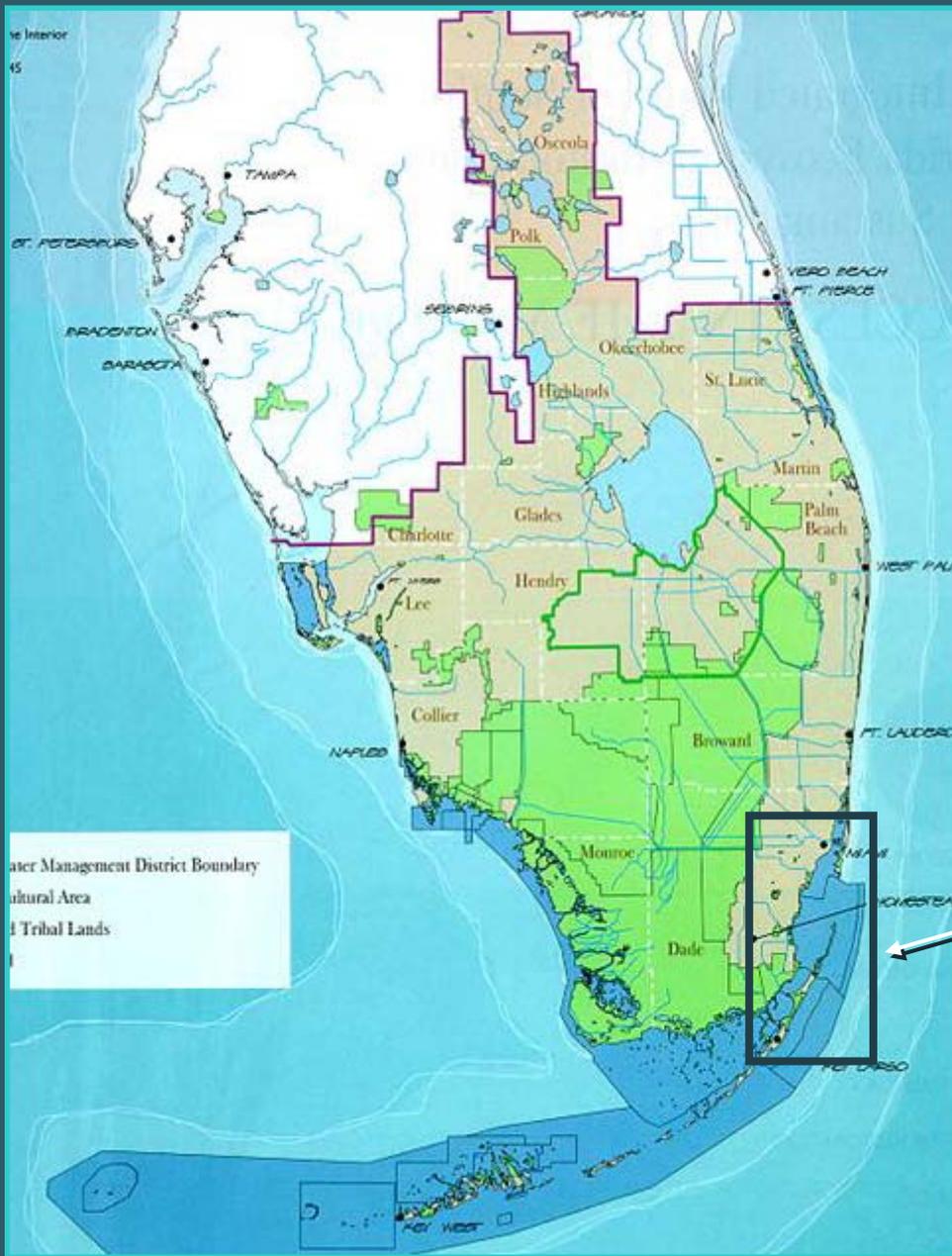


Biscayne Bay Coastal Wetlands Project Update

**TASK Force Meeting
December 5-6, 2007**

**Dewey Worth, Dir. Southern Everglades
Restoration**



Biscayne Bay Coastal Wetlands Component

Biscayne Bay Coastal Wetlands

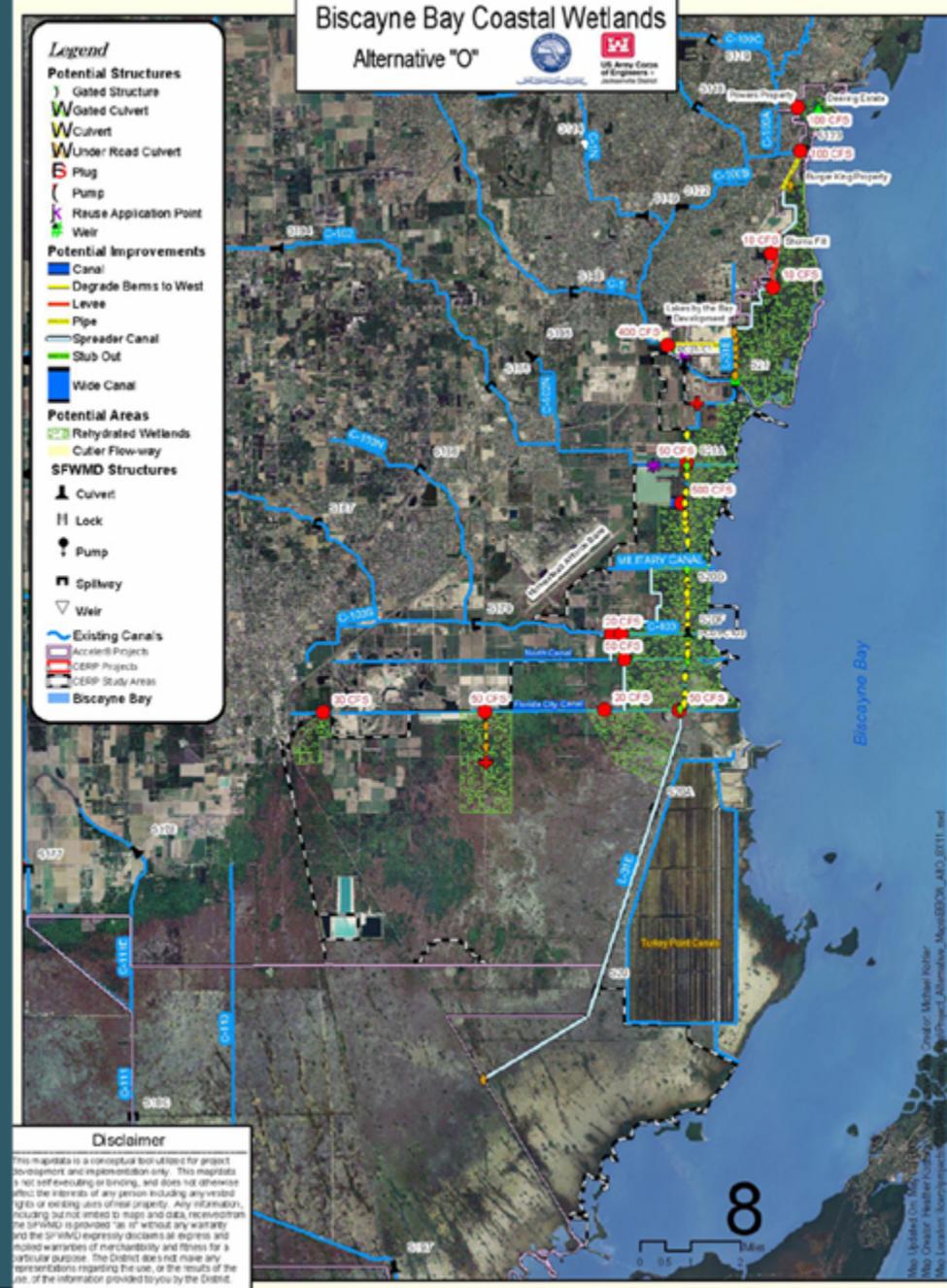
Project Objectives

- Reestablish productive **nursery habitat** along the shoreline
- Redistribute **freshwater flow** to minimize point source discharges to improve freshwater and estuarine habitat
- Enhance and improve **quantity, quality, timing and distribution of freshwater** to the Bay, including BNP
- Preserve and restore **spatial extent** of natural coastal glades habitat
- Reestablish **connectivity** between Biscayne Bay Coastal Wetlands, C-111 Basin, Model Lands and adjacent basins
- Restore nearshore and tidal wetland **salinity regimes**

