

# COMPREHENSIVE EVERGLADES RESTORATION PLAN CENTRAL EVERGLADES PLANNING PROJECT (CEPP)

**Civil Works Review Board (CWRB)  
Palm Beach, Broward, Miami-Dade Counties, Florida**

**Integrated Project Implementation Report  
and Environmental Impact Statement**

**Presented by Colonel Alan Dodd, Jacksonville District**

**22 April 2014**



# THE EVERGLADES

NATIONAL/INTERNATIONAL  
SIGNIFICANCE

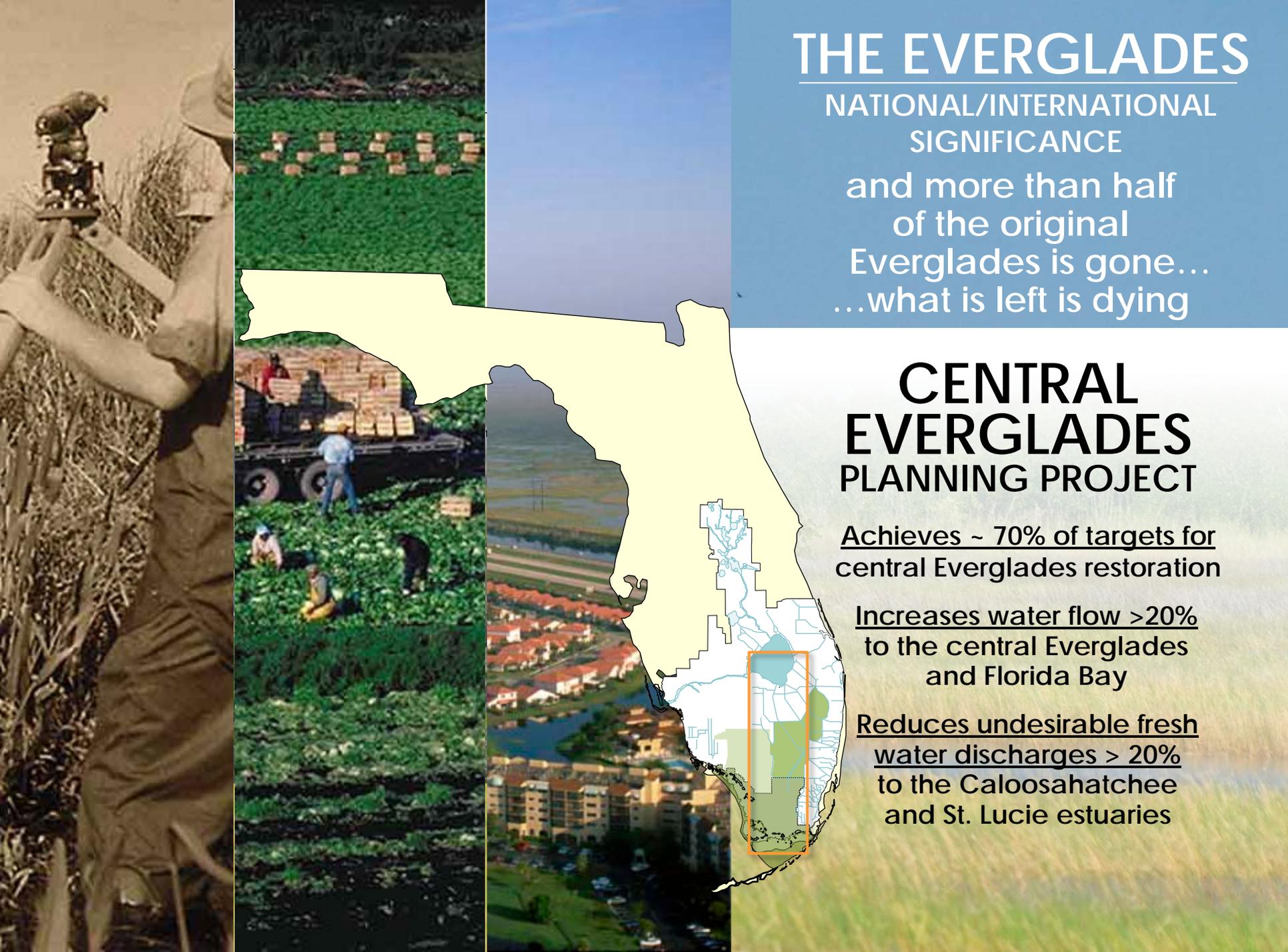
and more than half  
of the original  
Everglades is gone...  
...what is left is dying

## CENTRAL EVERGLADES PLANNING PROJECT

Achieves ~ 70% of targets for  
central Everglades restoration

Increases water flow >20%  
to the central Everglades  
and Florida Bay

Reduces undesirable fresh  
water discharges > 20%  
to the Caloosahatchee  
and St. Lucie estuaries



