station & High  
Head Cell**

**Temporary S-332C  
Pump Station**

**Contract #9  
L-31W Plugs**

**Taylor  
Slough  
Bridge**

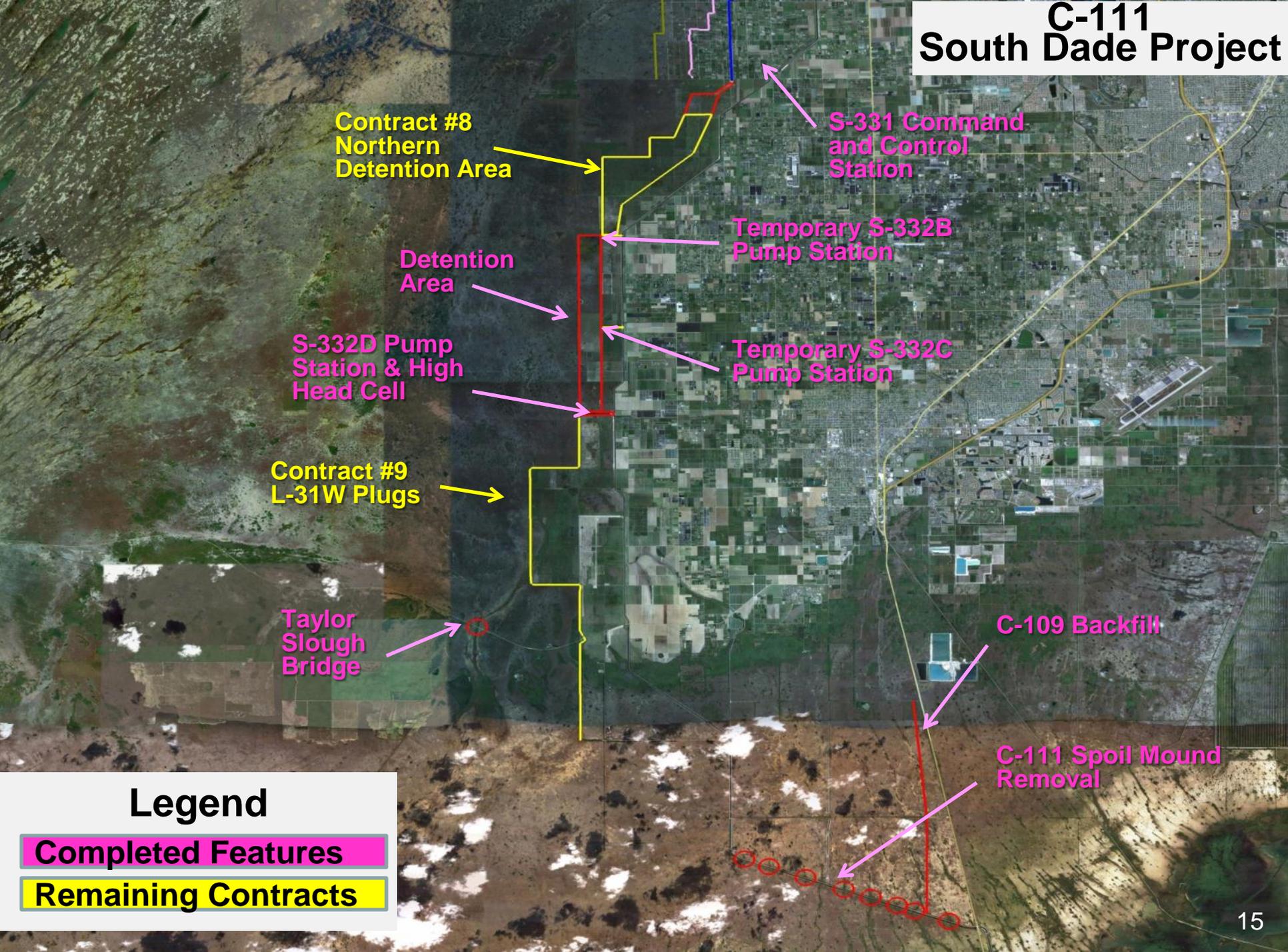
**C-109 Backfill**

**C-111 Spoil Mound  
Removal**

## Legend

**Completed Features**

**Remaining Contracts**



# C-111 South Dade Project Pump Stations and Detention Areas



S-332D Permanent Pump Station



S-332B Temporary Pump Station



S-332C Temporary Pump Station



C-111 Southern Detention Area

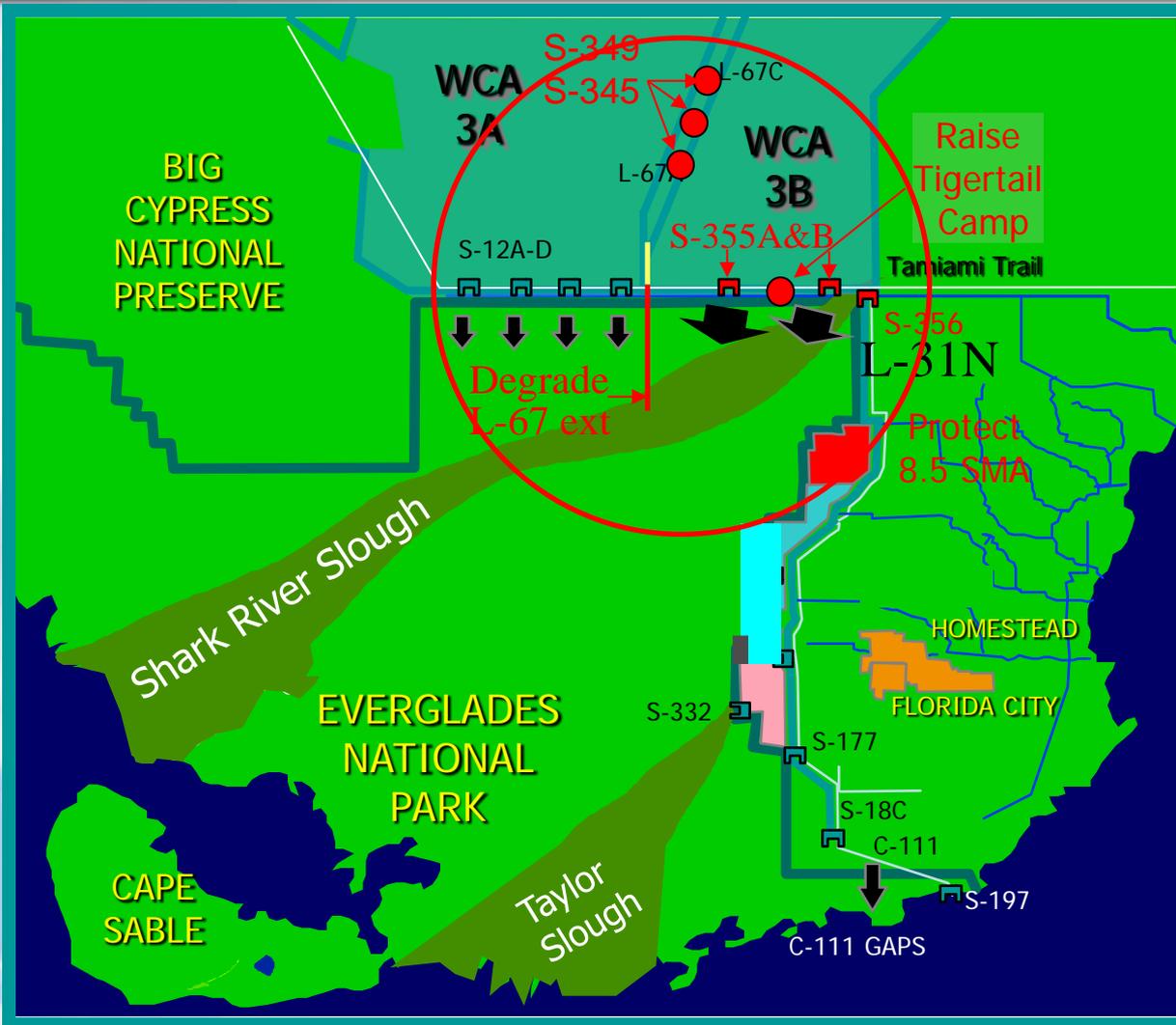
# C-111 South Dade Project Status

- 2 contracts pending
  - Contract 8 - Northern Detention Area
  - Contract 9 - L-31W canal plugging
- Completion of Contract 8 is necessary to allow full operations of the Modified Water Deliveries project
- Working with Assistant Secretary of the Army – Civil Works to resolve policy issues for PCA Amendment to allow completion of Contracts 8 and 9
- Estimated total cost = \$290M
  - SFWMD investment to date - \$115M
  - Federal investment to date - \$120M



# Modified Water Deliveries to Everglades National Park Project

# Modified Water Deliveries to Everglades National Park Project

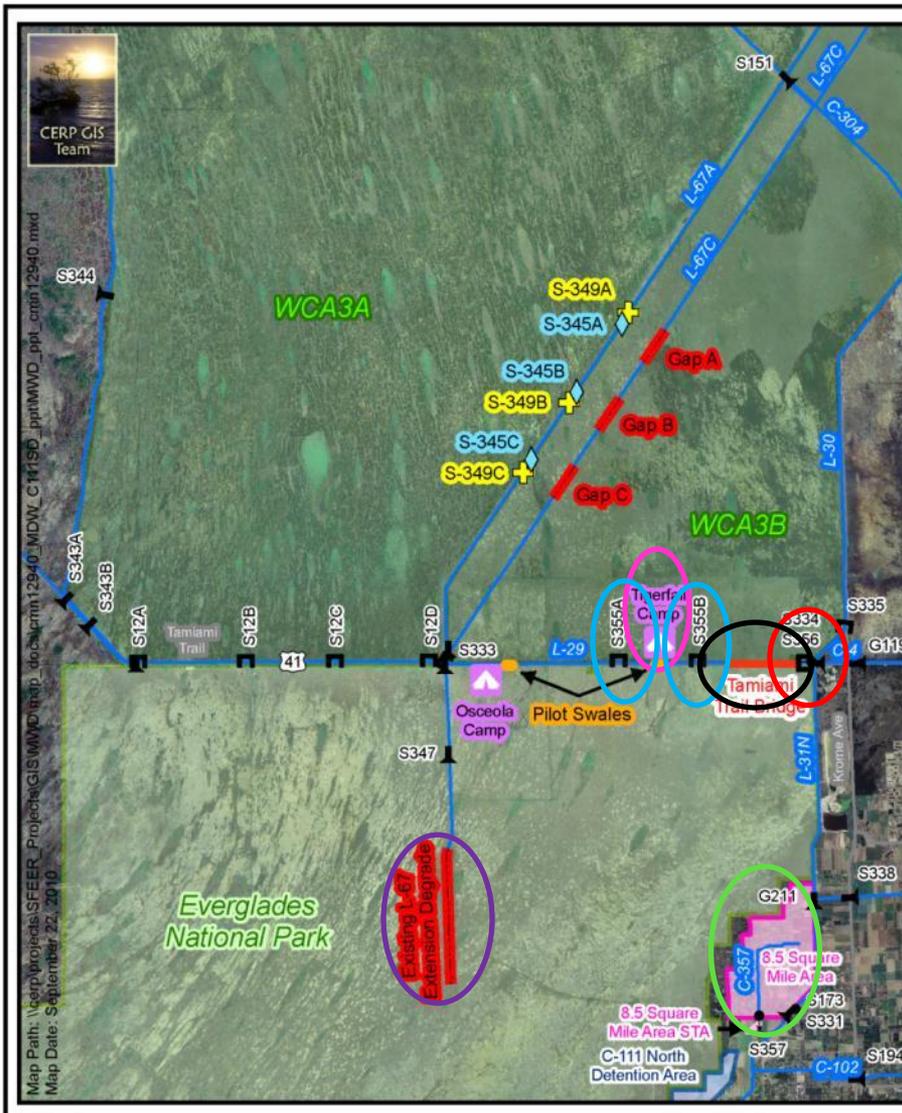


Goal is to improve water deliveries to Everglades National Park and restore more natural hydrological conditions in Northeast Shark River Slough

# Modified Waters Project Authorization

- Authorization
  - Section 104 of the 1989 Everglades National Park Protection and Expansion Act
  - Project Cooperation Agreement signed in September 1994
    - Corps responsible for construction
    - 100% Federal funding for land and construction
    - 75/25 O&M Cost Share - Federal/ State
  - Agreement amended in July 2001 and August 2008
    - Amendment 1 modified 8.5 Square Mile Area features
    - Amendment 2 modified Tamiami Trail features

# Modified Waters Project Components



- Constructed S-355A & S-355B
- Raised Tigertail Camp
- Degraded the lower 4 miles of L-67 extension & levee
- Constructed temporary S-356 pump station
- Completed construction of 8.5 Square Mile Area flood mitigation features
- One-mile Tamiami Trail bridge constructed