Alternative O

Major Features

- Canal discharge redistribution
 - 13 Pump Stations
 - 4,700 feet of piping
 - 7 miles of spreader canals
 - 5 miles of levees
- Flow ways
 - 10,134 acres of land
- Project cost **\$498,190,000**



Risk & Uncertainty of Full Implementation

- Modeling data uncertainty - flood control issues, reservation of water
- Availability of future water to support project
- Timing, quantity and quality of water to be provided by future reuse project (Miami-Dade water permit conditions)
- Uncertainty of land availability and cost due to development pressure – unknown time lag for Congressional approval

1 PIR with Phased Implementation

- Entire Alt O components recommended for authorization
- PDT identified the first increment for construction to achieve early benefits
 - Only first increment will be recommended for funding
 - Utilizes available water now – water reservation limited to first increment
 - Provides for adaptive management
- For remaining Alt-O features - the implementation sequence, reservation of water and re-evaluation of benefits will be identified in Detailed Design Reports or General Reevaluation Reports

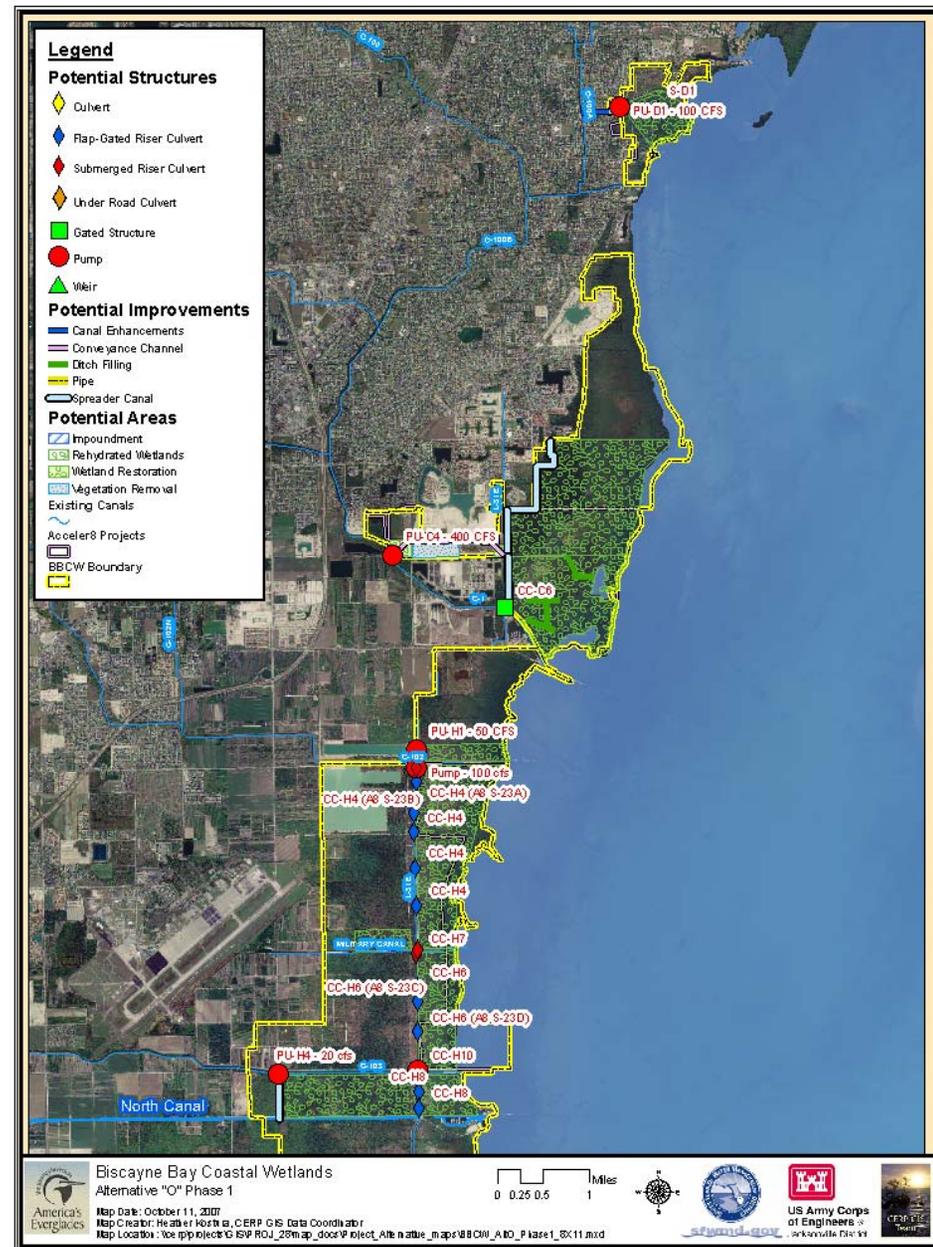
First Phase Implementation

Subset of Alt 0

- Includes all Acceler8
 - Deering Estate all features
 - Cutler Wetlands flow way & pumps (500 cfs)
 - L-31E culverts – 4 new connections

Requires Federal Funding

- 4 new pump stations (190 cfs)
- 1.5 mi new spreader canals
- 530 ac restored freshwater wetlands



Biscayne Bay Coastal Wetlands

First Phase Construction Cost

- The total cost is approximately 44% of the total cost of Alternative O
- Spatial extent - 4,594 acres or 45% of the acres for Alt-O

Item	Total
Construction	\$62,612,000
Real Estate	\$155,854,000
Total Cost	\$218,466,000

PIR Milestones

- Independent Technical Review Aug 07
- Alternative Formulation Briefing Nov 07
- Start Construction on A8 Features Jan 08
- Draft PIR/NEPA Report May 08
- Civil Works Review Board Nov 08
- Final PIR/NEPA Report Dec 08
- Chief's Report Mar 09

A8 Construction

- L-31E Culverts Installed Jan-Jun 2008
- Complete Constuction 2010

Biscayne Bay Coastal Wetlands Project Update

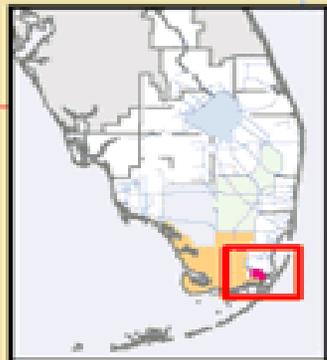
Questions?