# CENTRAL EVERGLADES THE RISK OF NOT ACTING



**DIMINISHED HABITAT/ LANDSCAPE PATTERNS**  
that Support Biological Diversity



**INCREASED LOSS OF SOIL**  
by Oxidation & Fires



**INCREASED THREAT TO 68 LISTED SPECIES**



**DIMINISHED HEALTH OF COASTAL ESTUARIES**  
& Economies Dependent on Them



**DIMINISHED OPPORTUNITIES TO ADDRESS WATER SUPPLY NEEDS**  
of Environmental, Agricultural & Urban Users



**DECREASED OPPORTUNITY FOR CLIMATE ADAPTATION**  
to Reduce Salt Water Intrusion/ Sea-Level Rise



**BUILDING STRONG®**

# CENTRAL EVERGLADES LEGISLATIVE AUTHORITY AND THE NATIONAL INVESTMENT IN SOUTH FLORIDA

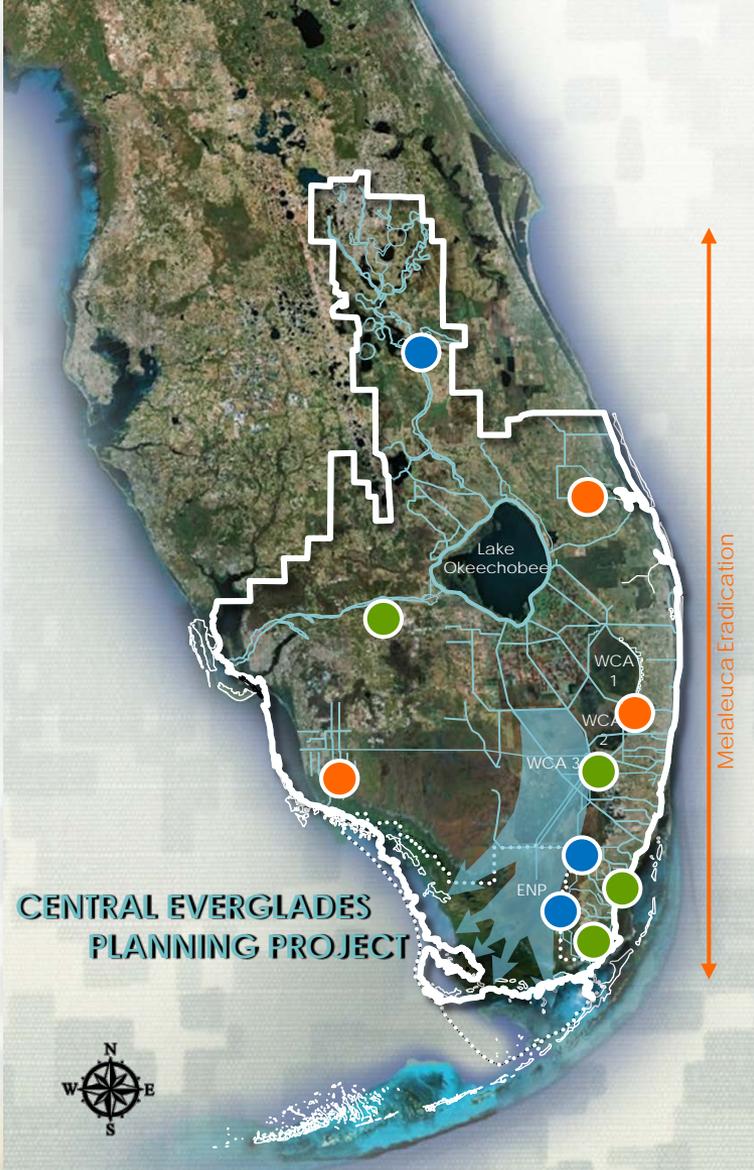
## AUTHORIZATION:

### WATER RESOURCES DEVELOPMENT ACT 2000

"...the Plan [CERP] is approved as a framework for modifications and operational changes to the Central and Southern Florida Project that are needed to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection."

## NON-FEDERAL SPONSOR:

South Florida Water Management District



CENTRAL EVERGLADES  
PLANNING PROJECT

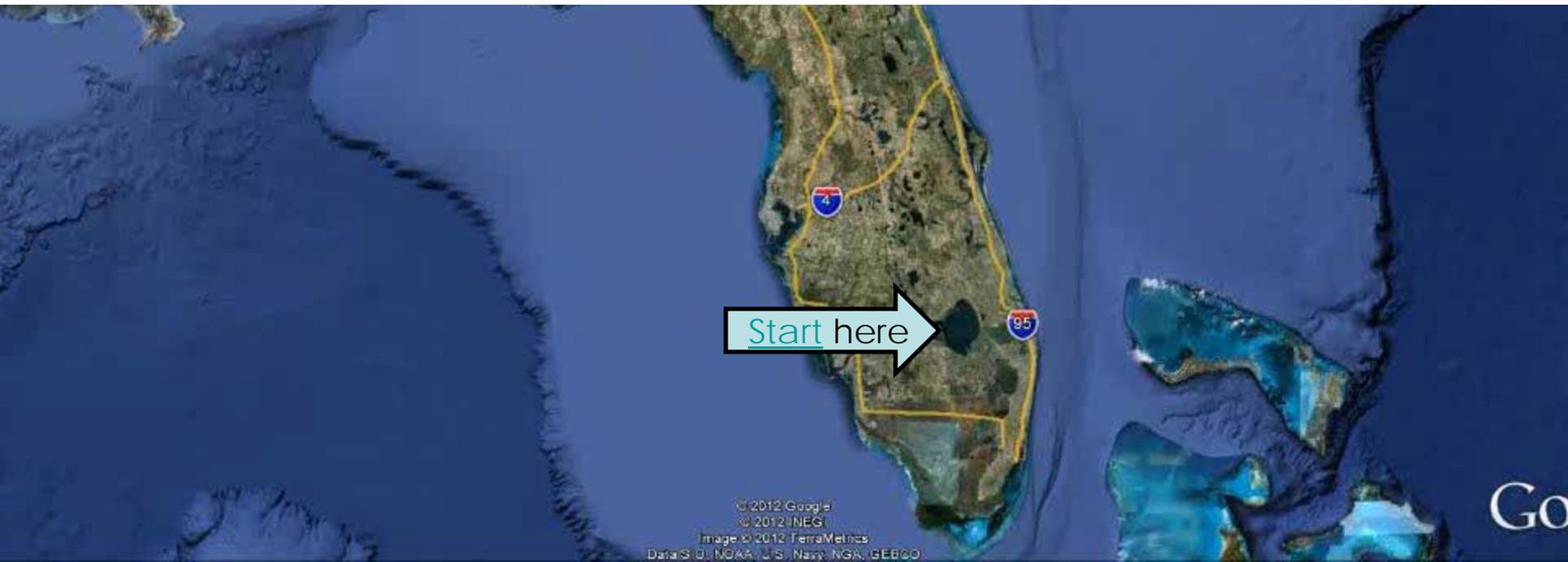
|         |  |
|---------|--|
| 1930    | HERBERT HOOVER DIKE AUTHORIZED                           |
| 1948    | C&SF PROJECT AUTHORIZED                                  |
| 1989    | MODIFIED WATER DELIVERIES TO<br>EVERGLADES NATIONAL PARK |
| 1992    | KISSIMMEE RIVER RESTORATION<br>C&SF RESTUDY              |
| 1994    | C-111 SOUTH DADE   |
| 2000    | CERP   |
| 2007    | 1 <sup>ST</sup> GENERATION CERP AUTHORIZED               |
| 2010/12 | 2 <sup>ND</sup> GENERATION CERP AWAITING AUTHORIZATION   |



