

# South Florida Ecosystem Restoration

**Presented by:**

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US Army Corps of Engineers  
**BUILDING STRONG**



# Briefing Outline

- Overview of Restoration Program Status

- ▶ Foundation Projects Status
- ▶ CERP Generation 1 Project Status (authorized and under construction)
- ▶ CERP Generation 2 Projects (authorized in 2014)
- ▶ CERP Projects in Planning Phase
- ▶ Project Dependencies

Project	Yellow Book Code	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Federal Construction Cost</b>													
<b>Non-Federal Construction Cost</b>													
<b>Total Construction Cost</b>													
Modified Water Deliveries to Everglades National Park*													
Herbert Hoover Dike*													
Seminole Big Cypress*	OPE												
Restoration Strategies*													
Tamiami Trail Next Steps Phase 1*													
Kissimmee River Restoration													
West Palm Beach Canal/STA-1E													
C-111 South Dade													
Picayune Strand Restoration	OPE												
Merritt Pump Station													
Faka Union Pump Station													
Manatee Mitigation and Flood Protection Features													
Miller Pump Station													
Remaining Features - Road removal and canal backfill													
Site 1 Impoundment	M												
Phase 1													
Indian River Lagoon-South													
C-44 Intake Canal	B												
C-44 Reservoir	B												
C-44 STA & Pump Station	B												
Decomp Physical Model	Q												
Caloosahatchee River (C-43) West Basin Storage -													
Interim Storage	D												
C-43 West Basin Storage Reservoir	D												
Broward County Water Preserve Areas													
C-11 Impoundment	Q												
WCA 3A&3B Levee/S-356	O												
C-9 Impoundment	R												
Biscayne Bay Coastal Wetlands Phase 1	FFF, OPE												
L-31 East Flowway													
Cutler Wetlands													
C-111 Spreader Canal Western Project	WW												
Central Everglades Planning Project	H												
PPA South	AA, FF												
PPA North	QQ, II, G												
PPA New Water	V												
Loxahatchee River Watershed Restoration Project	X, Y, K												

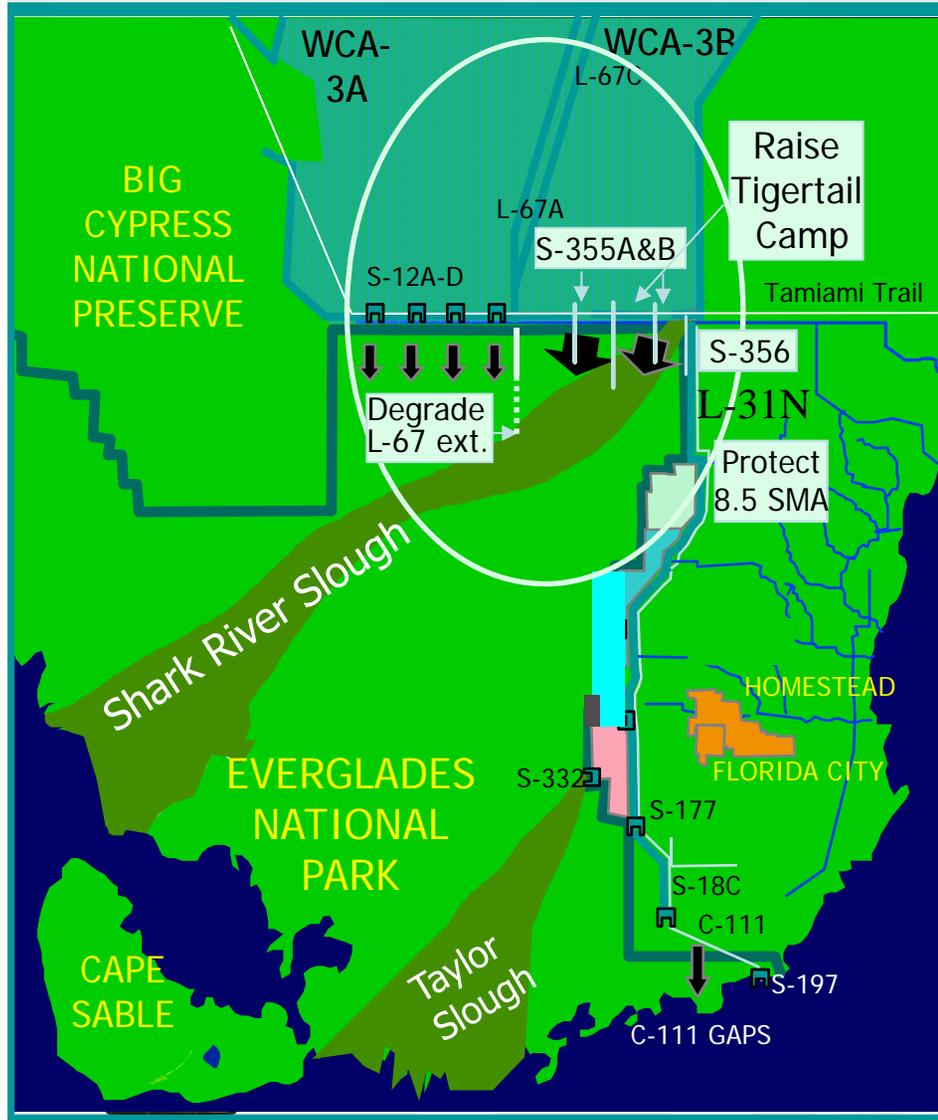


# Foundation Projects

(funded through other program authorities or  
by other entities)



# Modified Water Deliveries to Everglades National Park Project



- Purpose
  - ▶ To improve water deliveries and restore more natural hydrological conditions in Everglades National Park
- Status
  - ▶ S-355's, S-356, S-333, S-334 & L-67 Extension partial degrade, Tiger Tail Camp raising and Tamiami Trail bridge & road raising completed
  - ▶ Funding provided by DOI
  - ▶ 8.5 SMA Seepage Mitigation S-357N structure to be complete 2015
  - ▶ Combined Operations Plan requires:
    - Completion of C-111 SD
    - Lands and easements



# Herbert Hoover Dike Rehabilitation



## Purpose

- Reduce the risks around Lake Okeechobee improving HHD's Dam Safety Action Classification