C-111 Spreader Canal Project Update



C-111 Spreader Project Lands



Everglades National Park

Florida City

FLA 9336

L 31W

C 11E

C 110

C 111

CARD SOUND ROAD

L 31E

Potentially Hydrated by BBCW
or C-111
Spreader

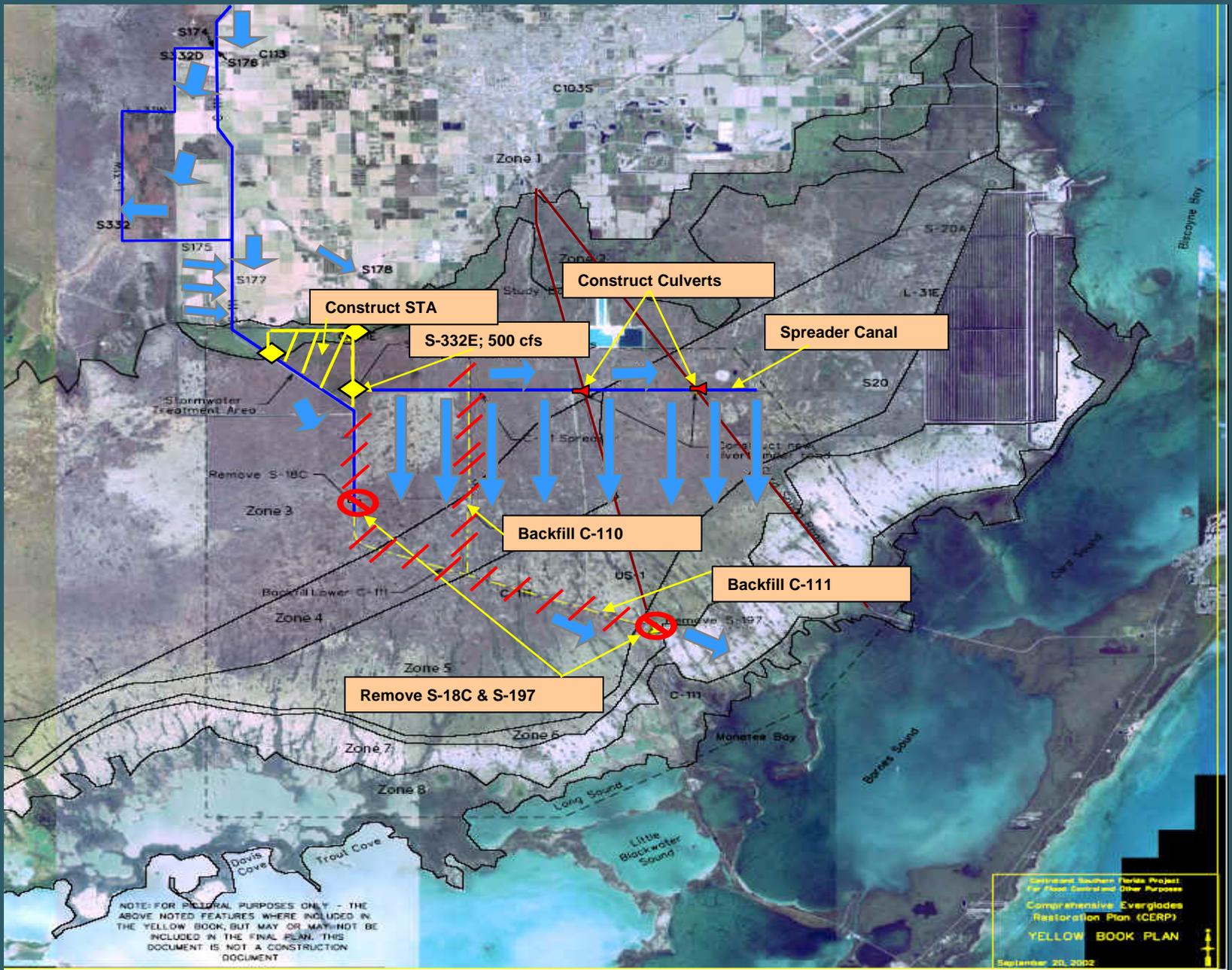
C-111 SPREADER
CANAL

Florida Bay

Est. Project Area = 33,000± Ac.