# Modified Waters Project Status



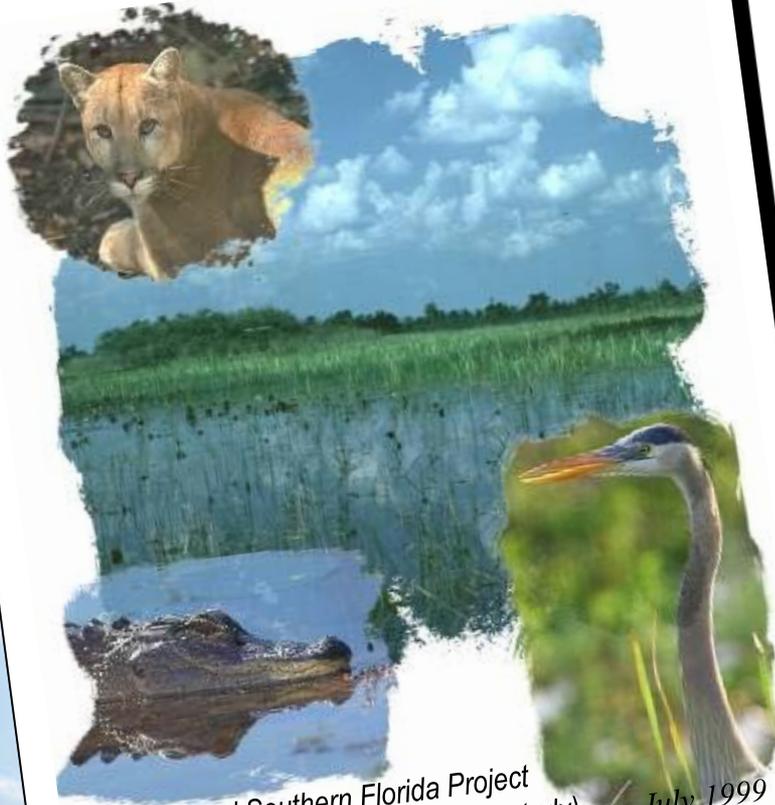
- Tamiami Trail bridge completed in 2013
- Modified Waters operations dependent on
  - Completion of C-111 SD Contract 8
  - Resolution of water quality issues
  - Development of operations plan
  - Lands and easements



# CERP

# Comprehensive Everglades Restoration Plan

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

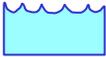
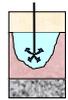
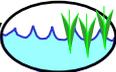


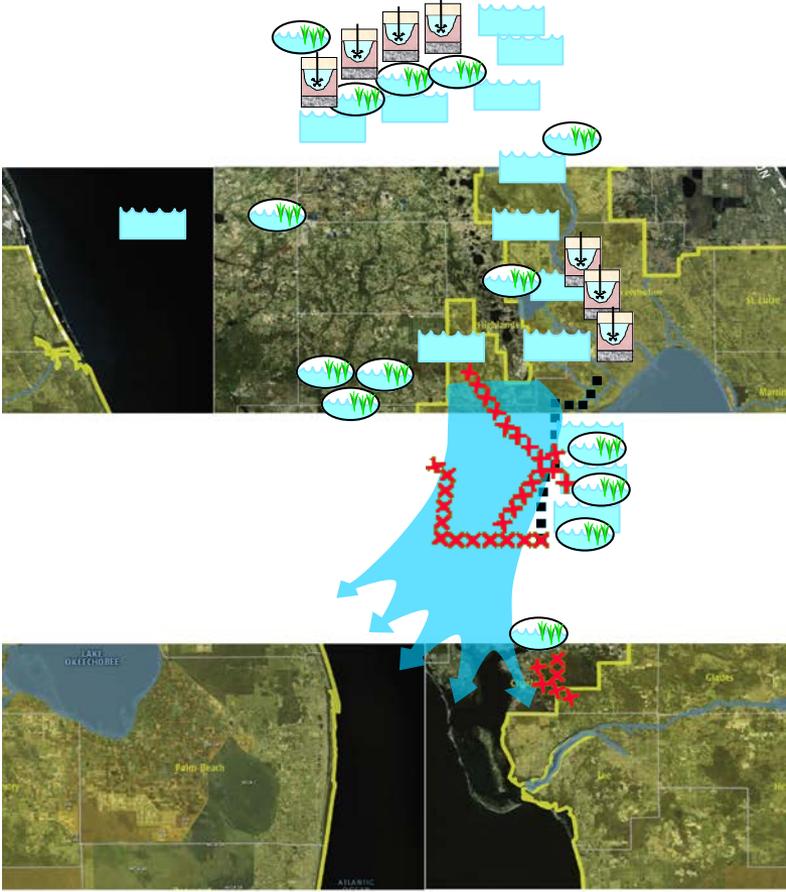
The Central and Southern Florida Project  
Comprehensive Review Study (The Restudy) July 1999

- Purpose
  - Restore and improve quality, quantity, timing and flow of water
  - Provide sustainable water supply to meet environmental, agricultural and urban needs
- 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)

# Comprehensive Everglades Restoration Plan (CERP)

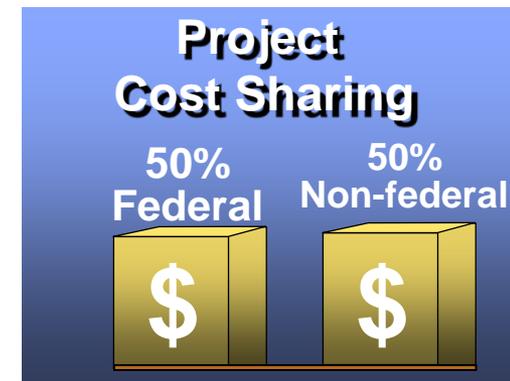


- 68 Components
  - ▶ Storage  Surface  ASR
  - ▶ STAs for water quality 
  - ▶ Seepage management ■■■■
  - ▶ Removing barriers to flow 
  - ▶ Revised operations



# WRDA-2000 CERP Authorizations

- Approved CERP as the framework for Everglades restoration
  - Required approval of a project implementation report for each project
- Authorized 50-50 Federal/ Non-federal cost share for all project phases
  - Planning
  - Design
  - Construction (and lands)
  - Operations and Maintenance
- Authorized Corps to credit the Sponsor for “in-kind work” on planning, design and construction
- Authorized Corps to carry-over credits between projects to balance the 50-50 cost-share programmatically



# CERP Implementation

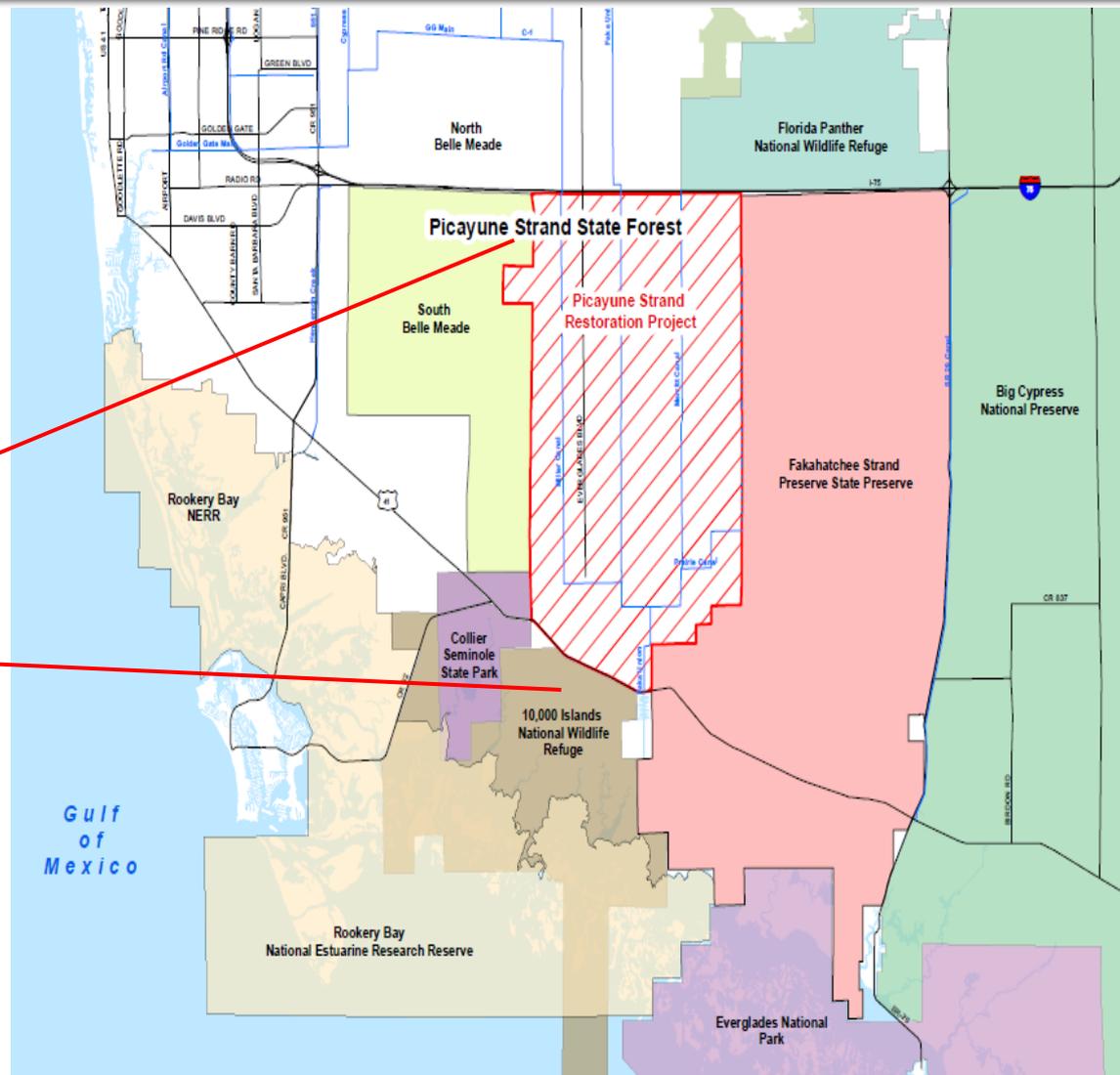
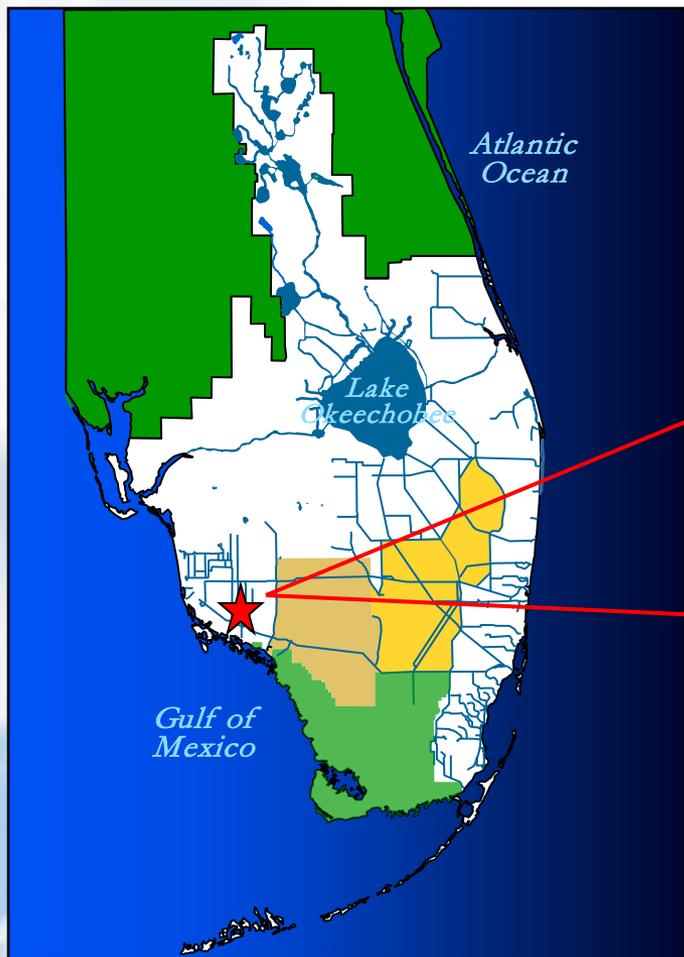


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  - ▶ Site 1 Impoundment} Under Construction
  
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  - ▶ C-111 Spreader Canal
  - ▶ Biscayne Bay Coastal Wetlands} Pending Authorization
  
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  - ▶ Loxahatchee River Watershed Restoration Project} Project Planning