## Status

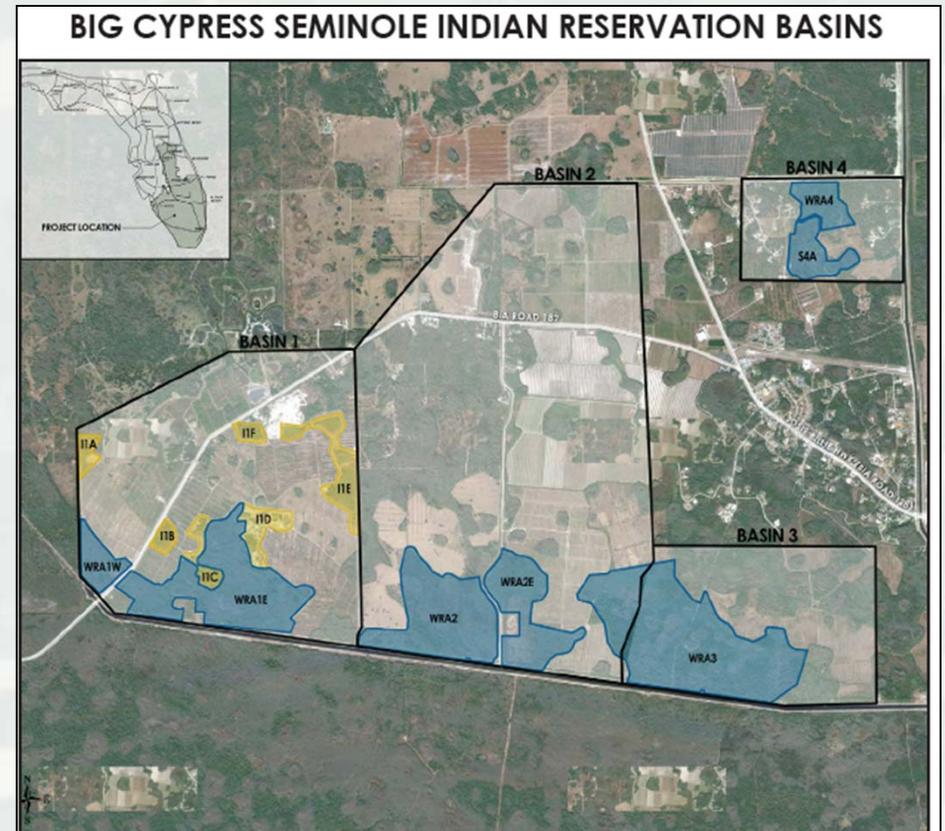
- Reach 1 cutoff wall completed in 2013
- 32 culverts identified for replacement or removal – Planned contract awards through FY18 with completion in FY21
  - ▶ 1 removal complete
  - ▶ 2 replacements complete (ARRA)
  - ▶ 16 replacements under contract
  - ▶ 10 replacements planned
  - ▶ 3 abandonments planned
- Dam Safety Modification Study – Draft NEPA document in Fall 2015, approval in 2016



# Seminole Big Cypress Reservation Water Conservation Plan

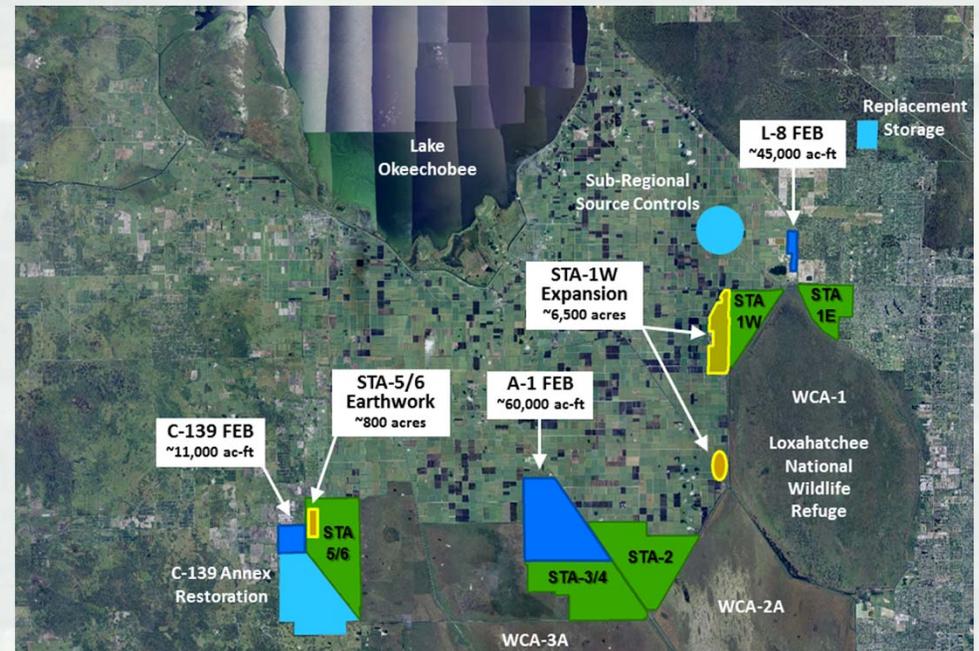
- Purpose
  - ▶ To achieve environmental restoration of 14,000 acres of swamp, hardwood hammocks, cypress sloughs, prairies and pine flatwoods through treatment and retention of runoff, prevention of extended periods of flooding and enhancement of hydroperiods
- Status
  - ▶ Basin 1 and 4 are complete
  - ▶ Basin 2 scheduled for completion in 2015
  - ▶ \$0 Federal remaining cost

- Remaining project efforts are 100% non-Federally funded (Seminole Tribe of Florida)



# Restoration Strategies

- Purpose
  - ▶ To achieve the Water Quality Based Effluent Limit (WQBEL)
- Status
  - ▶ A-1 FEB, L-8 FEB under construction and design of other features on track to meet Consent Order milestones
- \$690M remaining cost
  - ▶ STA 5/6 Earthwork
  - ▶ STA-1W Expansion
  - ▶ C-139 FEB





# Foundation Projects

(included in South Florida Ecosystem  
Restoration Program funding)



# Kissimmee River Restoration (KRR)

- Purpose
  - ▶ Restore ecological integrity by restoring 40 miles of meandering river and more than 12,500 acres of wetlands
  - ▶ Backfill 22 miles of canal and construction of other features necessary to operate system
- Status
  - ▶ Land acquisition 99% complete
  - ▶ Construction 65% Complete
  - ▶ \$75M remaining cost
    - MacArthur Ditch Backfill
    - Reach 2 & 3 backfill
    - S-69 Weir
    - Implementation of Headwaters Revitalization