-  Roads
-  Canals



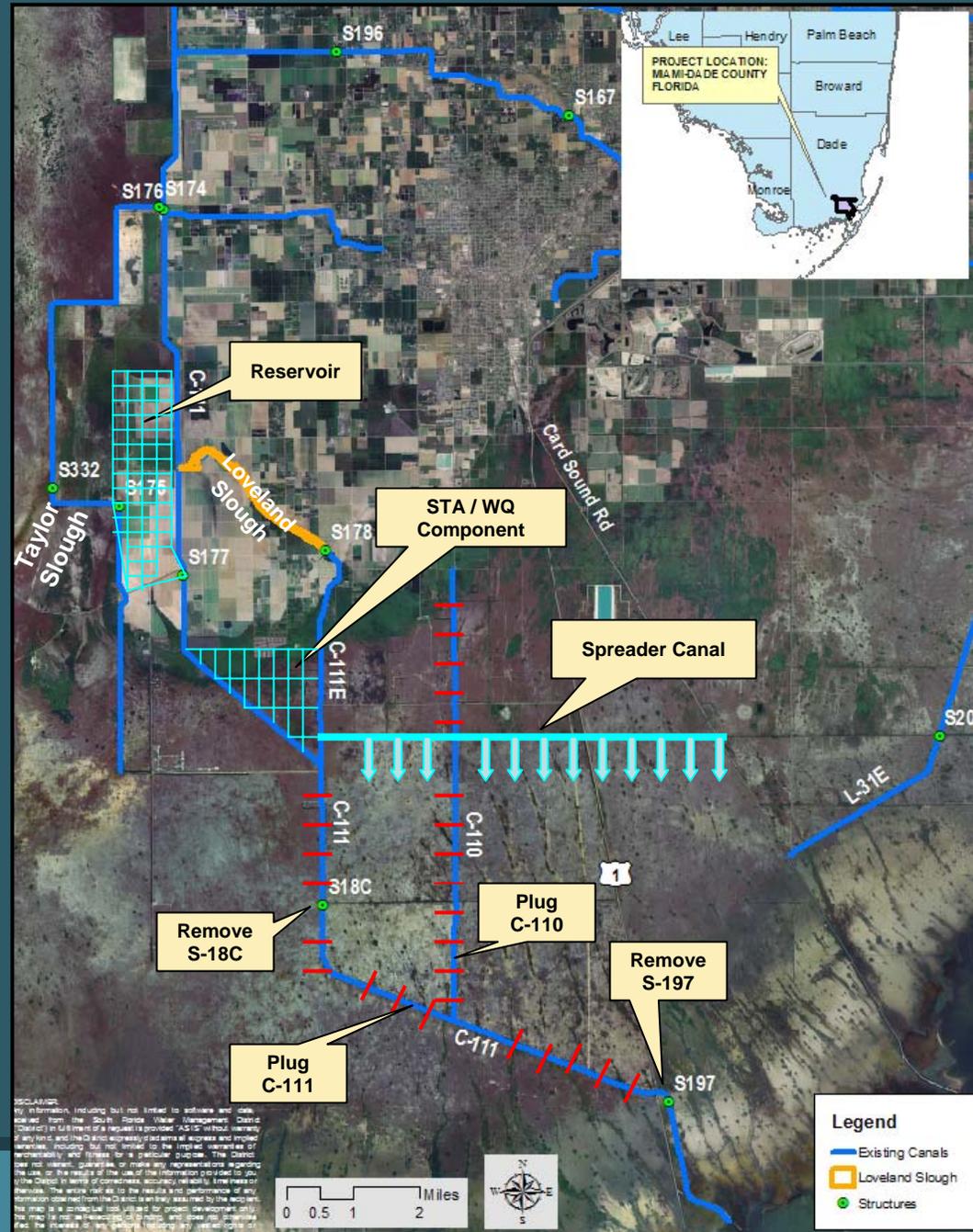


Yellow Book Concept

Total Costs \$141M

C-111 Spreader Project Components Identified by PIR PDT

Total Costs ~ \$295M
(rough estimate)



C-111 Agency and Other Stakeholder Responses

- **Uncertainty on canal alignment**
 - **balance between flood control impacts and maximizing environmental benefits**
- **ENP concerned that Taylor Slough restoration would continue to be adversely impacted by pump station and spreader canal operation**
- **Proposed water quality treatment at Loveland Slough may not be adequate**

IAR and 2 PIR Approach

- A8 Basis of Design report revised to incorporate Frog Pond concept to reduce Taylor Slough seepage losses - complete 30% design
- Team redirected to pursue 2-PIRs on basis of Incremental Adaptive Restoration (IAR)
 - PIR 1 – reduce losses of water from Taylor Slough and improve Florida Bay water deliveries; reduce damaging discharges from S-197
 - PIR 2 – determine restoration strategy for Taylor Slough, Model Lands and Southern Glades based on available water and future need to construct a spreader canal with a bridge over US-1