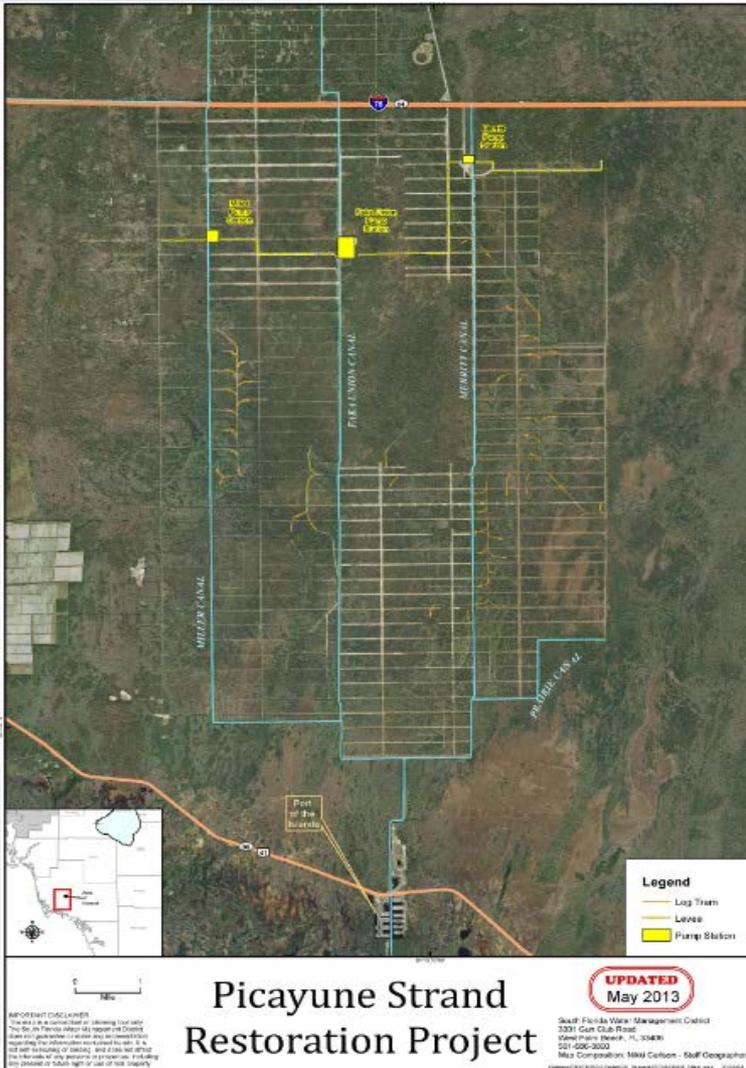


# 1<sup>st</sup> Generation CERP Projects

# Picayune Strand Restoration



# Picayune Strand Restoration Purpose and Authorization



## ■ Purpose

- Restore and enhance wetlands in Picayune Strand and adjacent public lands by reducing over-drainage
- Improve the water quality of coastal estuaries by moderating the large salinity fluctuations caused by point discharge of freshwater from the Fuka Union Canal

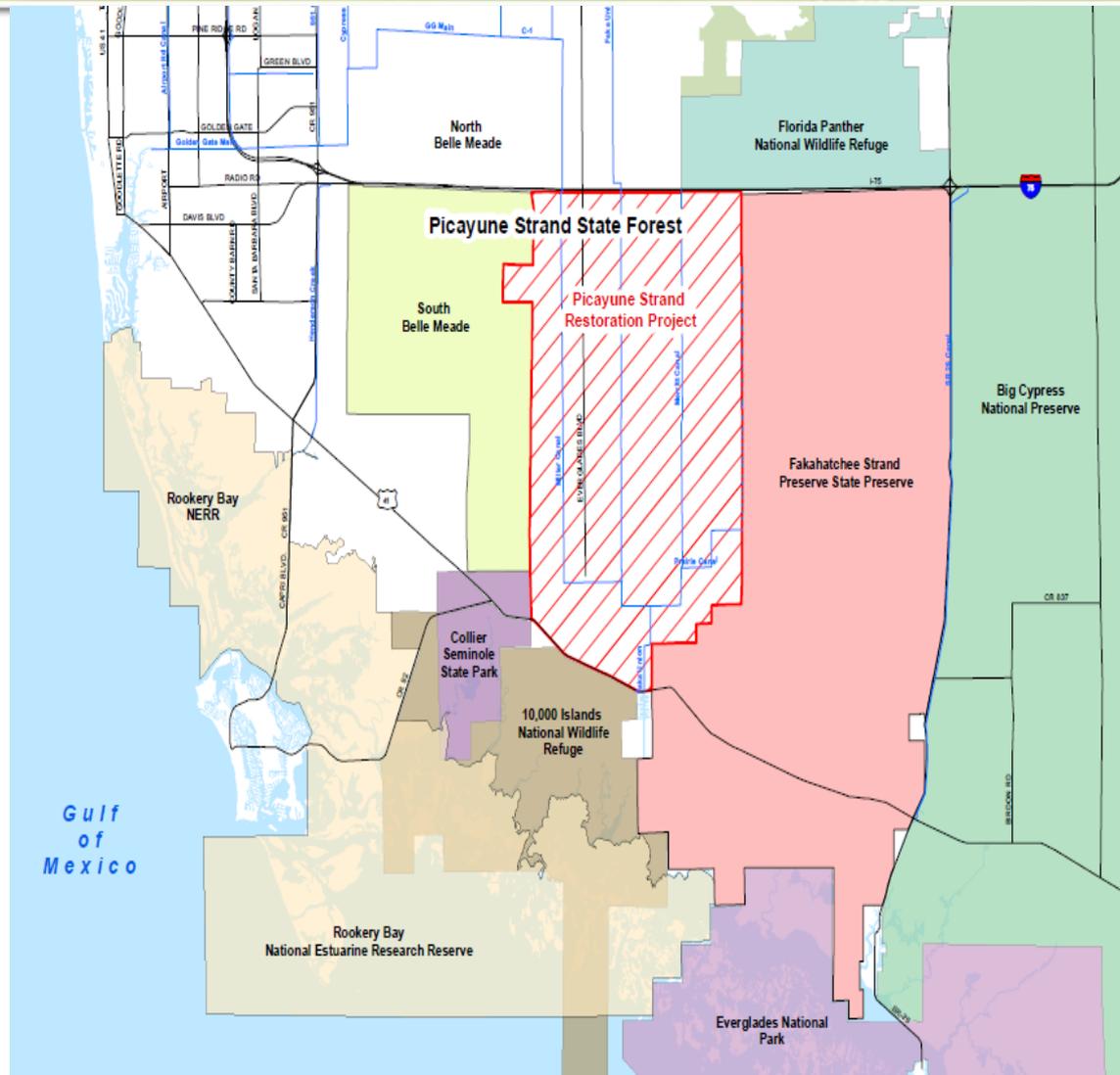
## ■ Authorization

- WRDA 2007
- Project Partnership Agreement (PPA) for all project features signed in August 2009

# Picayune Strand Restoration Background

Picayune Strand Restoration will help to close the "hole in the donut" of publicly owned and protected lands in the area, including:

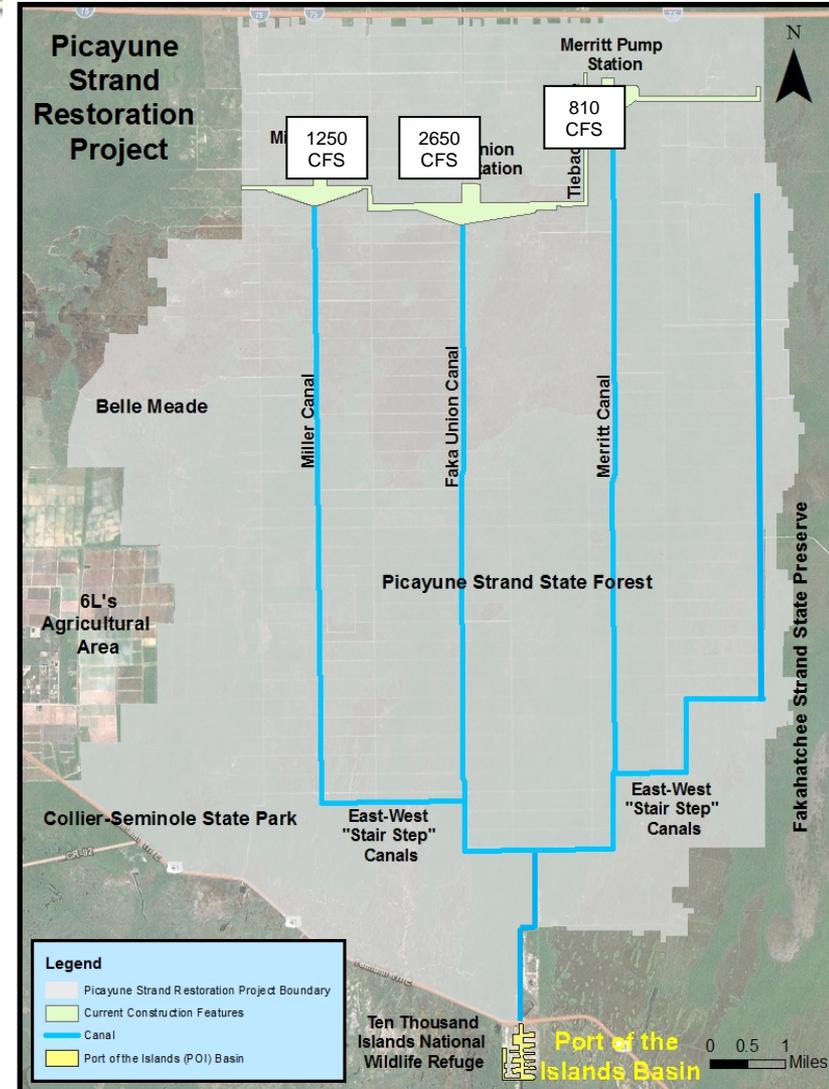
- Big Cypress National Preserve
- Fakahatchee Strand State Preserve
- Florida Panther National Wildlife Refuge
- Collier-Seminole State Park
- Ten Thousand Islands National Wildlife Refuge



# Picayune Strand Restoration Project- Components

## Project features include:

- Three pump stations
  - Merritt – 810 cfs
  - Faka Union – 2650 cfs
  - Miller – 1250 cfs
- Plugging 48 miles of canals
- Removing 227 miles of roads
- Removing 61 miles of tram roads
- Flood protection features for adjacent lands
- Manatee mitigation feature



# Picayune Strand Restoration Status

- Road removal
  - Phases I-III complete
  - Phase IV-On hold pending additional spending authorization
- Canal Plugs
  - Prairie – complete 2007
  - Merritt – complete 2014
  - Faka Union and Miller – pending additional spending authorization
- Pump stations
  - Merritt complete December 2013
  - Faka Union and Miller under construction
- Mitigation and protection features
  - Manatee Mitigation Feature is in design



- Estimated total cost = \$600M
  - State/ SFWMD investment to date - \$175M
  - Federal investment to date - \$305M



# Indian River Lagoon South

# IRL-S Purpose and Authorization

## ■ Purpose

- To construct storage and water quality improvement features to help reduce harmful freshwater discharges and reduce nutrient loading to the St. Lucie Estuary and Indian River Lagoon, and to increase wetland/upland habitat for threatened and endangered species



## ■ Authorization

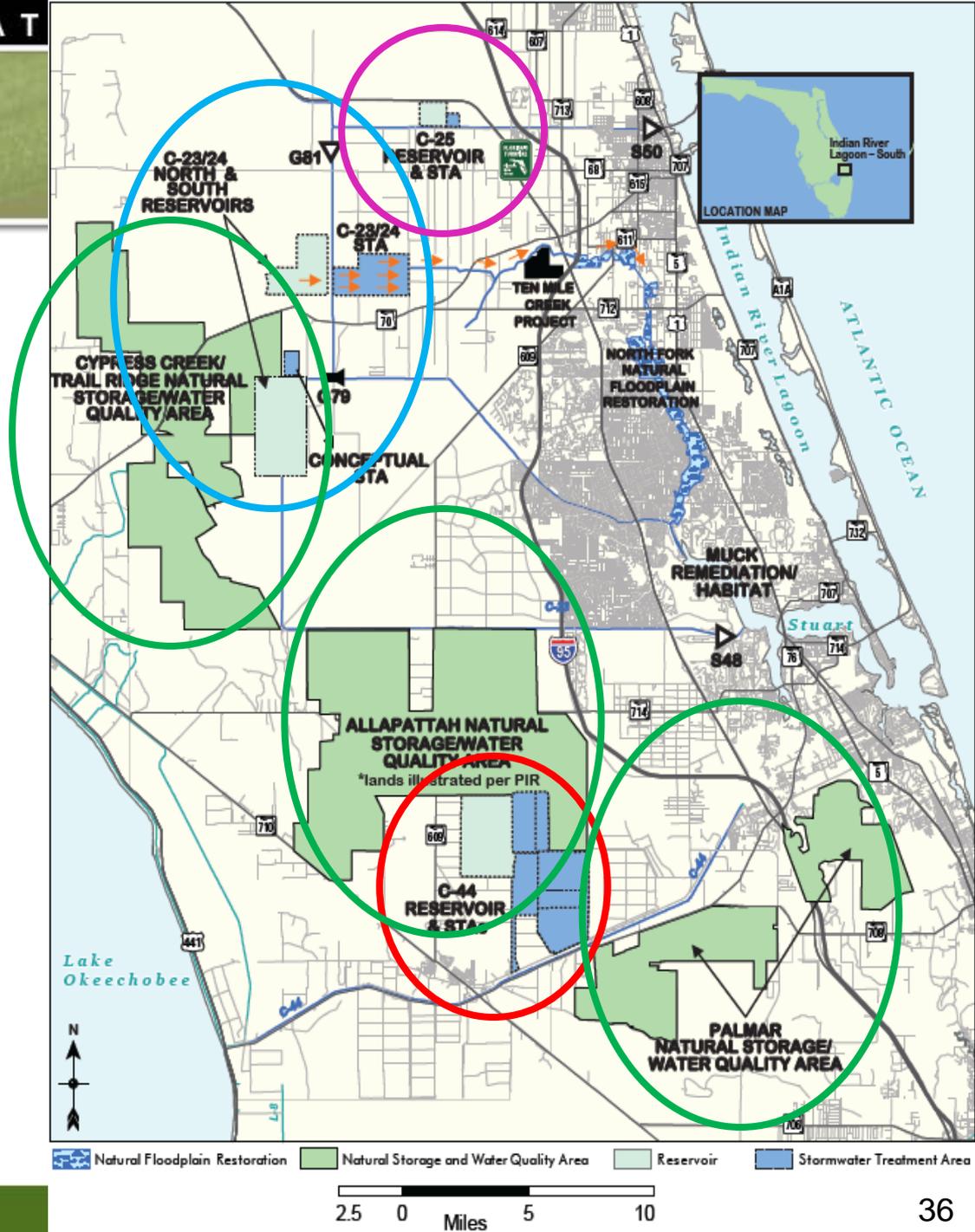
- WRDA 2007
- PPA signed in September 2010 for:
  - C-44, C-23/24 and C-25 Reservoirs and STAs