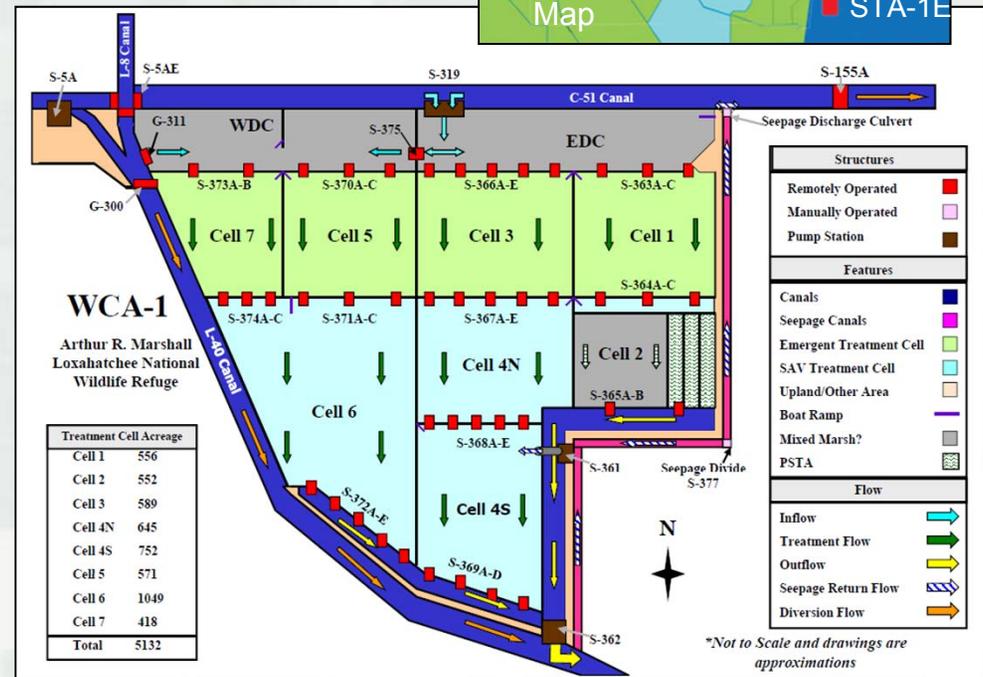
# West Palm Beach Canal C-51 / STA-1E

- Purpose

- ▶ STA-1E was constructed to detain and treat stormwater runoff from the western portion of the C-51 basin collected in the C-51 canal (West Palm Beach Canal). Treated water is discharged into Water Conservation Area 1 (WCA-1), also known as the Arthur R. Marshall, Loxahatchee National Wildlife Refuge.

- Status

- ▶ Completing culvert and trash rake repairs in summer 2016
- ▶ \$4M remaining cost



# C-111 South Dade Project



- Purpose
  - ▶ Improve hydrologic conditions in Everglades National Park, Taylor Slough and the panhandle of Everglades National Park
  - ▶ Reduce damaging discharges to Barnes Sound/Manatee Bay
  - ▶ Maintain flood control
- Status
  - ▶ Taylor Slough bridge, C-111 spoil degrade, 3 pump stations and most detention area levees complete
  - ▶ \$50M remaining cost
    - G-3273/S-356 Test
    - Contract 8 for North Detention Area
    - Contract 9 for L-31W plugs
    - Combined Operational Plan
    - Post-Authorization Change Report

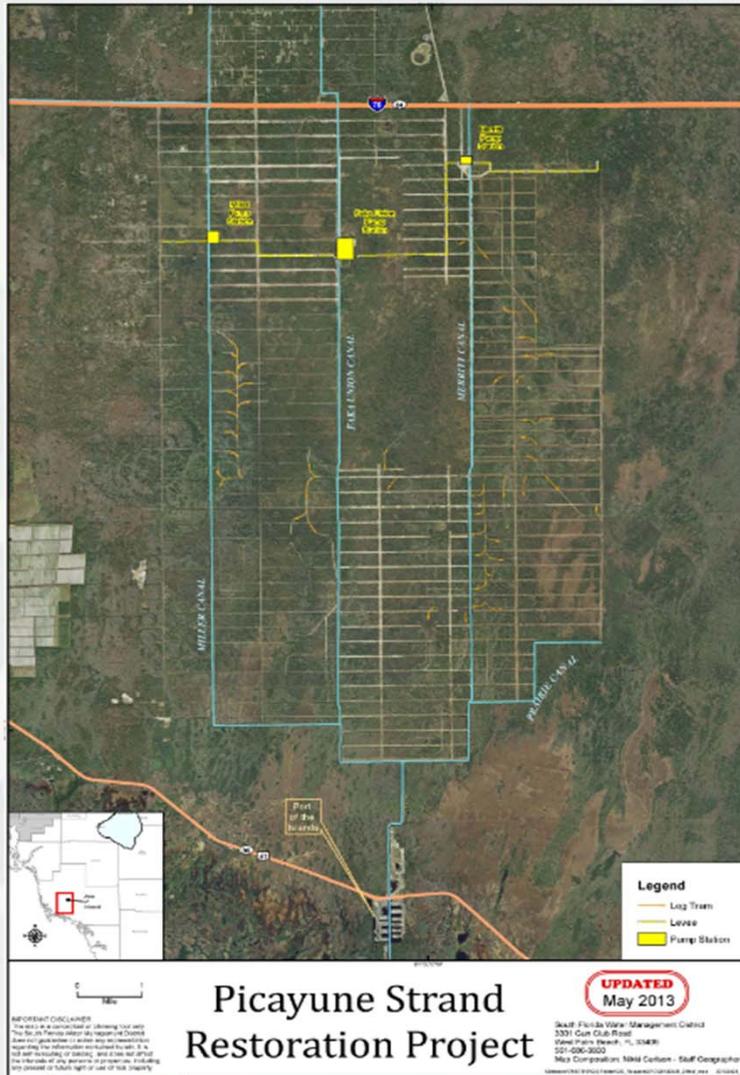


# CERP Generation 1

(authorized in WRDA 2007  
and under construction)