PIR -1 Team

Final Array of Alternatives to Improve Taylor Slough Hydrology

- No-Action (FWOP)
- Alt 1C – Frog Pond Detention (FPD) only
- Alt 1D – FPD + C-111 plugs
- Alt 2D – FPD + Aerojet Canal injection + C-111 plugs
- Alt 3D – FPD + Aerojet Canal detention + C-111 plugs
- Alt 4D – Increase S-332D pumping
- Alt 6D – Physical Seepage Barrier

Cost Estimates PIR-1

Alt	Construction	Real Estate	Total Cost	HU
1C	\$41,600,000	\$12,500,000	\$54,100,000	2,401
				15,823
1D	\$50,100,000	\$36,400,000	\$86,500,000	
2D	\$77,500,000	\$41,400,000	\$118,900,000	17,312
3D	\$85,900,000	\$42,600,000	\$128,500,000	17,526
4D	\$24,400,000	\$29,000,000	\$53,400,000	16,309
6D	\$402,100,000	\$35,400,000	\$437,500,000	21,895

Restudy Estimate in FY99 Dollars - \$94M

Restudy Cost (2006) plus 20% then escalated - \$134M

PIR-1 Recommended Plan – Alt 2D



- 530 Acre Detention Area
- Max Stage of 3 feet
- New Ops Triggers at S-177 and S-18C
- Pump and Canal to move water from C-111 to Aerojet Canal

Plug at S-20A (approximate location shown, but not within aerial extent)

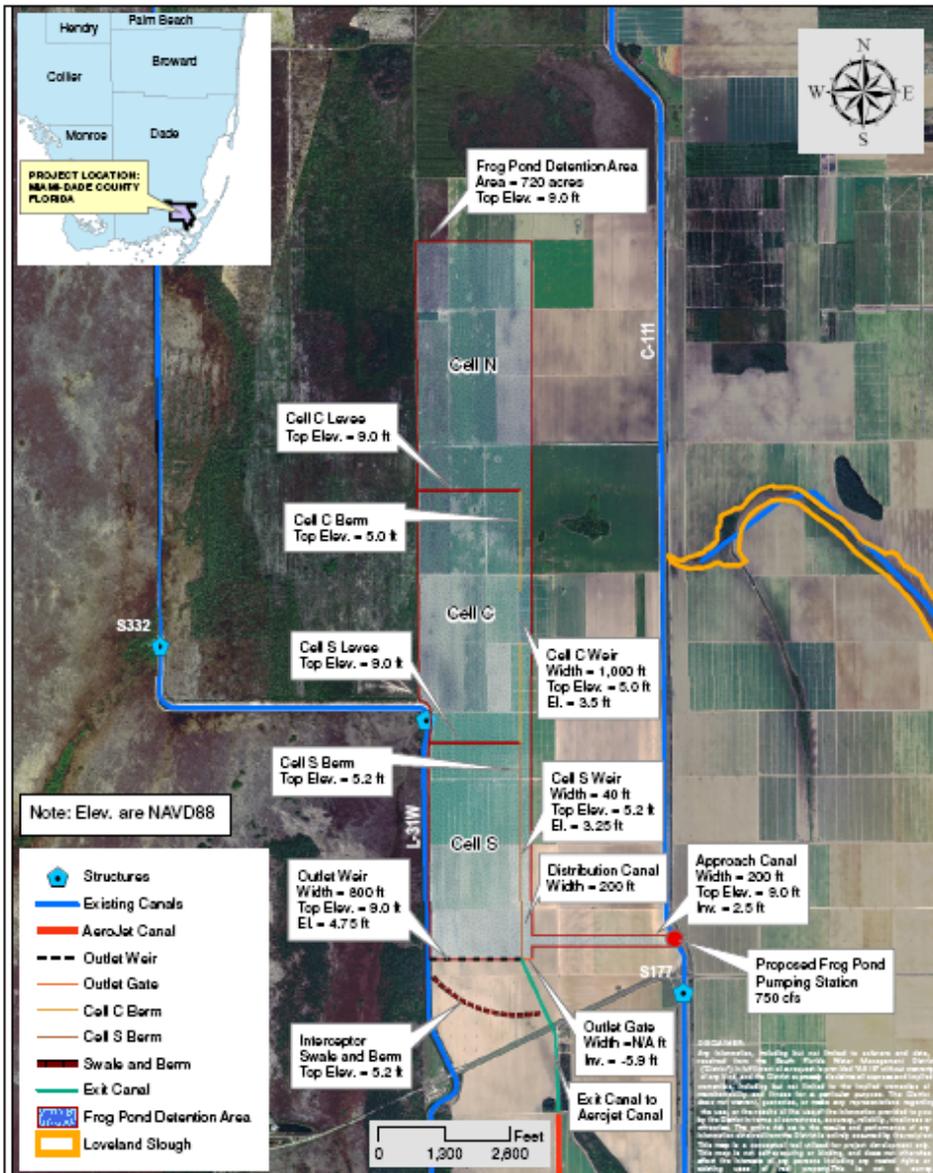
Two Plugs; 13 culverts; 3,000 cfs capacity (similar to S-197)