# IRL – South

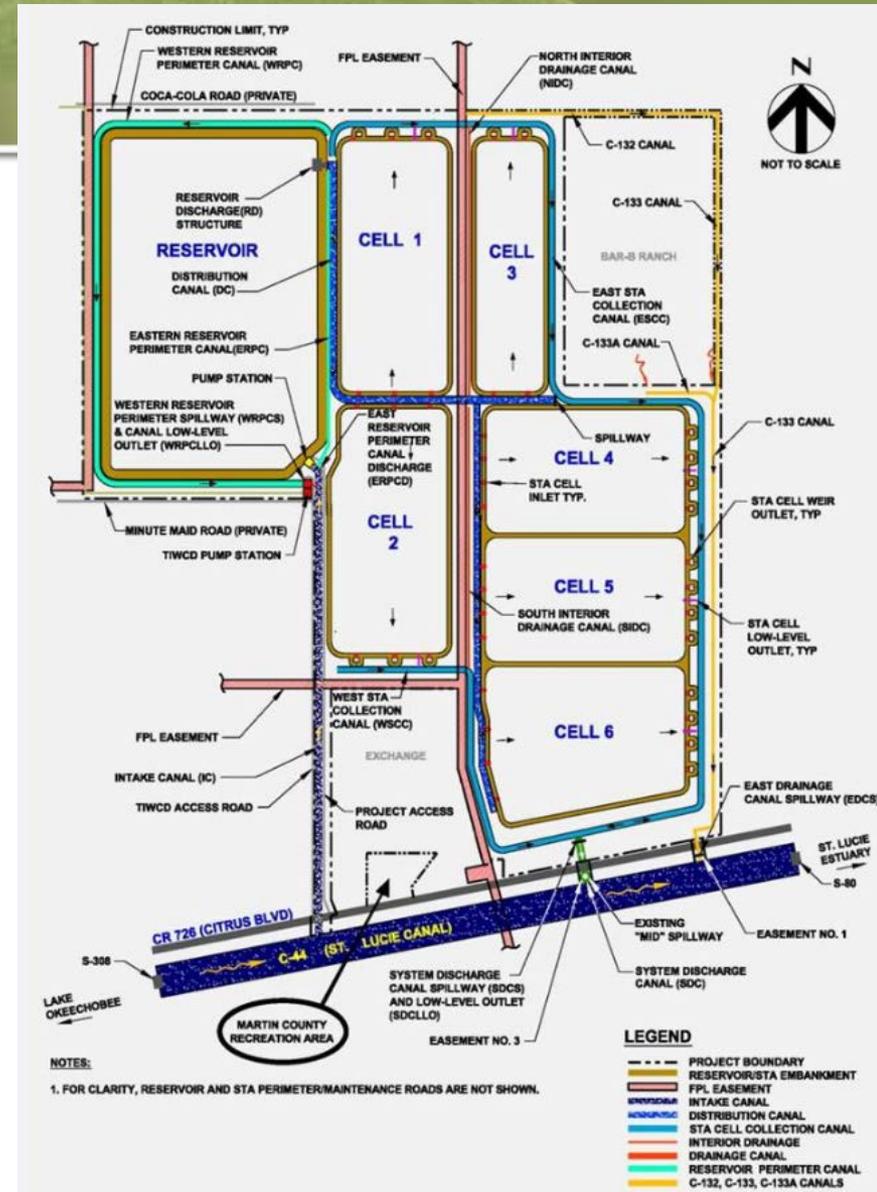
## Authorized Components:

- C-44 Reservoir & STA
  - 3,400 acre reservoir – 50,600 acre feet
  - 6,300 acre STA (6 cells)
- C-23/24 Reservoirs & STA
  - N/S Reservoirs - ~100,000 acre feet
  - 2,500 acre STA – 4 cells
- C-25 Reservoir/STA
  - 741 acre Reservoir – 5,900 acre feet
  - 163 acre STA
- ~ 90,000 acres Natural Water Storage & Treatment Area (NWSTA)
  - Allapattah - C-23 Basin
  - Palmar/SouthFork – C-44 Basin
  - Cypress Creek/Trail Ridge – C-23/24 Basin



# IRL South Phase 1 Status

- **C-44 Reservoir and STA**
  - SFWMD has acquired 100% of lands needed for C-44 reservoir and STA
  - Corps is the lead on construction of reservoir
  - SFWMD pursuing construction of STAs/ reservoir discharge canal and pump station
    - Anticipated construction start of June 2014
- **C-23/24 Reservoir and STA**
  - 100% of land acquired for north reservoir and STA
  - 78% of land acquired for south reservoir
- **C-25 Reservoir and STA**
  - No lands acquired to date



C-44 Reservoir and STA

# IRL South Phase 1 Status

- Estimated total cost = \$1.45B
  - State investment to date - \$365M
  - Federal investment to date - \$55M



C-44 Intake Canal



# Site 1

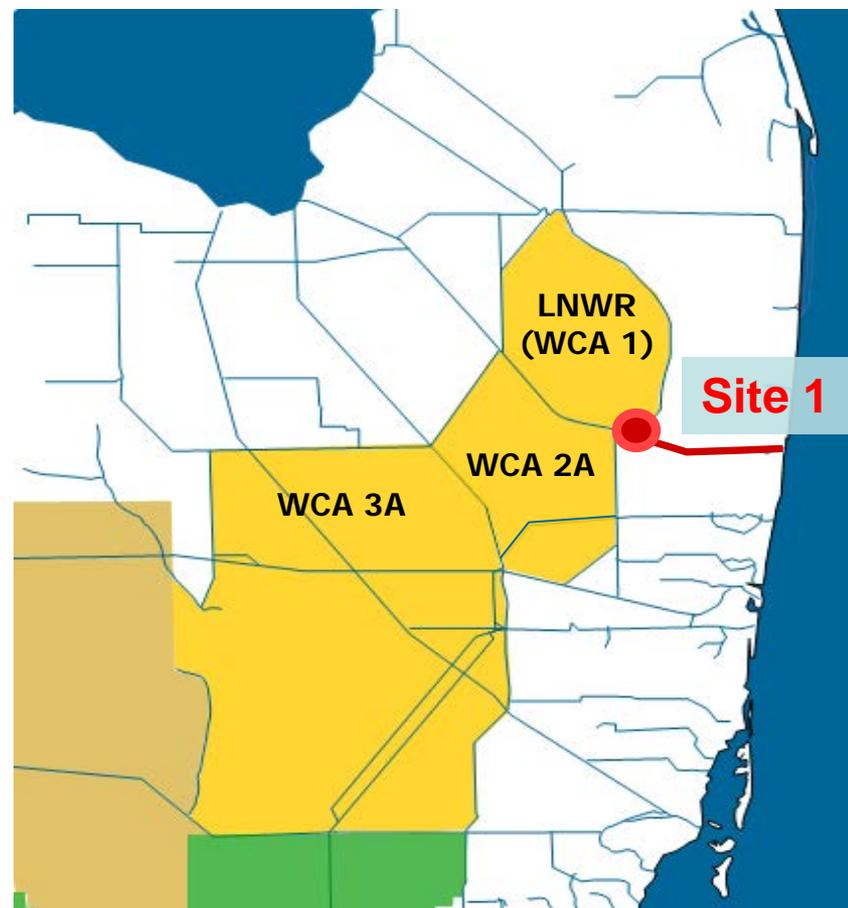
# Site 1 Purpose and Authorization

## ■ Purpose

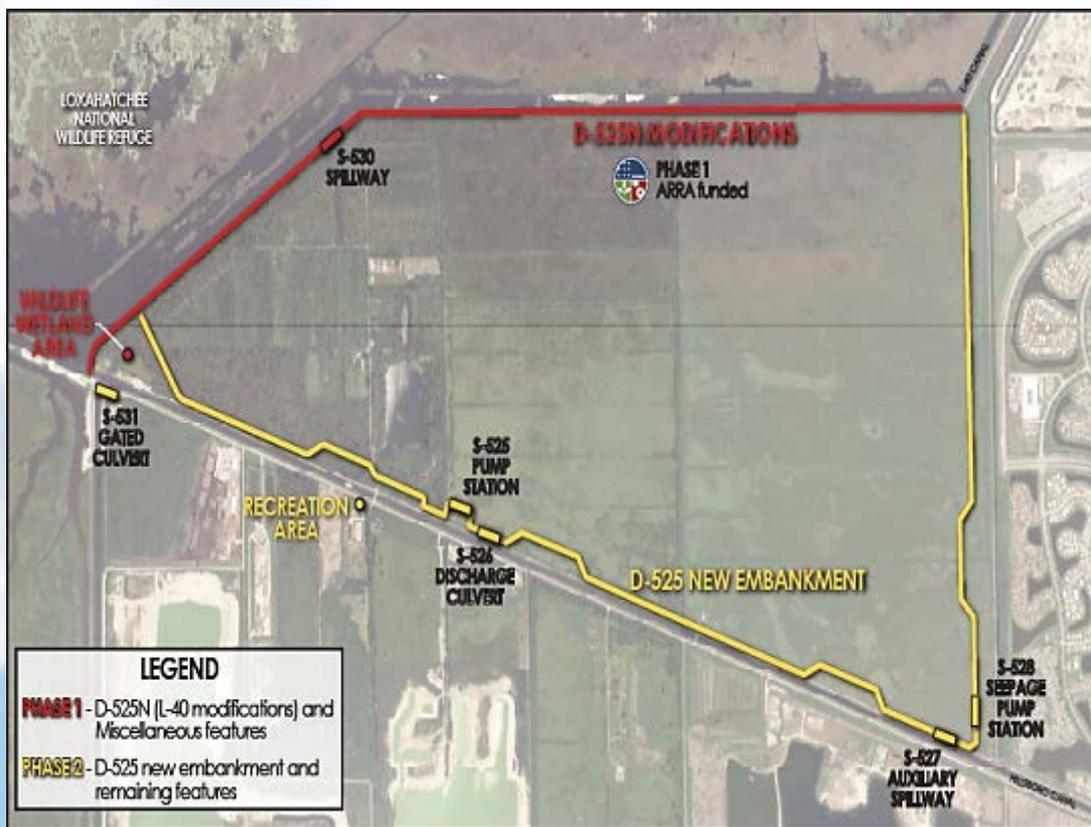
- Improve hydroperiods and hydropatterns in Loxahatchee National Wildlife Refuge and WCA-2A by capturing and storing excess water currently discharged to tide via Hillsboro Canal

## ■ Authorization

- WRDA 2007
- PPA signed in June 2010



# Site 1



- Phase 1 components
  - L-40 modifications, seepage management measures and construction of a six-acre wildlife wetland area and an auxiliary spillway
- Phase 2 components
  - Site work, construction of inflow and seepage pump stations, associated impoundment structures, canal improvements and D-525 embankment improvements

# Site 1 Status

- Phase 1
  - Construction scheduled for completion in 2014
- Phase 2
  - Requires additional planning and authorization
- Estimated Phase 1 total cost = \$85M
  - State/ SFWMD investment to date - \$8M
  - Federal investment to date - \$68M