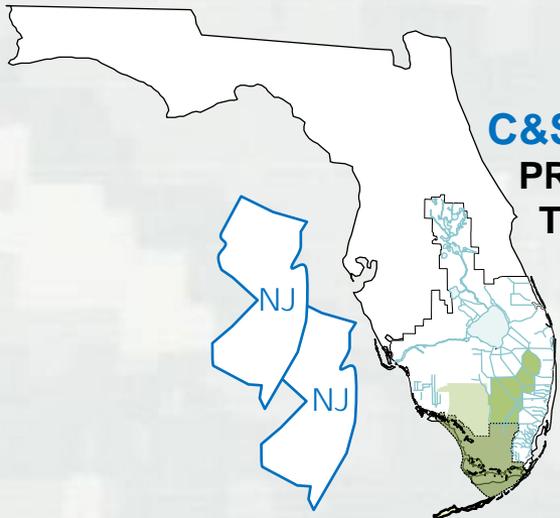
BUILDING STRONG®



# CENTRAL EVERGLADES FLYOVER

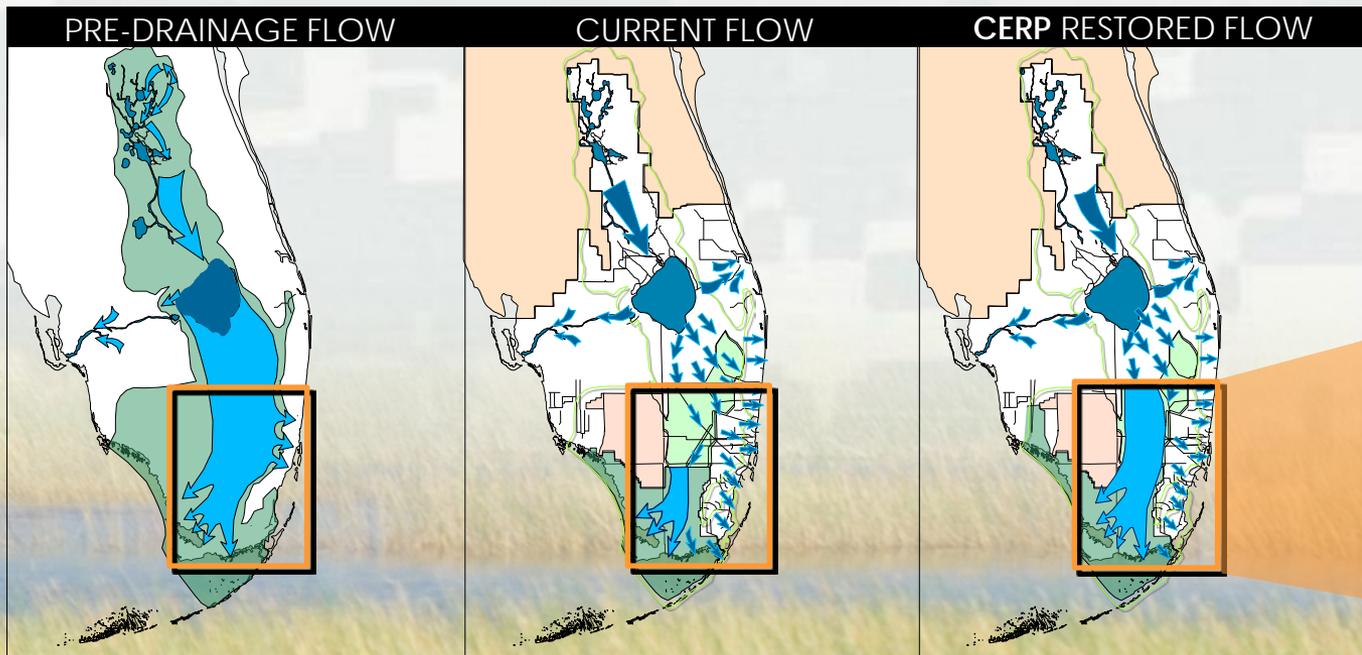


# COMPARTMENTALIZED SYSTEM

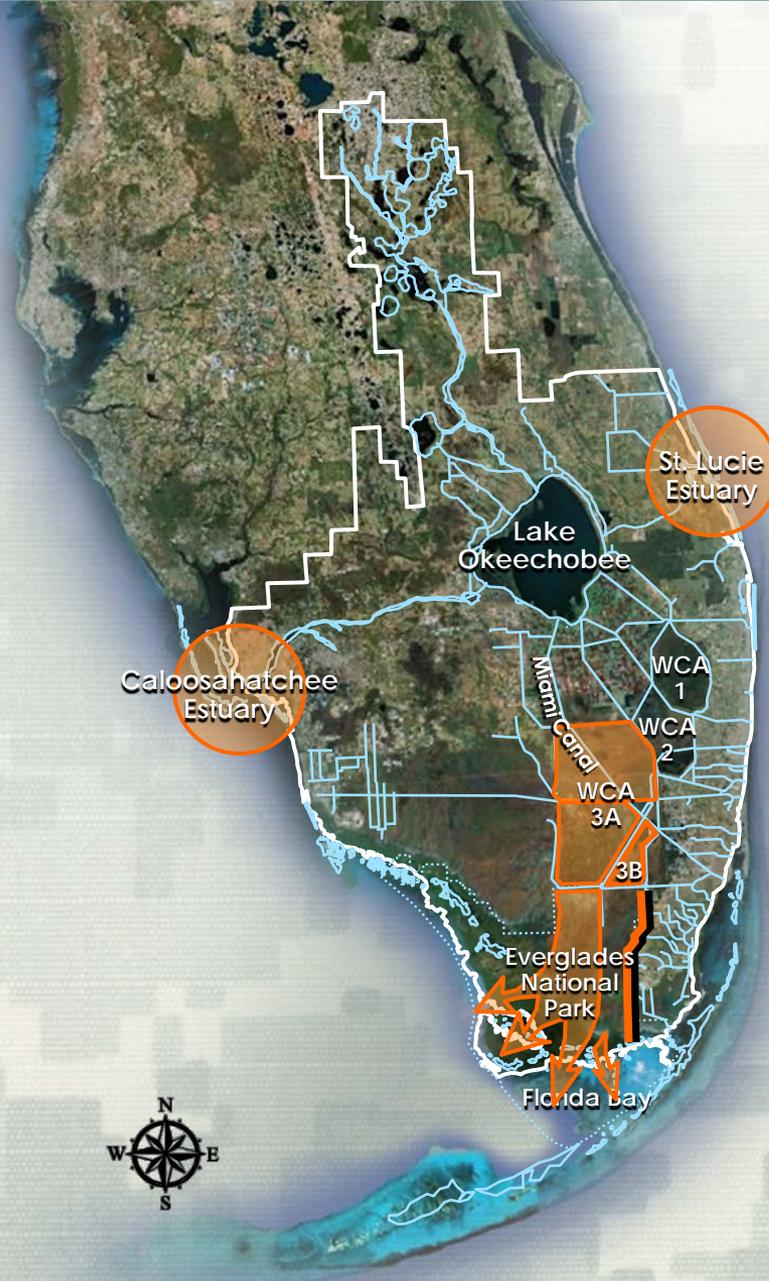


**C&SF: MULTI-PURPOSE  
PROJECT ROUGHLY  
TWICE THE SIZE OF  
NEW JERSEY**

**UNINTENDED  
NEGATIVE  
CONSEQUENCES TO  
THE ENVIRONMENT**



**OPPORTUNITY:  
TO CONSTRUCT THE  
NEXT INCREMENT OF  
THE COMPREHENSIVE  
EVERGLADES  
RESTORATION PLAN  
(CERP)**



**DECLINING ESTUARY HEALTH**  
TOO MUCH OR TOO LITTLE WATER