# Picayune Strand Restoration

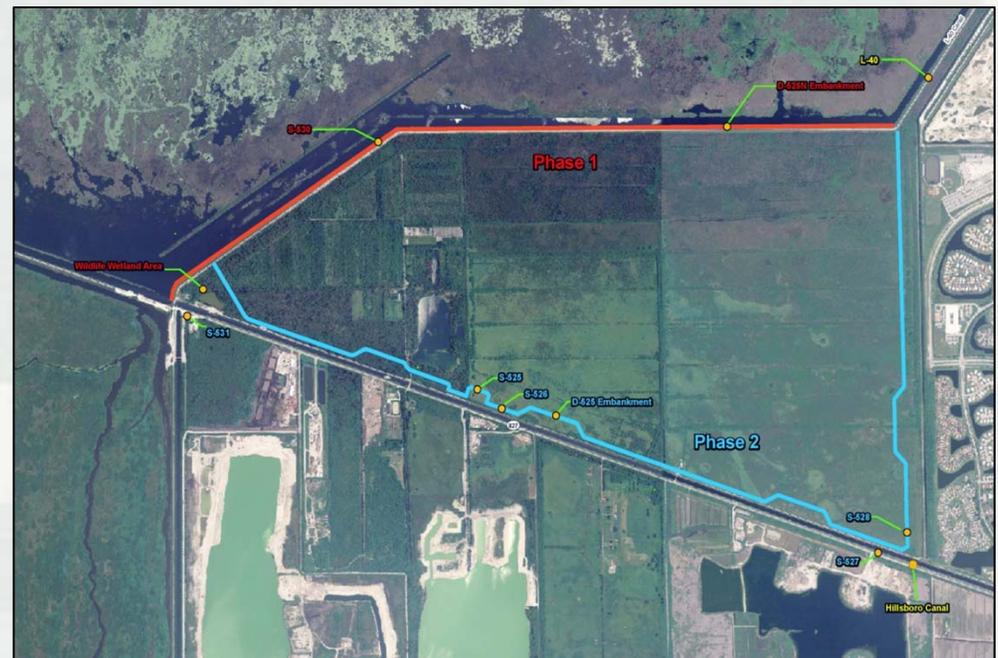
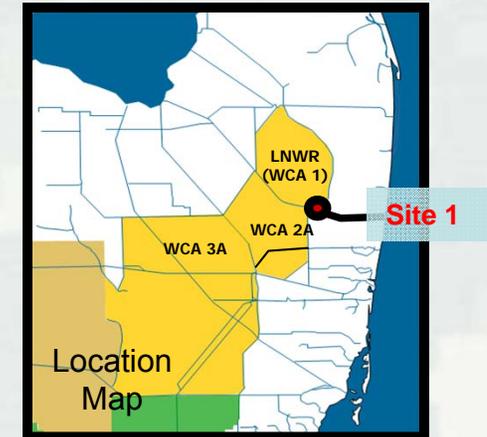


- Purpose
  - ▶ Restore and enhance 55,000 acres of wetlands in Picayune Strand
  - ▶ Improve the water quality of coastal estuaries by moderating the large salinity fluctuations caused by point discharge of freshwater from the Faka Union Canal
- Status
  - ▶ Land acquisition 98% complete
  - ▶ Merritt Pump Station complete
  - ▶ \$60M remaining cost
    - Completion of Faka Union Pump Station
    - Completion of Miller Pump Station
    - Manatee Mitigation & Flood Protection Features
    - Road removal and canal backfilling



# Site 1 Impoundment – Phase 1

- Purpose
  - ▶ To 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
  - ▶ 1,660 acre impoundment
- Status
  - ▶ Land acquisition complete
  - ▶ L-40 levee modifications scheduled for completion in 2015





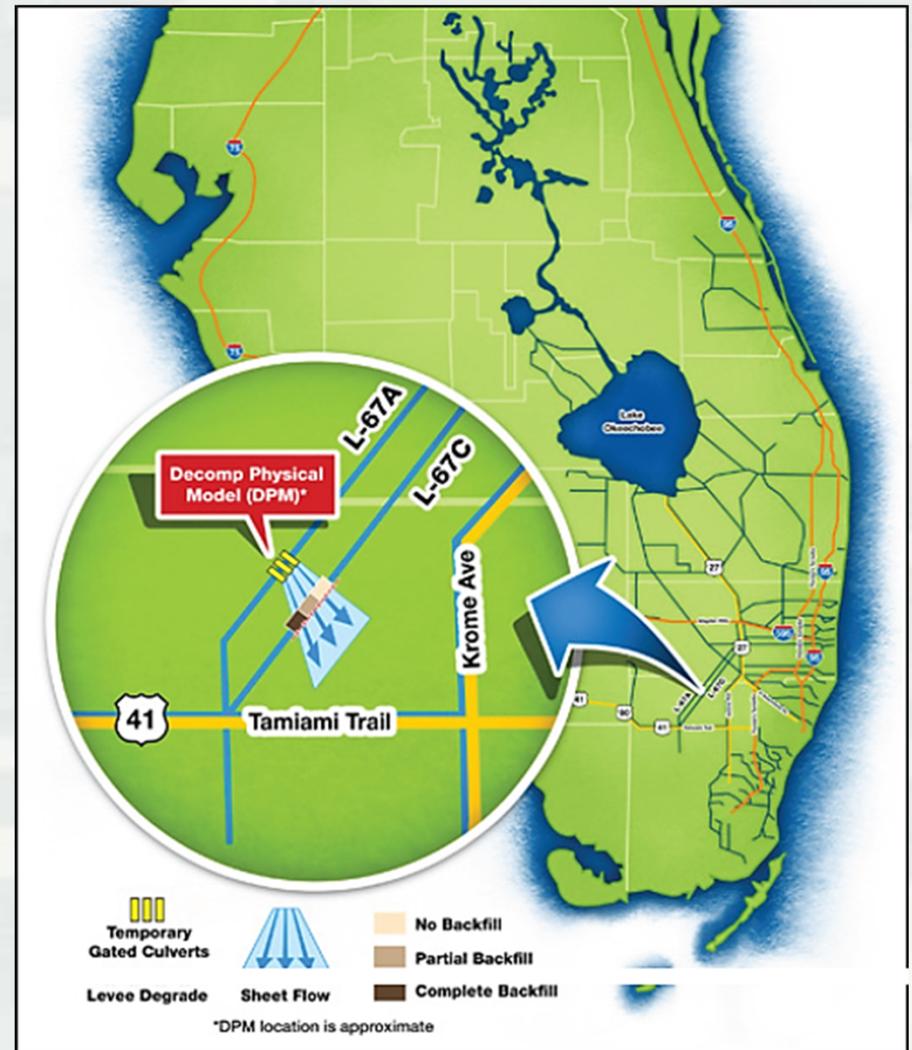
# Decomp Physical Model

- Purpose

- ▶ To determine how best to address scientific and hydrologic uncertainties as well as design and formulate plans for future decompartmentalization of WCA-3, as visualized in the Comprehensive Everglades Restoration Plan (CERP)