# 2<sup>nd</sup> Generation CERP Projects



# C-43 West Basin Storage Reservoir

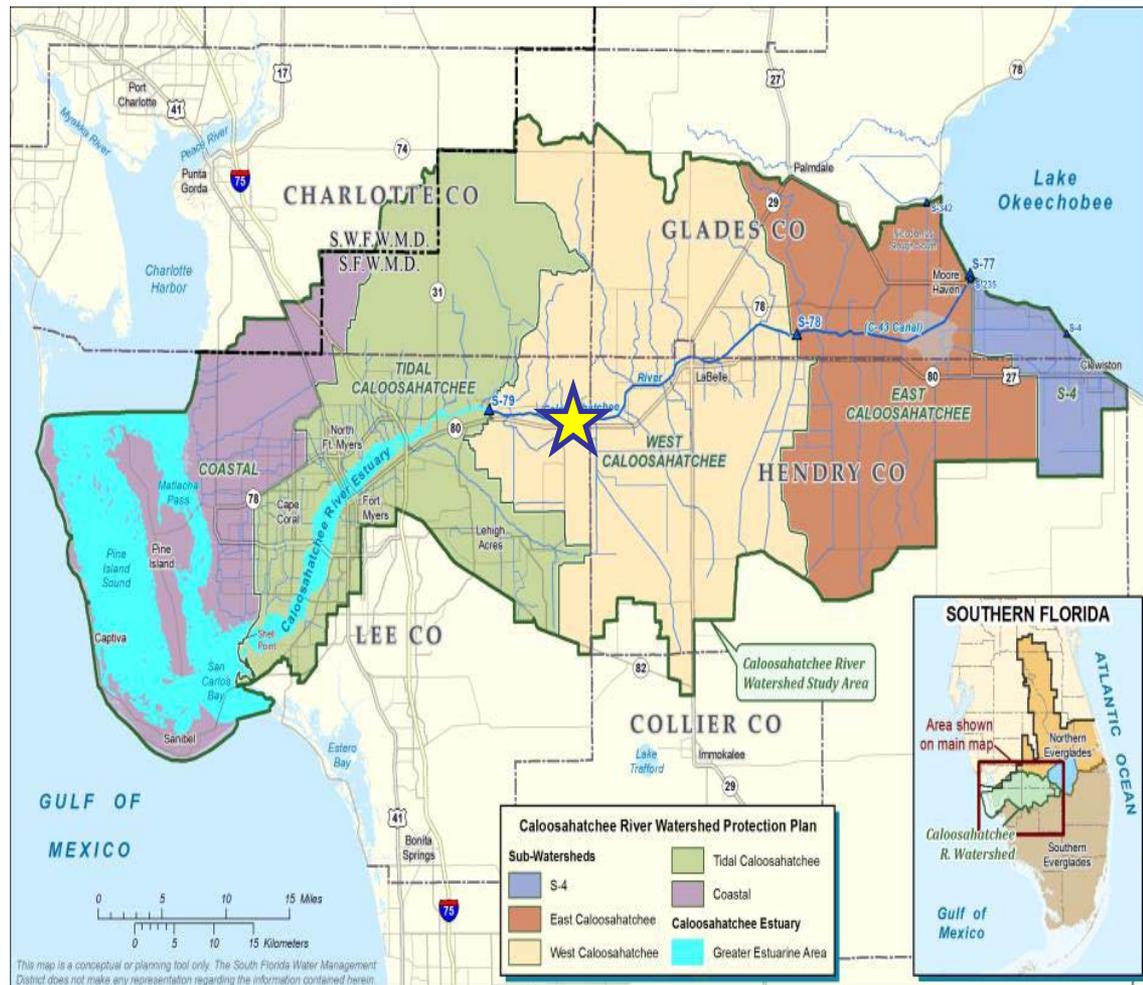
# C-43 West Basin Storage Reservoir Purpose and Authorization

## ■ Purpose

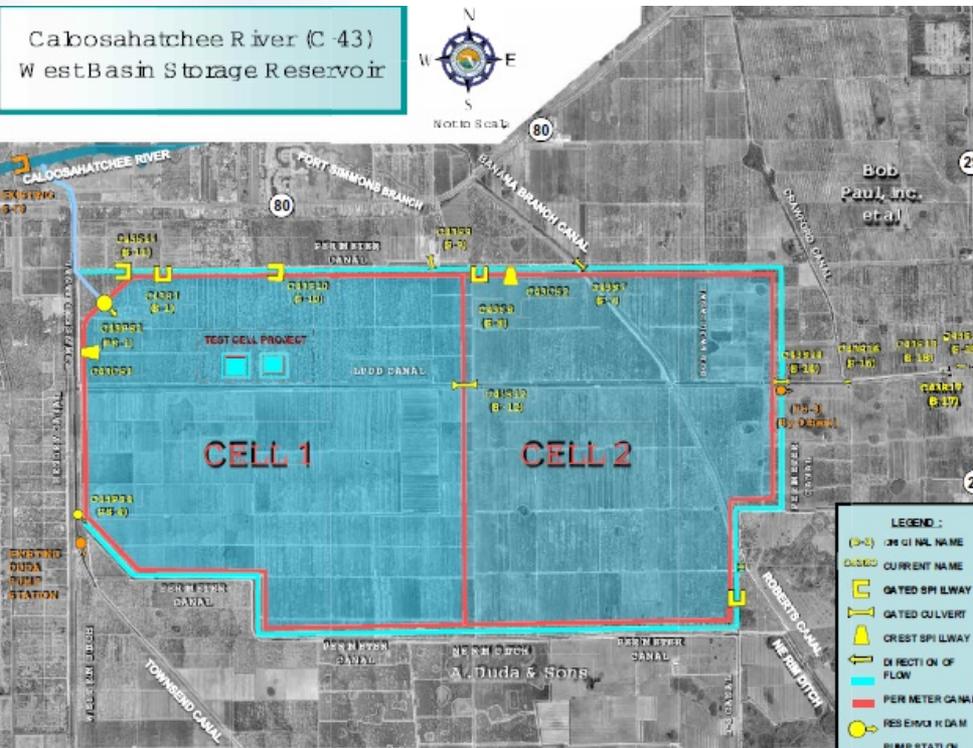
- Improve the salinity balance in downstream estuary
- Attenuate peak flows during the wet season
- Provide essential flows during the dry season

## ■ Authorization

- WRDA - awaiting authorization
- PPA - awaiting authorization and appropriation



# C-43 West Basin Storage Reservoir Components and Status



## Components

- 170,000 ac/ft deep storage reservoir

## Status

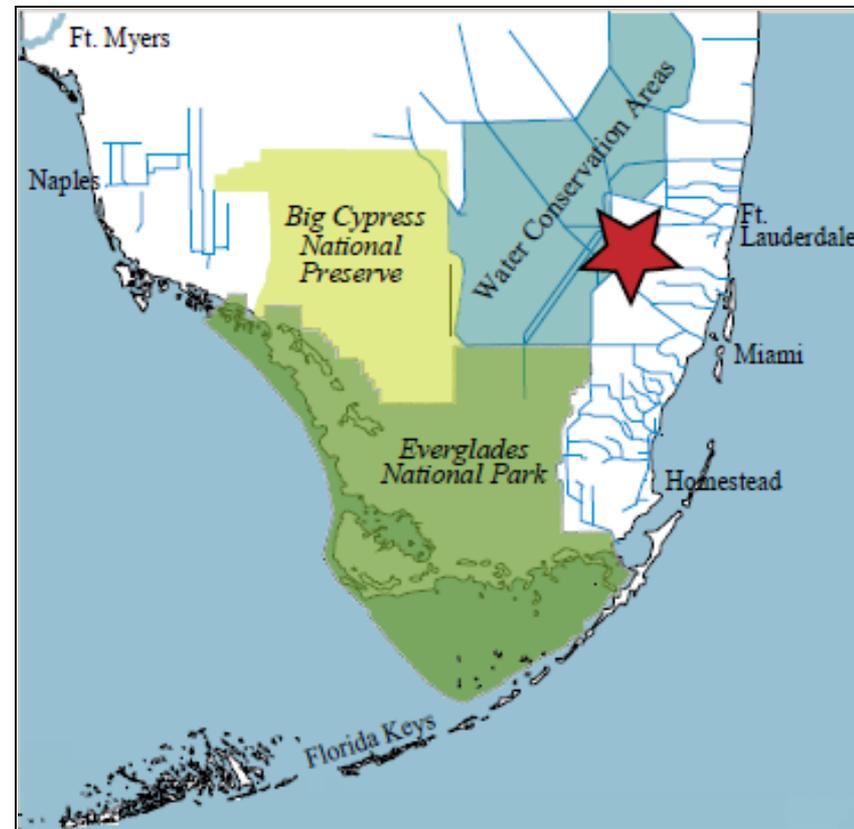
- Project Implementation Report - Completed 2010
- Chief's Report - Completed March 2010
- Reservoir design - Complete
- Construction - Pending congressional authorization
- Total estimated project cost = \$570M
  - State/ SFWMD investment to date - \$90M
  - Federal investment to date - \$35M



# Broward County Water Preserve Areas (WPAs)

# Broward County WPAs Purpose and Authorization

- Purpose
  - Reduce seepage loss from Water Conservation Area (WCA) 3A/3B to the C-11 and C-9 basins
  - Capture, store and distribute surface water runoff from the western C-11 Basin that is currently discharged into WCA 3A/3B
- Authorization
  - WRDA - awaiting authorization
  - PPA - awaiting authorization and appropriation





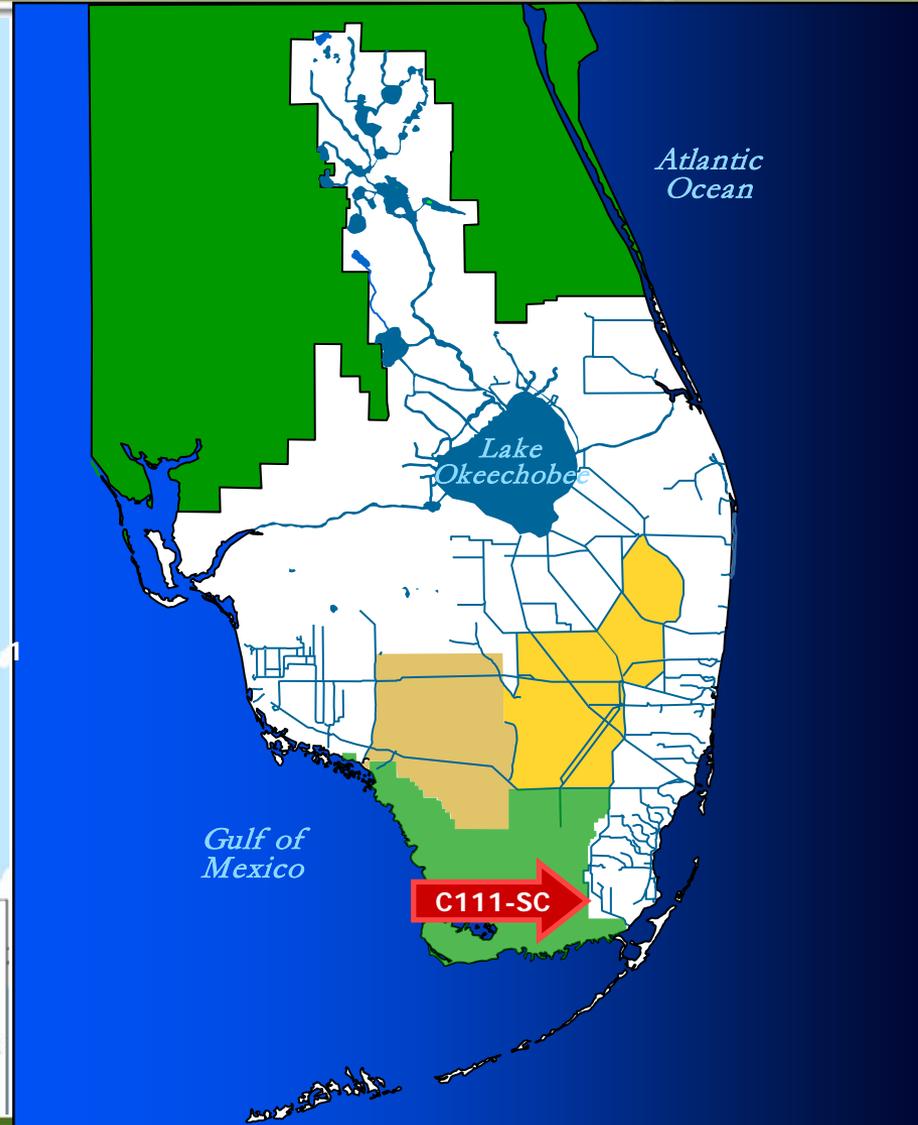
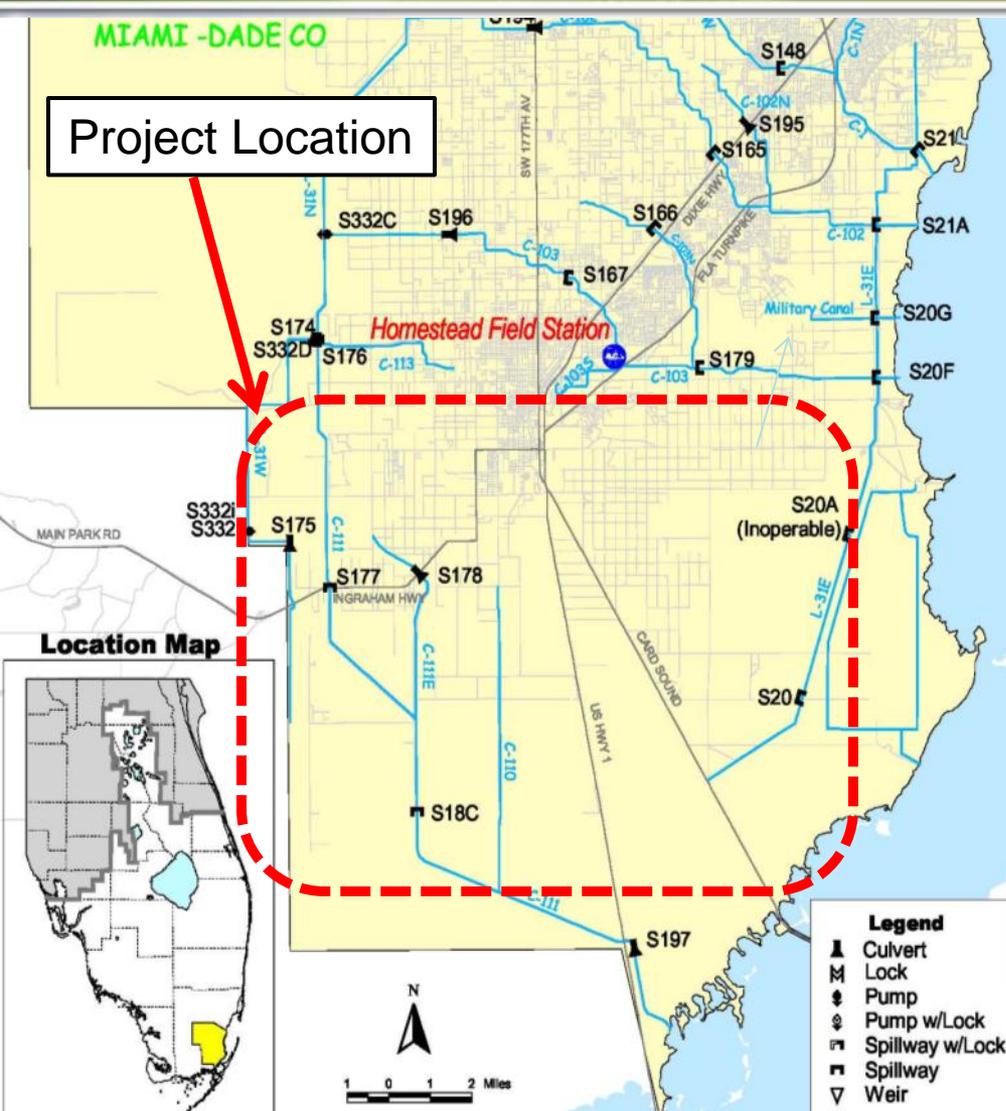
# Broward County WPAs Status