**SOIL OXIDATION, MUCK FIRES, LOSS OF SAWGRASS RIDGES, TREE ISLANDS & SLOUGHS**  
INTERIOR CANALS OVERDRAIN AREAS



**LOSS OF TREE ISLANDS & SAWGRASS RIDGES**  
INTERIOR LEVEES HOLD WATER TOO DEEP FOR TOO LONG IN SOUTHERN WCA 3A

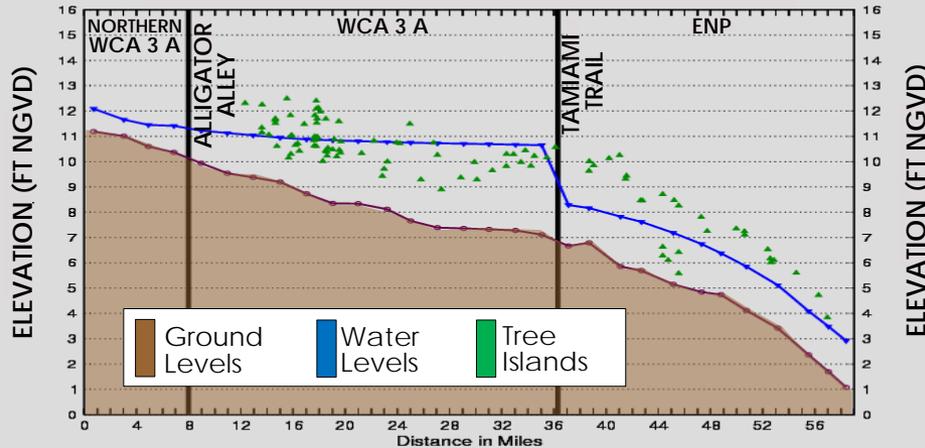


**LOSS OF SOILS/SUBSIDENCE**  
DISCONNECTED FROM WATER FLOW



**DECLINING EVERGLADES AND FLORIDA BAY HABITAT**  
TOO LITTLE WATER SENT TO EVERGLADES NATIONAL PARK AND FLORIDA BAY; TOO MUCH WATER SEEPS OUT OF EVERGLADES

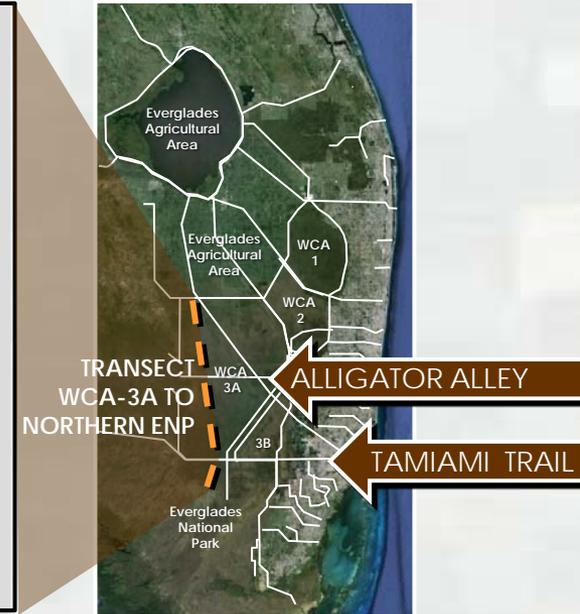
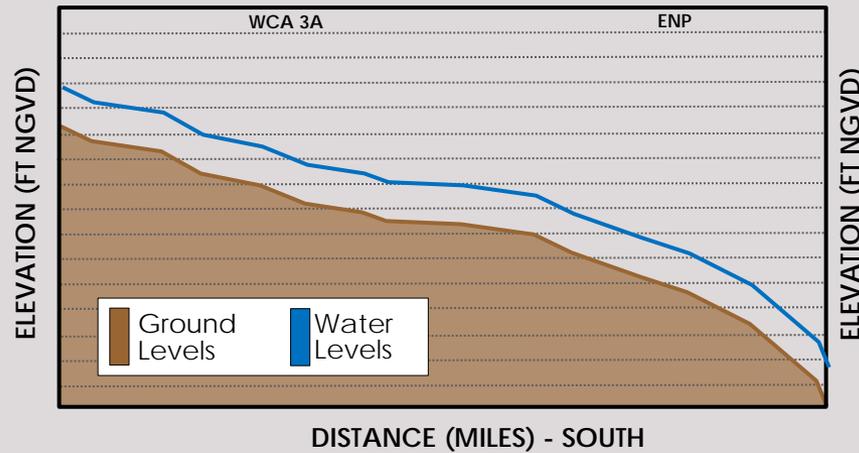
### FUTURE WITHOUT-PROJECT