- Status

- ▶ Construction completed
- ▶ 2 seasons of operations monitored
- ▶ \$2.9M remaining cost
  - Test extended for one additional year



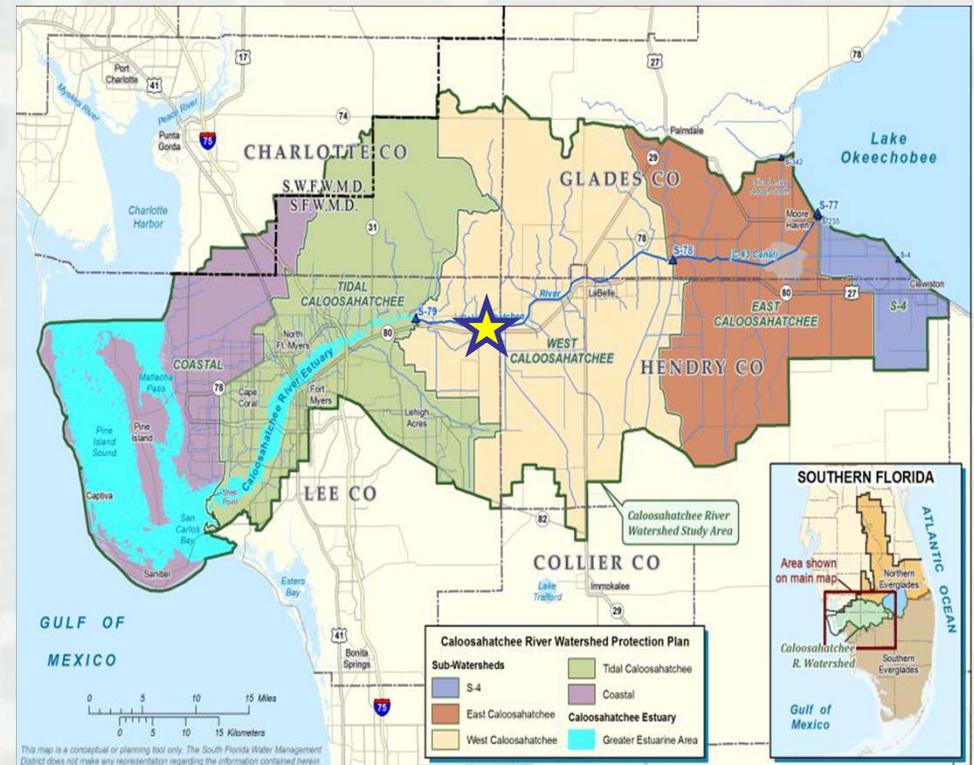
# CERP Generation 2

(authorized in WRRDA 2014)



# C-43 West Basin Storage Reservoir

- Purpose
  - ▶ 170,000 ac-ft storage to improve the salinity in Caloosahatchee estuary and provide essential flows during the dry season
- Status
  - ▶ Reservoir design - complete
  - ▶ SFWMD Interim Storage construction planned
    - 5,000 ac-ft storage & pump station
    - \$18M Budgeted in FY15
  - ▶ Crediting requires execution of PPA
  - ▶ \$510M remaining cost



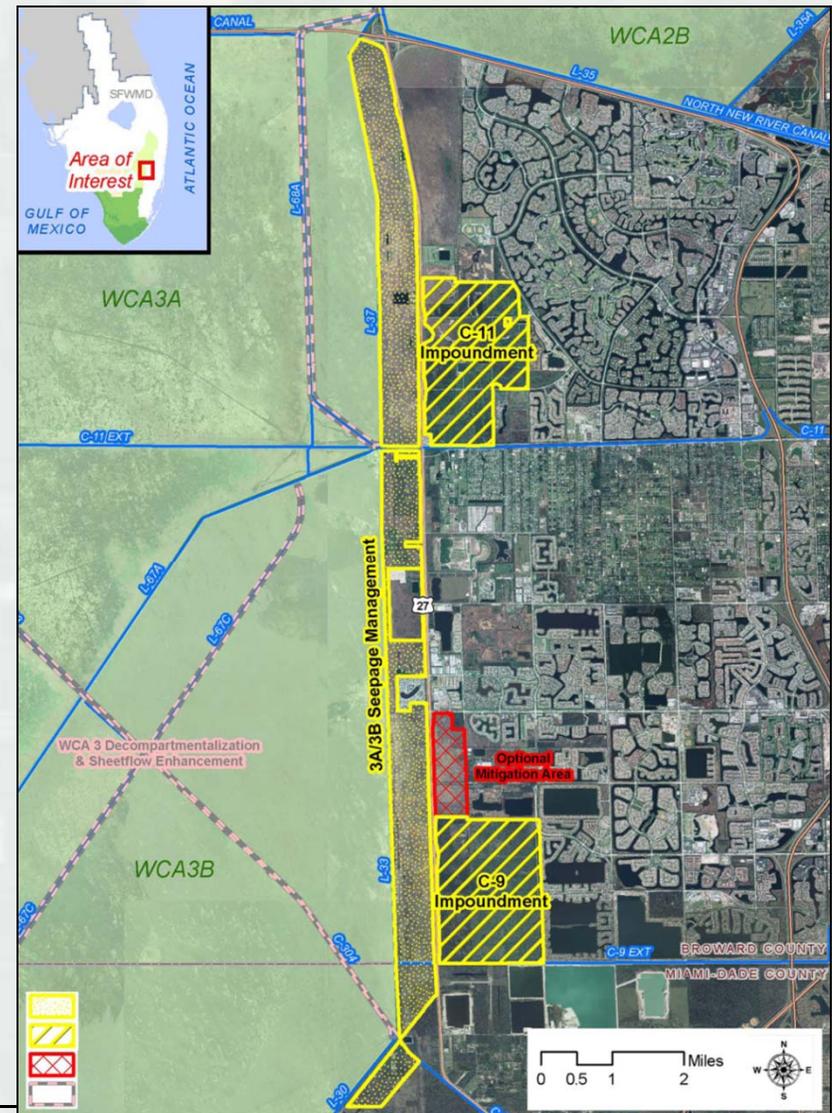
# Broward County WPAs

## ■ Purpose

- ▶ Capture, store and distribute surface water runoff from the western C-11 Basin that is currently discharged into WCA 3A/3B and reduce seepage loss from Water Conservation Area (WCA) 3A/3B
- ▶ 1,070 ac-ft storage in C-11
- ▶ 1,650 ac-ft storage in C-9
- ▶ 4,353 acres wetlands in seepage management area