- Project Implementation Report - Completed April 2007, revised February 2012
- Chief's Report - Completed May 2012
- Design and Construction - Pending congressional authorization
- Total estimated project cost - \$870M
  - State/ SFWMD expenditures to date - \$260
  - Federal expenditures to date - \$60M



# C-111 West Spreader Canal

# C-111 West Spreader Canal

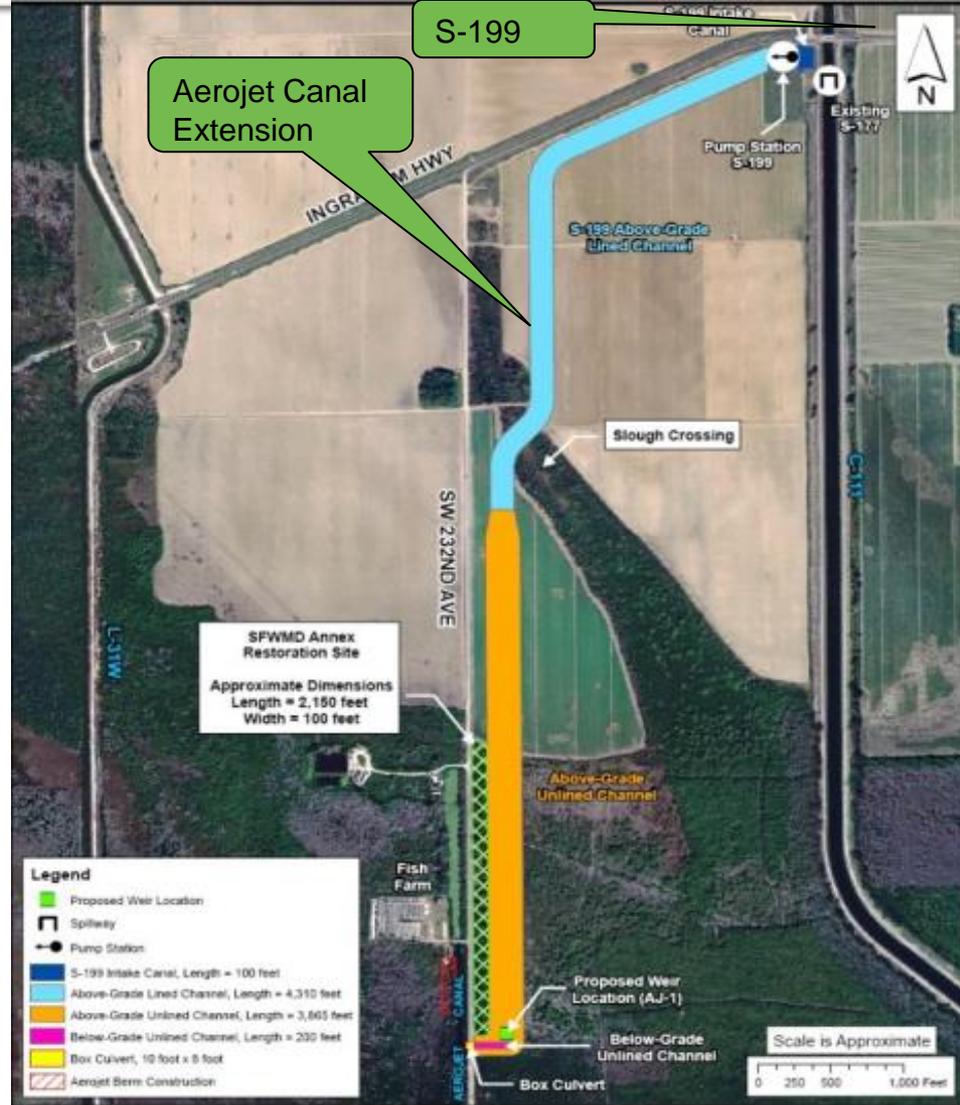
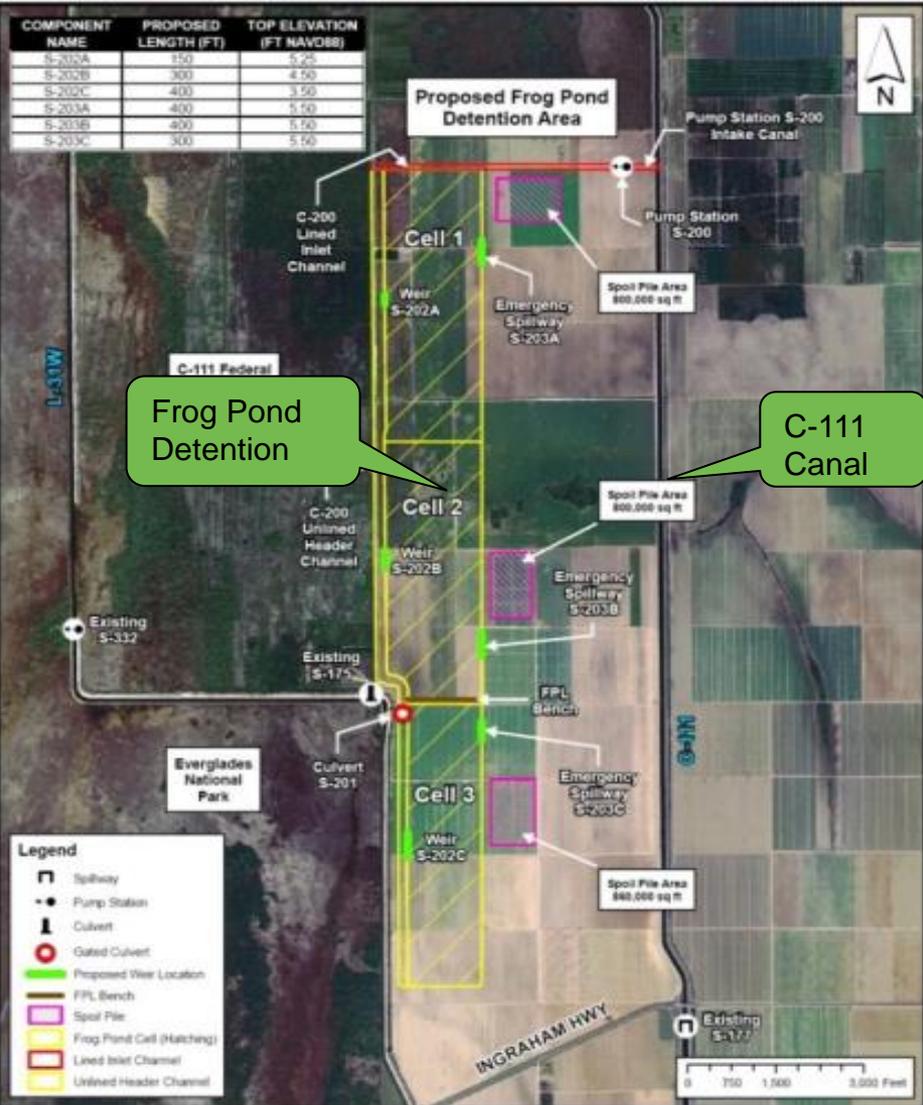


# C-111 West Spreader Canal Purpose and Authorization

- Purpose
  - Improve the quantity, timing and distribution of water delivered to Florida Bay via Taylor Slough
  - Improve hydroperiods and hydropatterns in the Southern Glades and Model Lands
  - Improve coastal zone salinities in Florida Bay
- Authorization
  - WRDA - awaiting authorization
  - PPA - awaiting authorization and appropriation