CROSS-SECTION (WCA-3A TO NORTHERN ENP)

WATER LEVELS SHOULD BE PARALLEL TO GROUND LEVELS TO MAINTAIN RIDGE AND SLOUGH

### PRE-DRAINAGE SYSTEM



**INCREASED  
DEGRADATION  
TO LANDSCAPE  
PATTERNS AND  
HABITAT IN THE  
INTERIOR OF THE  
SYSTEM**

## OBJECTIVES

- **Project Objective Summary:** Restore seasonal water depths, durations, distribution and timing of water flow to support a natural mosaic of wetland and upland habitat in the central Everglades, which promotes natural plant and animal diversity

### RELATIONSHIP OF LANDSCAPE TO HABITAT, FORAGING AND LIFECYCLES OF SPECIES



PERIPHYTON GROWTH AND TURTLES

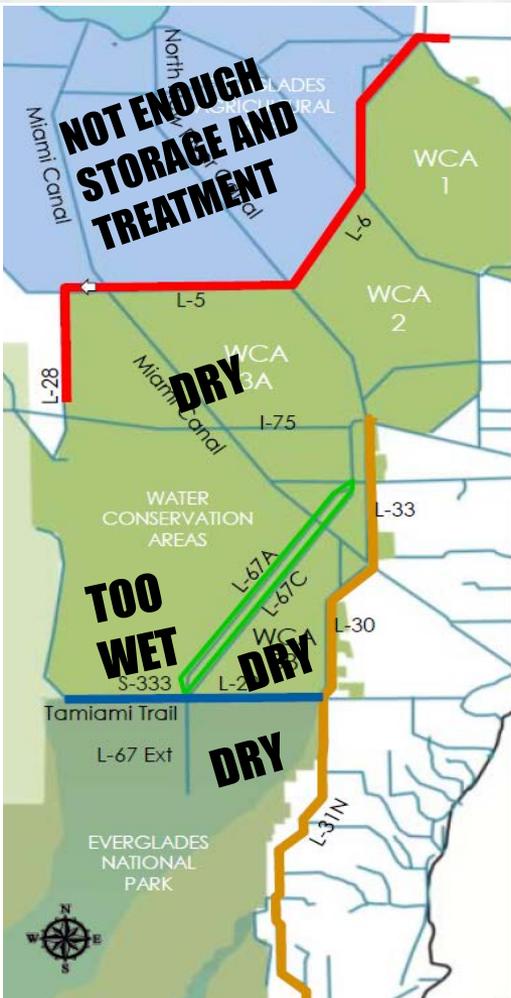
SAWGRASS, APPLE SNAILS, AND SNAIL KITES

ROOKERIES, WOODSTORKS, AND SMALL FISH

## CONSTRAINTS

- Maintain flood protection and water supply
- Meet applicable water quality standards
- Maintain Lake Okeechobee ecology and freshwater flows to Biscayne Bay





## MEASURES CONSIDERED

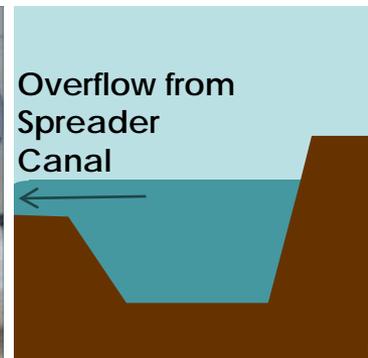
### STORAGE/TREATMENT Quantity and Quality

- Stormwater Treatment Areas (STAs)
- Flowage Equalization Basins (FEBs)
- Deep Storage (various depths)



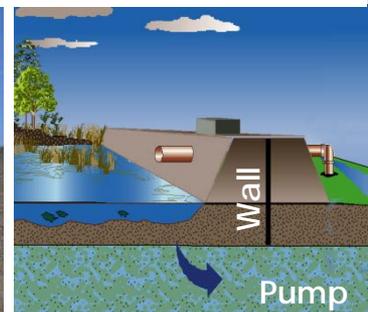
### CONVEYANCE/DISTRIBUTION Distribution, Directionality, Timing Controlled Versus Not Controlled

- Spreader Canals
- Pumps
- Canal Filling
- Levee Removal and Gaps
- Culverts/Gated Structures