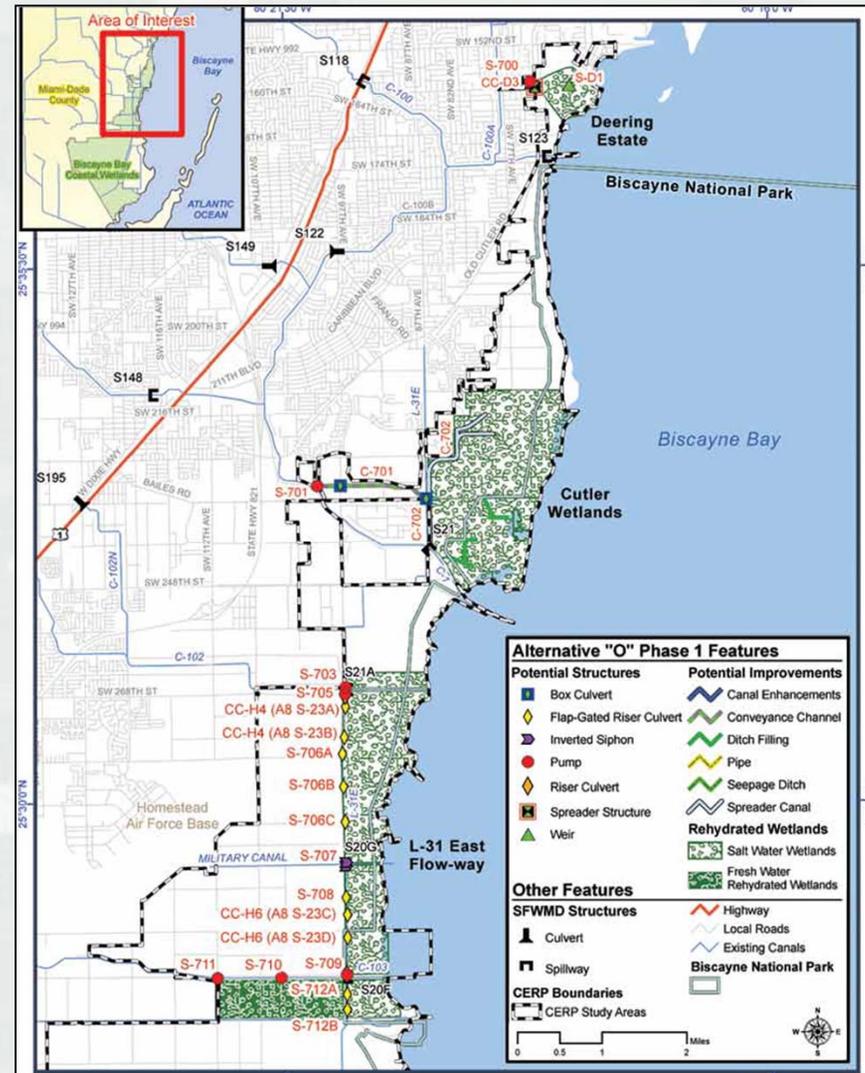
## ■ Status

- ▶ Land acquisition complete
- ▶ \$550M remaining cost
  - Design and Construction
  - Crediting requires execution of PPA



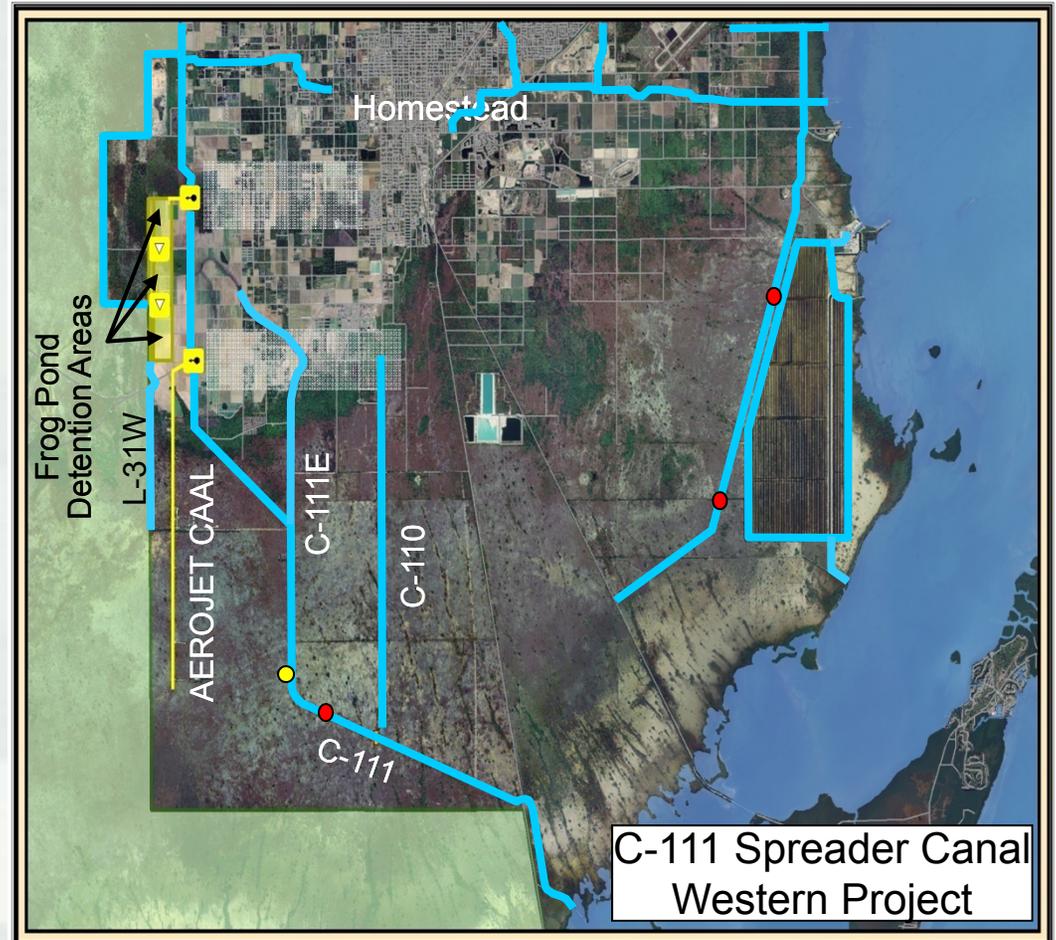
# Biscayne Bay Coastal Wetlands – Phase I