# Project Features C-111 West Spreader Canal



# C-111 West Spreader Canal Constructed Components



S-200



Frog Pond  
Impoundment

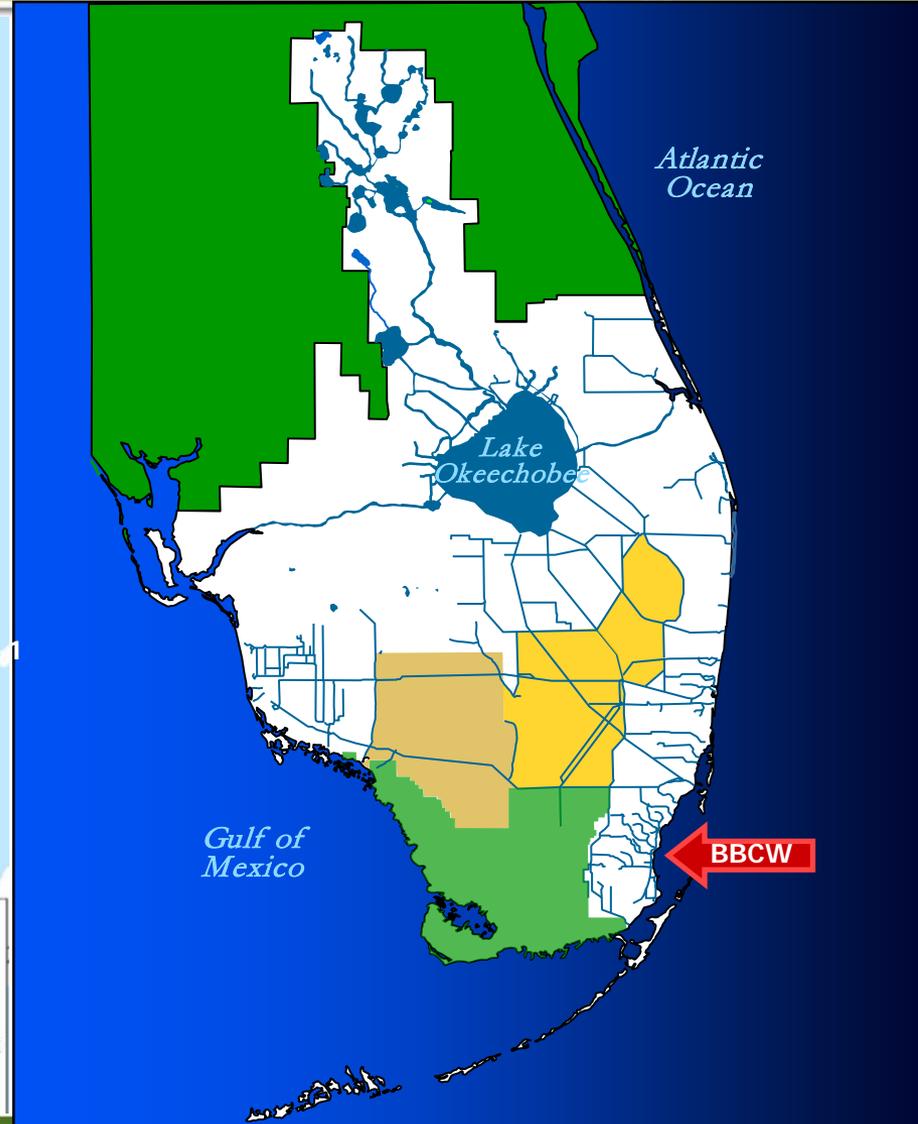
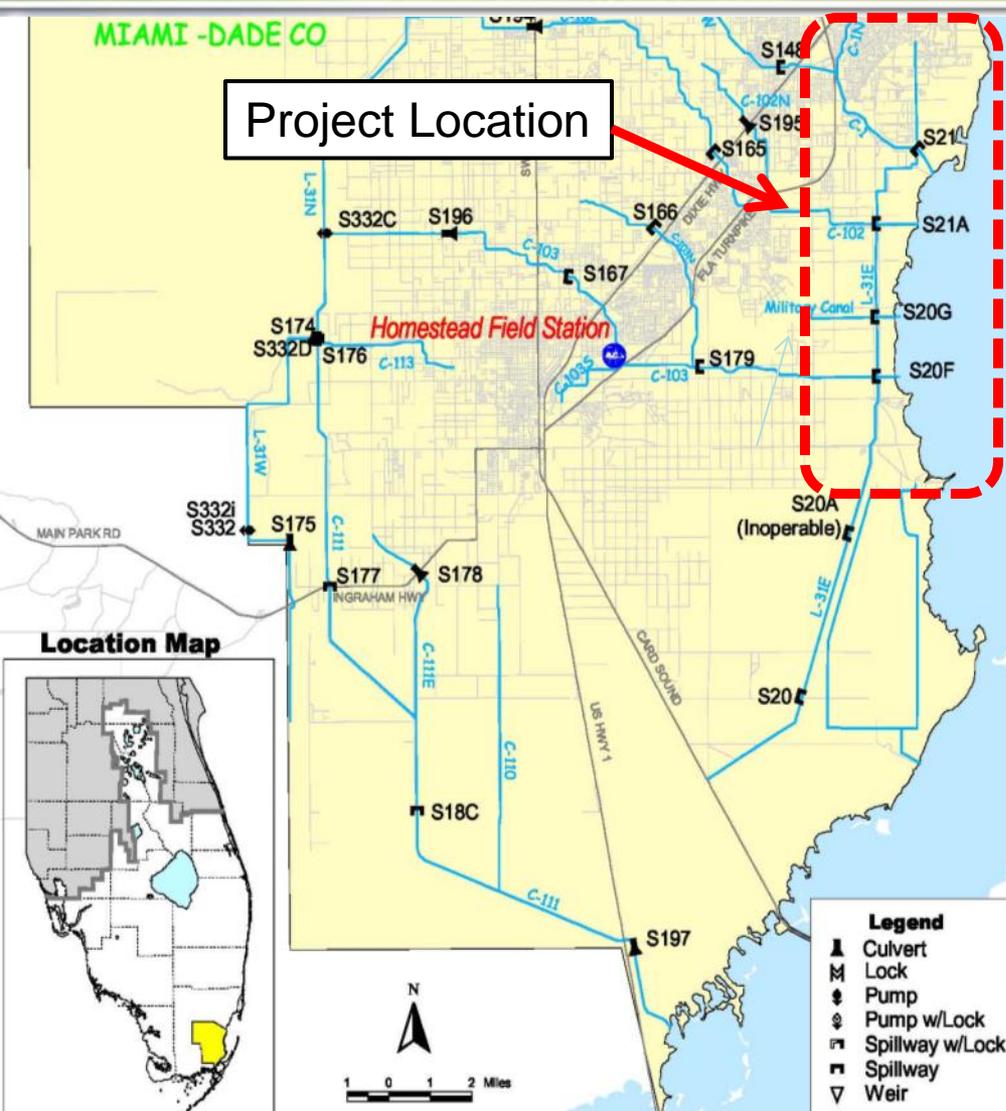


Aerojet Canal  
Extension

# C-111 West Spreader Canal Status

- Project Implementation Report - Completed January 2011
- Chief's Report - Completed January 2012
- Construction - SFWMD expedited construction of PIR components
  - Construction completed in 2011
- Total estimated project cost - \$85M
  - State/ SFWMD expenditures to date - \$64M
  - Federal expenditures to date - \$12M

# Biscayne Bay Coastal Wetlands – Phase I



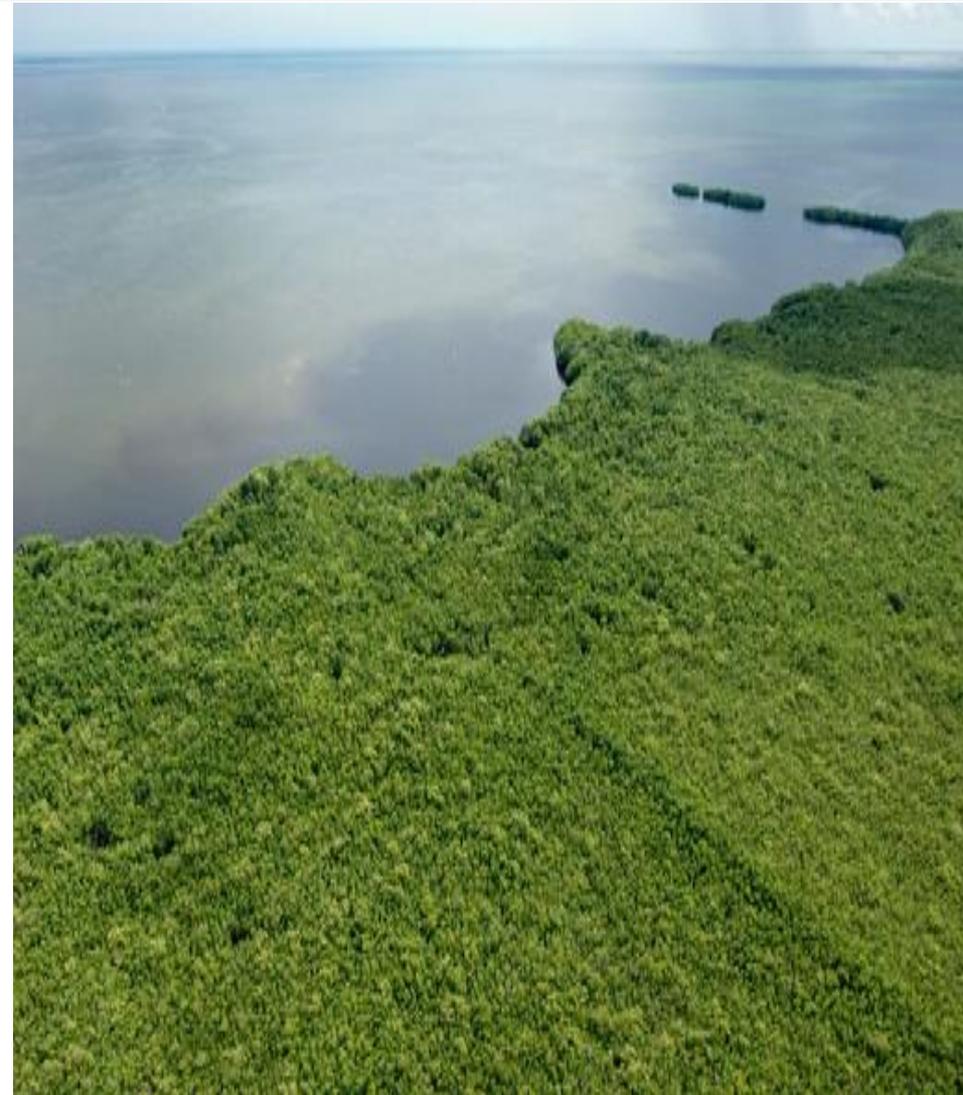
# Biscayne Bay Coastal Wetlands – Phase I Purpose and Authorization

## ■ Purpose

- Restore natural water flows to Biscayne Bay and Everglades National Park
- Improve salinity distributions near the shoreline which will reestablish productive nursery habitats for fish and shellfish

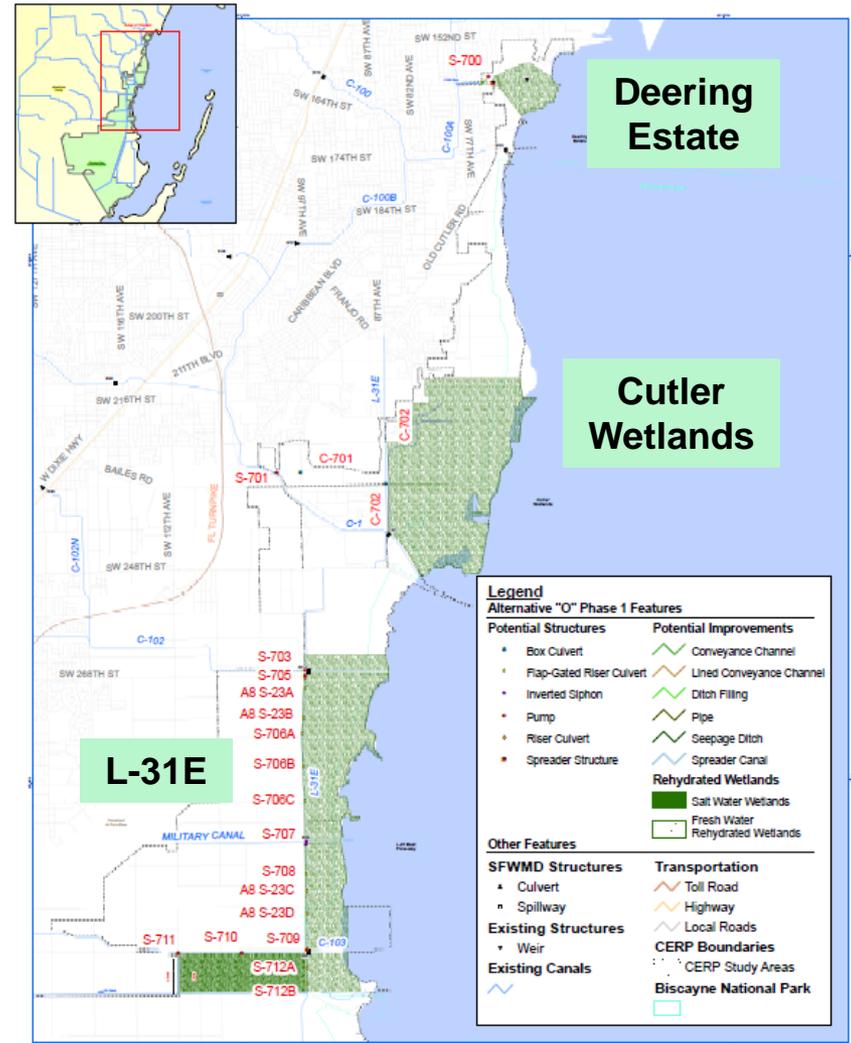
## ■ Authorization

- WRDA - awaiting authorization
- PPA - awaiting authorization and appropriation



# Biscayne Bay Coastal Wetlands – Phase I Components

- **Deering Estate**
  - Spreader structure to redistribute flows improving salinity in coastal wetlands
  - Pump station, spreader canal, and constructed wetland
  
- **Cutler Wetlands**
  - Re-establishes connectivity between coastal and near shore wetlands and hydrates areas susceptible to hypersaline conditions
  - Pump station, culverts, and spreader canal
  
- **L-31E Flowway**
  - Delivers water to remnant tidal creeks, hydrates tidal wetlands, and improves distribution of flows
  - Pump stations, culverts, siphon and wetland areas



# Biscayne Bay Coastal Wetlands – Phase I Deering Estate Constructed Features



# Biscayne Bay Coastal Wetlands Phase I Status

- Project Implementation Report – Completed July 2011
- Chief's Report – Completed May 2012
- Construction - SFWMD expedited Deering Estate and portions of the L-31E Flowway component
- Total estimated project cost - \$125M
  - State/ SFWMD expenditures to date - \$42M
  - Federal expenditures to date - \$12M