### SEEPAGE MANAGEMENT Keeping Water in the Natural System

- Walls
- Pumps
- Step Down Levees



Problems  
Opportunities

Existing  
Conditions

Future  
Without-Project

Objectives  
Constraints

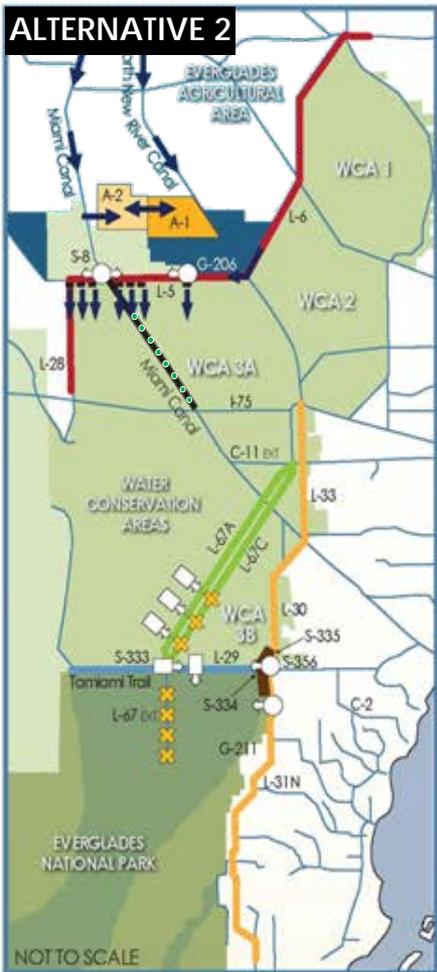
Plan  
Formulation

Recommended  
Plan

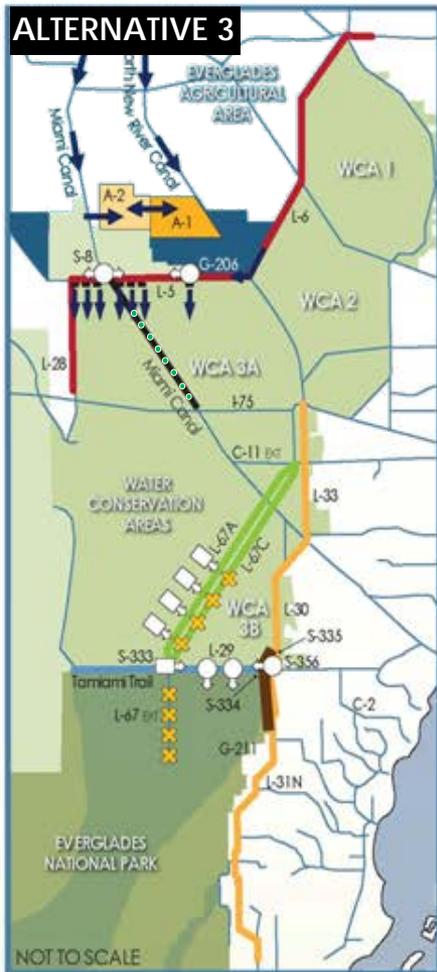
**ALTERNATIVE 1**



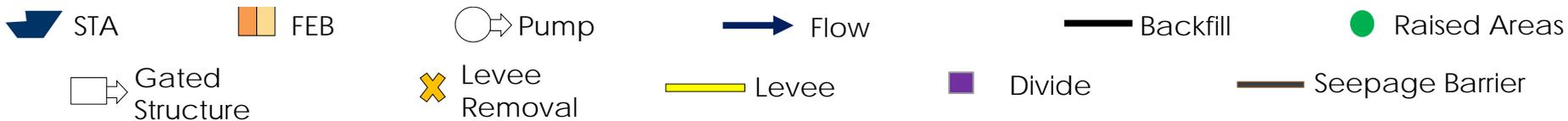
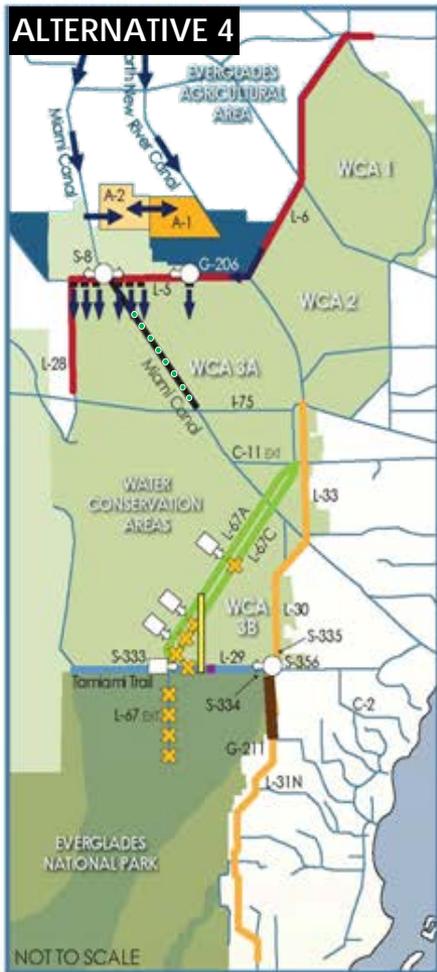
**ALTERNATIVE 2**