S-20 triggers raised

C-111 Spreader Canal Project Implementation Report #1

- **Frog Pond Detention Area - A8 Component**
- Pump Stations – Under discussion
- Pilot Spreader Canal
- Pilot Water Quality Feature
- Water Control Structure Modifications
- New Water Control Structures in C-111

Frog Pond Detention Area Components – 30% Design



- Pump Station
- Inlet/Distribution Canals
- Detention Cells
- Outlet Structures
- Exit Canal

Detention Area Objectives

- Diversion of high flows from C-111 Canal to:
 - Provide hydration of wetlands south and west of the Frog Pond area.
 - Maintain hydration in Taylor Slough.
 - Increase freshwater discharges to Florida Bay.
 - Reduce fresh water discharges through S197 to the maximum extent practicable.

Pump Station

- Design Capacity: 750 cfs
- Pumps:
 - 3 Diesel (200 cfs ea)
 - 2 Electric (75 cfs ea)
- Inlet: Shoebottom (Standard)
- Outlet: Overflow Weir
- Operating Floor Elev: +20 ft NAVD88
- Max Inlet Inflow Elev: +6.0 ft NAVD88

Provisional – Subject to Change

IAR Uncertainties to be Addressed for Planning of PIR-2

- What is the maximum flow that can be discharged from a spreader canal without causing significant backwater flooding impacts to privately owned lands?
- What is the availability of water to restore Taylor Slough and Model Lands/Eastern Panhandle wetlands?
- What can be done to sufficiently treat S-178 discharges (Loveland Slough) to the degree necessary to ensure that the water discharged from the future spreader canal, is “marsh ready”?

Perimeter Levee Design Criteria

- Low Hazard Classification
- Max. Design Water Depth: 2.5 ft
- Top Width: 14 ft
- Top Elevation: +9.0 ft NAVD88
- Max. Pool Elevation: +5.2 ft NAVD88
- Side Slopes: 4H:1V

Pilot Project Features Included in PIR-1

- **50/100 + cfs pump station & spreader canal**
 - Pilot test to evaluate scientific, engineering, & operational uncertainties of the larger C-111SC project
- **Water quality pilot components**
 - Source Control Implementation and monitoring
 - Infiltration basin – test various treatment technologies

PIR Milestones

- Independent Technical Review Dec 07
- Alternative Formulation Briefing Mar 08
- DPIR/NEPA Report in Federal Register Aug 08
- Submit Final PIR/NEPA to MSC Nov 08
- Chief's Report May 09

Acceler8

- Final Design Nov 2009
- Construction Mar 2013

C-111 Spreader Canal Project Update

Questions?