# 3<sup>rd</sup> Generation CERP Projects



# Central Everglades Planning Project (CEPP)

# CEPP

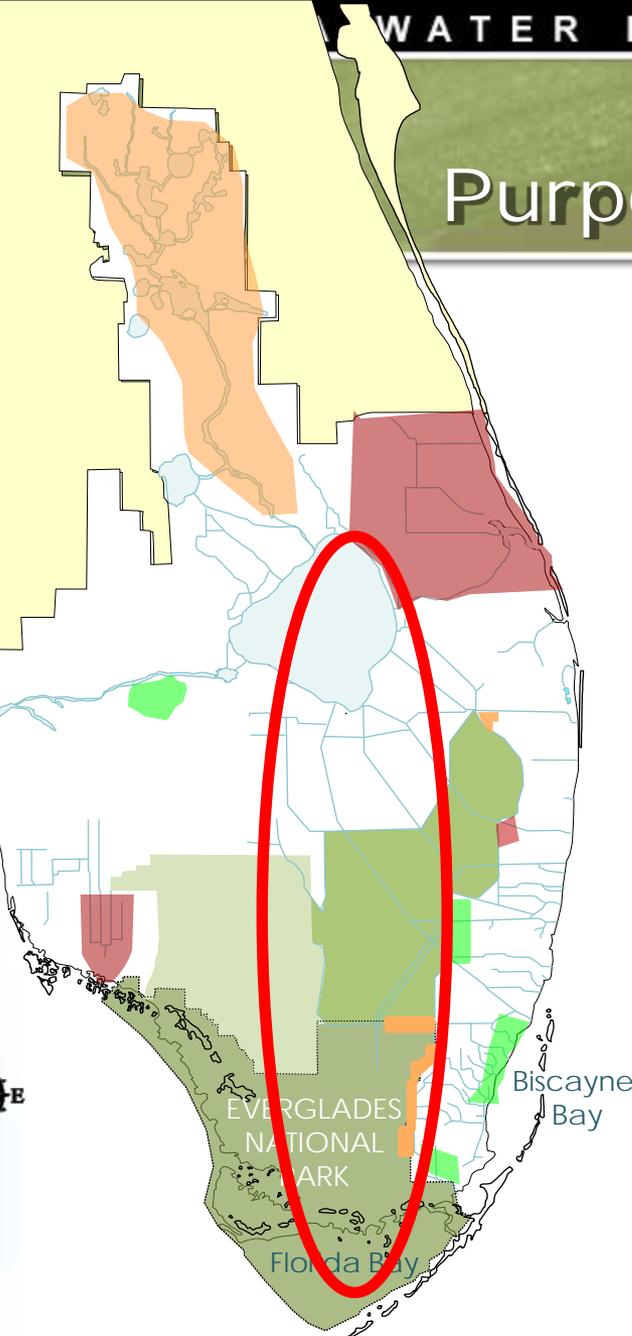
## Purpose and Authorization

### ■ Purpose

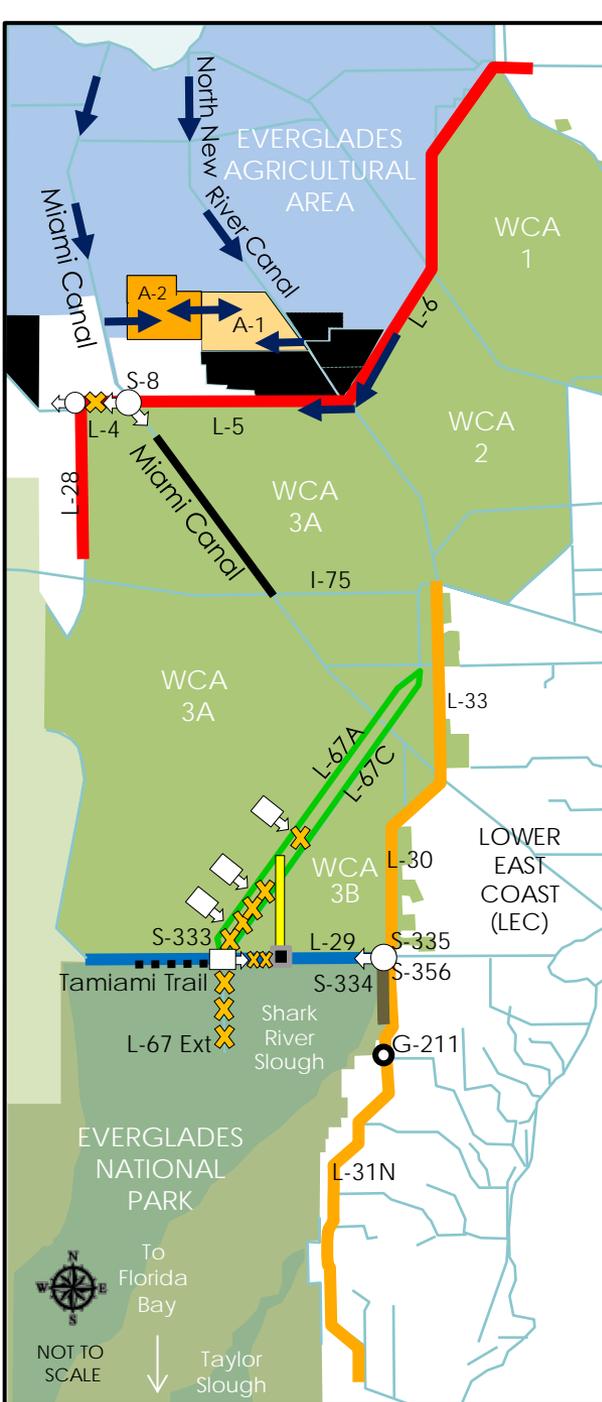
- Redirect damaging estuary discharges from Lake Okeechobee south to improve the flow, timing and distribution of water through the Everglades

### ■ Authorization

- Dependent upon completion of PIR, Chief's Report and inclusion in a WRDA bill



# TENTATIVELY SELECTED PLAN (Alt 4R2) IMPLEMENTATION



## STORAGE AND TREATMENT

- Construct A-2 FEB and integrate with A-1 FEB operations
- Lake Okeechobee operational refinements

## DISTRIBUTION/CONVEYANCE

- Diversion of L-6 flows, infrastructure, and L-5 canal improvements
- Remove western ~2.9 miles of L-4 levee west of S-8 (3,000 cfs capacity)
- Construct 360 cfs pump station at western terminus of L-4 levee removal
- Backfill Miami Canal and Spoil Mound Removal from ~1.5 miles south of S-8 to I-75

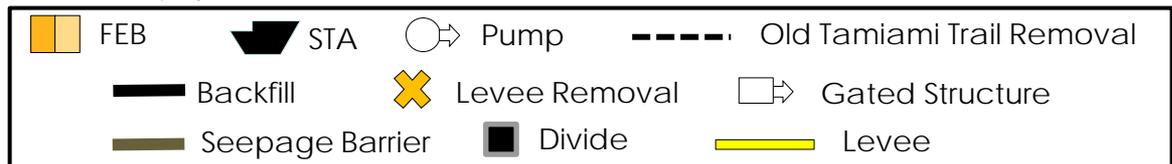
## DISTRIBUTION/CONVEYANCE

- Increase S-333 capacity to 2,500 cfs
- One 500 cfs gated structure north of Blue Shanty levee and 6,000-ft gap in L-67C levee
- Two 500 cfs gated structures in L-67A; 0.5 mile spoil removal west of L-67A canal north and south of structures
- Remove ~8 miles of L-67C levee in Blue Shanty flowway (no canal back fill)
- Construct ~8.5 mile levee (Blue Shanty levee) in WCA 3B, connecting L-67A to L-29
- Remove ~4.3 miles of L-29 levee in Blue Shanty flowway; divide structure east of Blue Shanty levee at terminus of Tamiami Trail Next Steps western bridge
- Remove entire 5.5 miles L-67 Extension levee; backfill L-67 Extension canal
- Remove ~6 miles of Old Tamiami Trail road (south of L-29 western levee, from L-67 Ext to ENP Tram Rd)

## SEEPAGE MANAGEMENT

- Increase S-356 pump station to ~1,000 cfs
- Construct 4.2 mile partial depth seepage barrier south of Tamiami Trail (along L-31N)
- G-211 operational refinements; use coastal canals to convey seepage

*Note: System wide operational changes and adaptive management considerations will be included in project*



# Central Everglades Planning Project Status

- PIR in public comment period ended November 1, 2013
- Next steps
  - Biological opinion
  - Complete final PIR
  - Governing Board letter of support
- Total estimated project cost - \$1.75B
  - State/ SFWMD expenditures to date - \$4M
  - Federal expenditures to date - \$31M

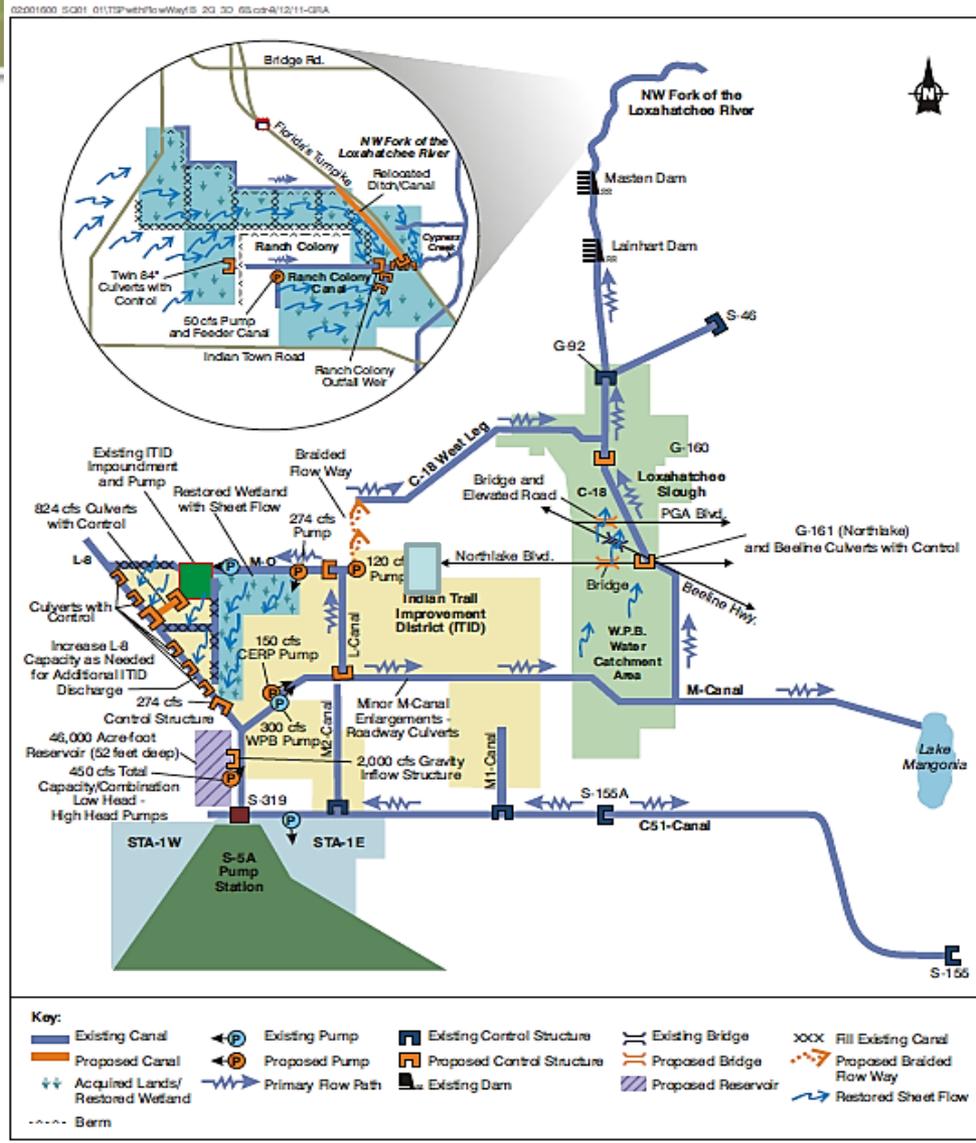


# Loxahatchee River Watershed Restoration



# Loxahatchee River Restoration Proposed Components

- Flowway 1
  - Control 2 Pump Station
  - M-Canal Improvements
  - G-161 (complete)
  - Northlake Bridge (complete)
  - G-160 (complete)
  
- Flowway 2
  - Mecca Storage
  - C-18 Connection
  - Possible modifications to C-18 Weir
  - Moss Property Improvements
  
- Flowway 3
  - Acquired 7,566 acres
  - Restore connection to Cypress Creek



TSP with Flow Ways 1B, 2G, 3D and 6B

# Loxahatchee River Restoration Status

- SFWMD has expedited land acquisition and construction of multiple components
  - G-160
  - G-161
  - M-Canal Improvements and Northlake Bridge (with partners)
  - Cypress Creek and Flowway 3 Construction Efforts (with partners)



Allows greater control of C-18 Stages to improve Slough hydroperiods



Provides connectivity between Grassy Waters Preserve and Loxahatchee



Improved M-Canal Section

Unimproved M-Canal Section



Flowway 3 Wetland restoration and more efficient water control

# Loxahatchee River Restoration Status

- Planning/formulation work to update and complete PIR will be reinitiated in early 2014
- Total estimated project cost - TBD
  - State/ SFWMD expenditures to date - \$163M
  - Federal expenditures to date – \$5M





Questions?

# Additional Components Replacement Features

- Acquire and construct replacement storage to capture flows from C-18 western basin and then discharge those flows down Flow-way 2 to the Loxahatchee River
- District and Palm Beach County Reached Agreement on Purchase
- Utilize L-8 reservoir as Flow Equalization Basin