**ALTERNATIVE 3**

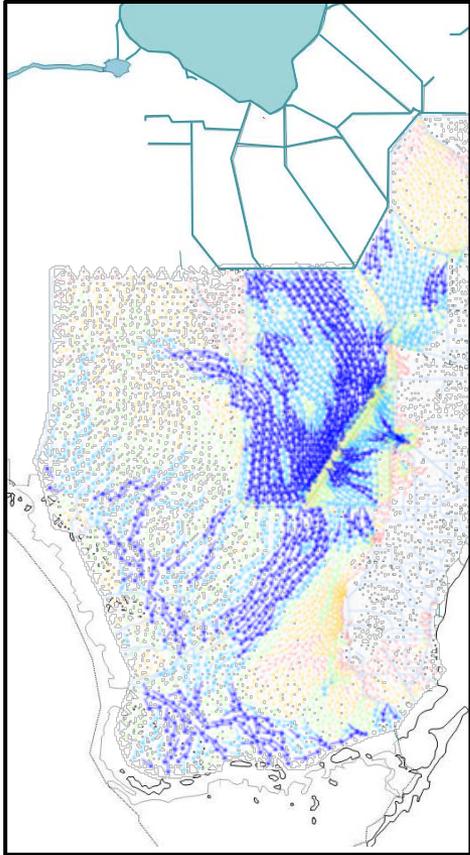


**ALTERNATIVE 4**



# EVALUATION (Example Using Central Everglades Zones)

## 1 RUN HYDROLOGIC MODELS OF ALTERNATIVES

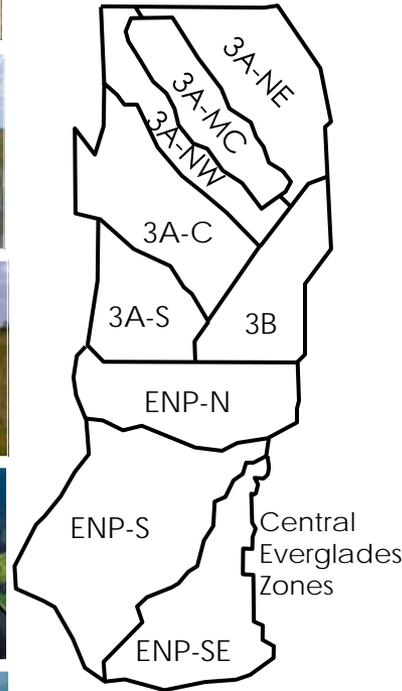


**OUTPUT:**

WATER DEPTHS, DURATIONS, DISTRIBUTION, TIMING

## 2 CALCULATE % OF TARGETS ACHIEVED (PERFORMANCE MEASURES) PER ZONE

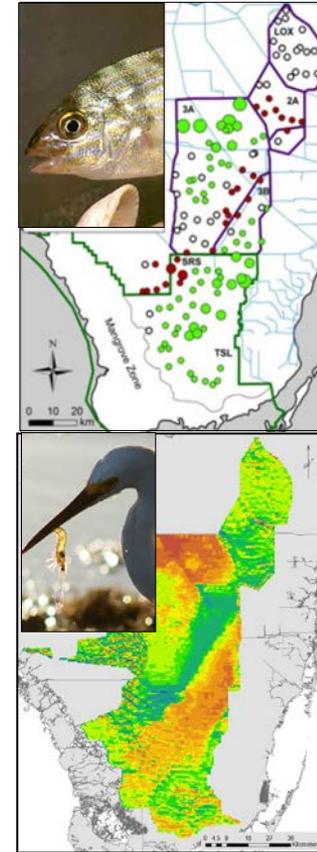
PERFORMANCE MEASURES



**OUTPUT:**

HABITAT UNITS

## 3 ASSESS ADDITIONAL ECOLOGICAL EFFECTS



EXAMPLE:  
SMALL FISH

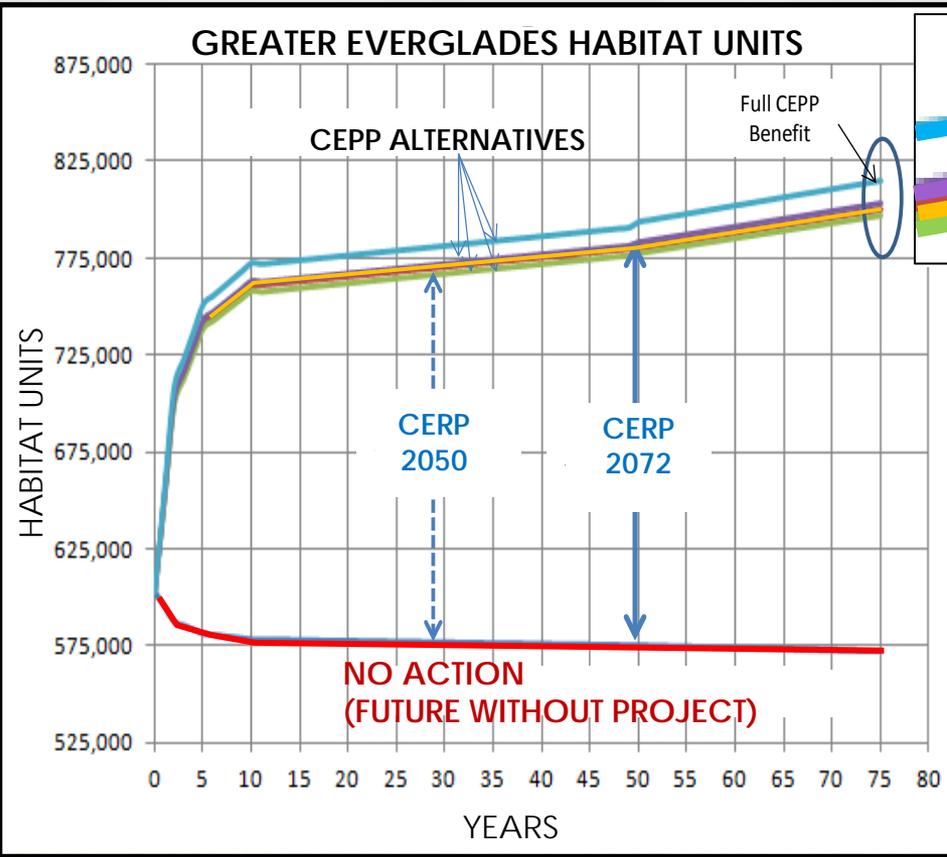


WADING BIRD

**OUTPUT:**

HABITAT SUITABILITY

# EVALUATION: HABITAT UNITS



## HABITAT UNIT (HU):

- USACE metric used for environmental benefits
- Habitat quality over a geographic area; scores assigned: 0 = worst, 1 = best

Quantity = Acres

Quantity x Quality = HU

## HYDROLOGIC PERFORMANCE MEASURES



## FORMULA FOR HABITAT UNIT LIFT:

Alternative Habitat Units - No Action Habitat Units = Habitat Unit Lift

|                        |                     |                        |                        |                  |                  |
|------------------------|---------------------|------------------------|------------------------|------------------|------------------|
| Problems Opportunities | Existing Conditions | Future Without-Project | Objectives Constraints | Plan Formulation | Recommended Plan |
|------------------------|---------------------|------------------------|------------------------|------------------|------------------|

# COMPARISON

## PHASE 1: DETERMINING EFFICIENCIES

Value planning determined efficiencies could be achieved with **infrastructure modifications** for alternatives 2 through 4 (achieved same benefits at less cost)