- Purpose
  - ▶ Re-distribution of freshwater flows to restore or enhance freshwater wetlands, tidal wetlands and nearshore bay habitat for fish and shellfish
- Status
  - ▶ Crediting requires execution of PPA
  - ▶ Deering Estate – complete
  - ▶ L-31E Flowway – partially complete
  - ▶ Cutler Wetlands – design complete
  - ▶ \$70M remaining cost
    - L-31E Flowway completion
    - Culter Flowway construction
    - Real estate acquisition



# C-111 West Spreader Canal

- Purpose
  - ▶ Improve quantity, timing and distribution of water delivered to Florida Bay via Taylor Slough, hydroperiods and hydropatterns in the Southern Glades/Model Lands and coastal zone salinities in Florida Bay
  - ▶ 590-acre detention area
  - ▶ 252,000 acres of wetlands and coastal habitat improved
- Status
  - ▶ Construction S-199 & S200 pump stations, detention areas, weirs, C-110 plugs completed
  - ▶ Crediting require execution of PPA

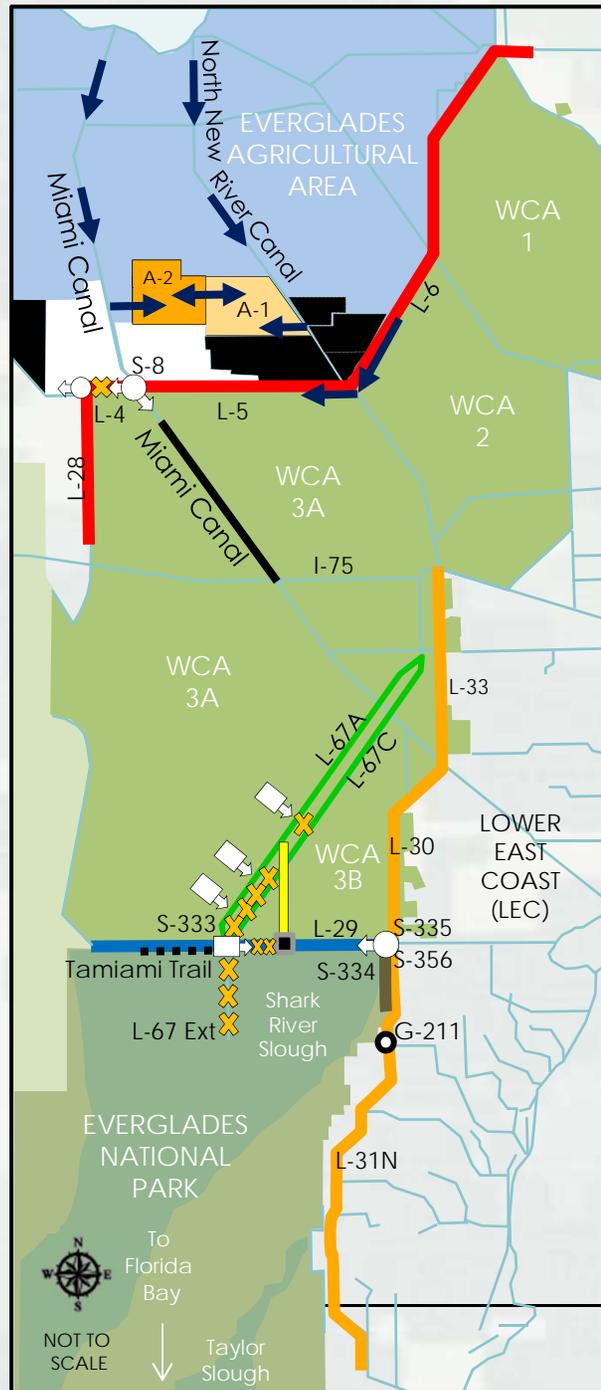


# CERP Projects in Planning Phase

(Project Implementation Reports completed  
or underway, require Congressional  
authorization)



# Central Everglades Planning Project



- Purpose

- ▶ To redirect damaging estuary discharges from Lake Okeechobee south to improve the flow, timing and distribution (QQTd) of water through and conditions within the Everglades

- Status

- ▶ Awaiting authorization

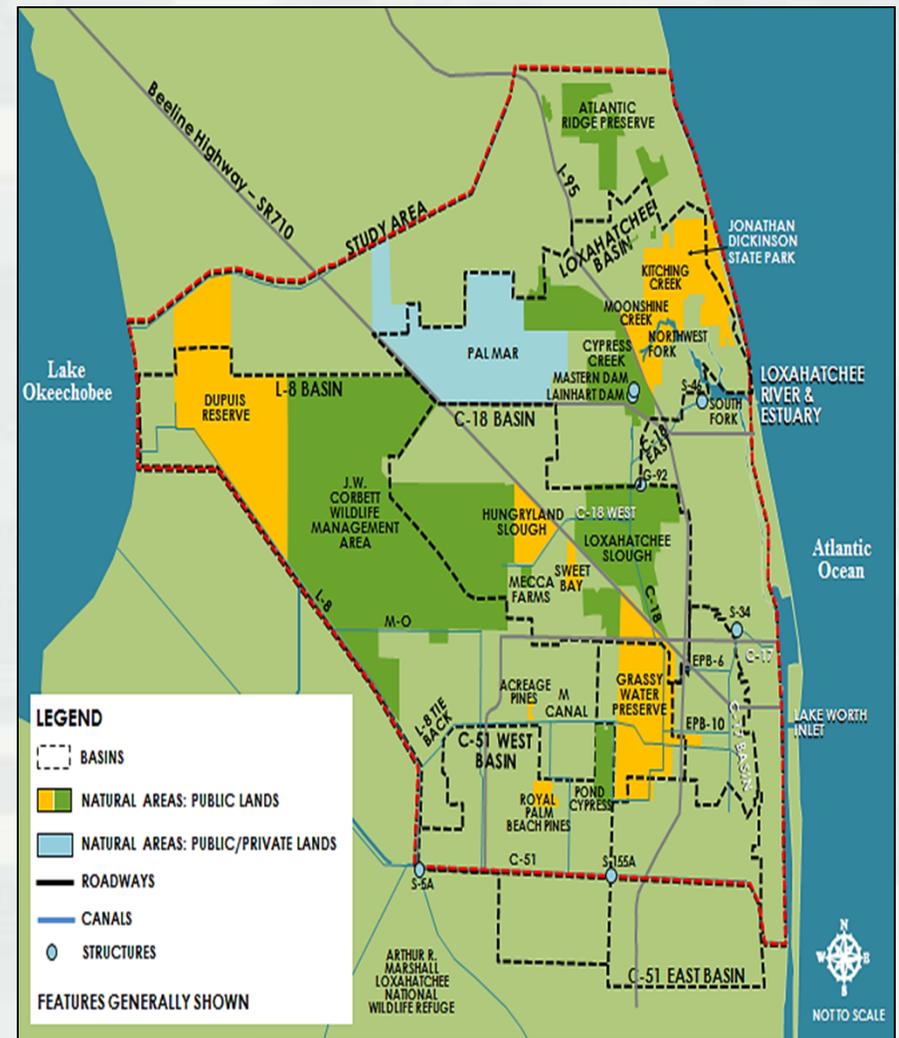
- \$1.95B remaining cost

- ▶ PPA South - \$466M
- ▶ PPA North - \$582M
- ▶ PPA New Water - \$903M



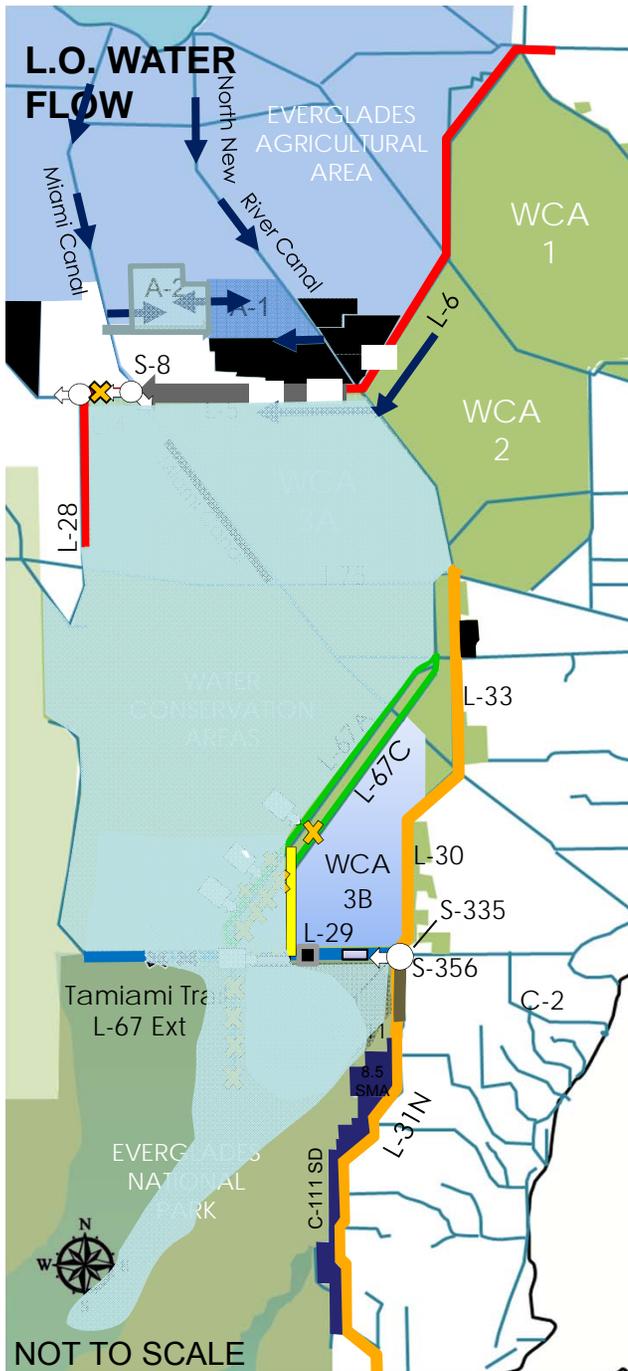
# Loxahatchee River Watershed Restoration

- Purpose
  - ▶ Restore important ecosystem values and functions for the Nationally designated Wild and Scenic Loxahatchee River, Northwest Fork, Estuary and watershed
- Status
  - ▶ \$3M Planning Cost
    - PIR under development



# Project Dependencies





## TENTATIVELY SELECTED PLAN (Ait 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*



NOT TO SCALE

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		Federal Construction Cost Non-Federal Construction Cost Total Construction Cost											
Modified Water Deliveries to Everglades National Park*		.....●											
Herbert Hoover Dike*		—————●											
Seminole Big Cypress*	OPE	——●—————●											
Restoration Strategies*		—————●—————●											
Tamiami Trail Next Steps Phase 1*		- - - - ●—————●											
Kissimmee River Restoration		—————●											
West Palm Beach Canal/STA-1E		—————●											
C-111 South Dade		- - - - ●—————●											
Picayune Strand Restoration	OPE												
Merritt Pump Station		.....●											
Faka Union Pump Station		——●.....●											
Manatee Mitigation and Flood Protection Features		——●——●——●——●											
Miller Pump Station		——●.....●											
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Site 1 Impoundment	M												
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C-44 Reservoir	B	- - - - ●—————●											
C-44 STA & Pump Station	B	——●——●——●											
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Caloosahatchee River (C-43) West Basin Storage -													
Interim Storage	D	——●——●											
C-43 West Basin Storage Reservoir	D	——●——●											
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WCA 3A&3B Levee/S-356	O												
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Central Everglades Planning Project	H												
PPA South	AA, FF,												
PPA North	QQ, II, G												
PPA New Water	V												
Loxahatchee River Watershed Restoration Project	X, Y, K,	——●——●——●											