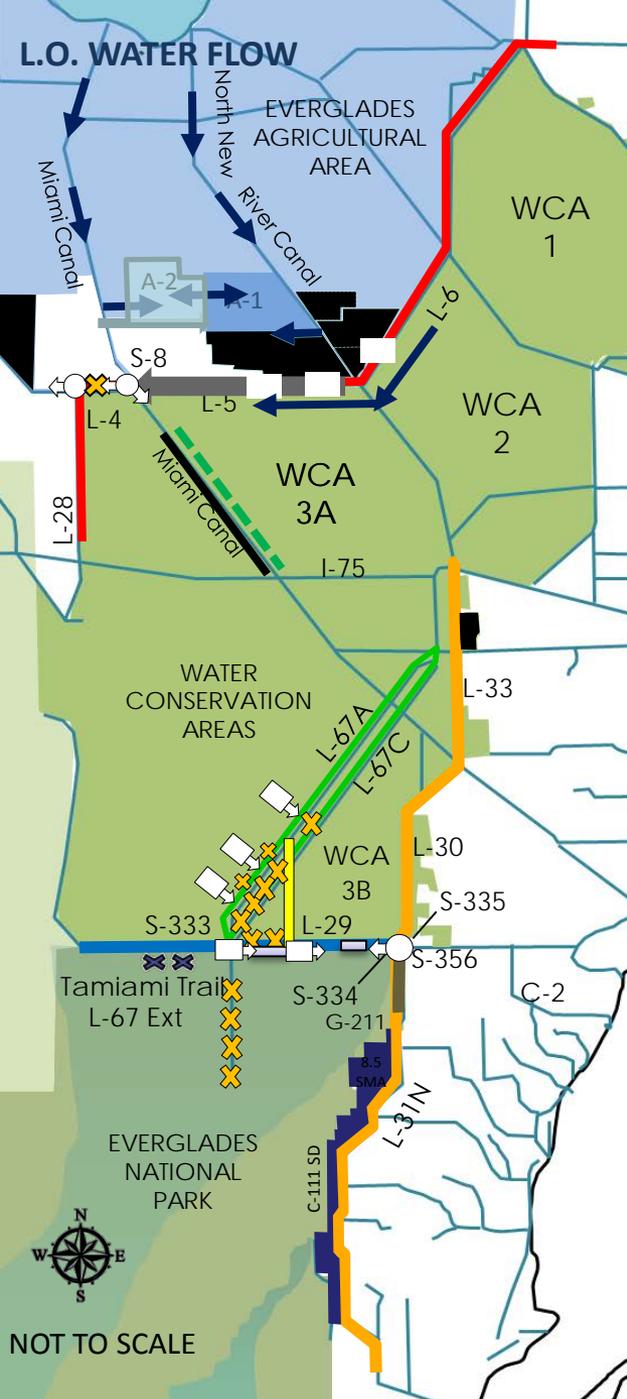
|  | Alt 1        | Alt 2M       | Alt 3M        | Alt 4M       |
|--|--------------|--------------|---------------|--------------|
| Average Annual Cost                                  | \$92,500,000 | \$99,900,000 | \$105,300,000 | \$98,800,000 |
| System-Wide Average Annual Habitat Unit Lift         | 245,748      | 240,785      | 261,542       | 280,094      |
| Average Annual Cost/<br>Average Annual Habitat Units | \$376        | \$415        | \$403         | \$353        |

## PHASE 2: REFINEMENTS

The National Ecosystem Restoration (**NER**) plan (**Alt4M**) underwent **operational refinement** to further meet project objectives for increasing agriculture, municipal and industrial water supply, and to meet the project constraint of maintaining water supply to Biscayne Bay, resulting in **Alt 4R2**

|   | Alt 4M               | Alt 4R         | Alt 4R1              | Alt 4R2          |
|---|----------------------|----------------|----------------------|------------------|
| Meet Environmental Water Supply (Constraint)    | No<br>(Biscayne Bay) | Yes            | No<br>(Biscayne Bay) | Yes              |
| Meet Municipal and Ag Water Supply (Constraint) | No<br>(LEC and LOSA) | No<br>(LOSA)   | Yes                  | Yes              |
| Water Supply Increase (Objective)               | No<br>(0 MGD*)       | No<br>(0 MGD*) | Yes<br>(73 MGD*)     | Yes<br>(17 MGD*) |

\* MGD: Millions Gallons Per Day



## RECOMMENDED PLAN (Alt 4R2)

### STORAGE AND TREATMENT

- A flow equalization basin, or shallow reservoir, that will be integrated with the state's water quality treatment facilities to increase the amount of clean water flow to the Everglades from Lake Okeechobee

### DISTRIBUTION/CONVEYANCE

- Increasing the L-5 canal capacity and modification to the S-8 pump station to convey water west
- Construction of a 360 cfs pump station to maintain water supply to the Seminole Tribe and western basin
- Removal of 2.9 miles of the L-4 levee to distribute inflow to WCA-3A and backfilling 13.5 miles of the Miami Canal

### DISTRIBUTION/CONVEYANCE

- Construction of 8 miles of new levee and removal of 12 miles of existing levees to create a flowway through WCA-3B;
- Two 500 cfs gated culvert structures will provide inflow to the flowway and an 1150 cfs spillway will provide deliveries directly to eastern Shark River Slough;
- A 1,230 cfs spillway will maintain flow to the east of the flowway
- Additional 500 cfs gated culvert structure outside of the flowway to rehydrate the eastern portions of WCA-3B
- Removal of 5.5 miles of the L-67 extension levee and canal; and 6 miles of the Old Tamiami Trail within ENP

### SEEPAGE MANAGEMENT

- A 1,000 cfs pump station and 4.2 miles of seepage barrier wall along the protective levee south of Tamiami Trail

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

|                 |                   |                 |                           |
|-----------------|-------------------|-----------------|---------------------------|
| FEB             | STA               | Pump            | Old Tamiami Trail Removal |
| Backfill        | Levee Removal     | Gated Structure |                           |
| Seepage Barrier | Canal Improvement | Levee           |                           |



NOT TO SCALE

| Problems Opportunities | Existing Conditions | Future Without-Project | Objectives Constraints | Plan Formulation | Recommended Plan |
|------------------------|---------------------|------------------------|------------------------|------------------|------------------|
|------------------------|---------------------|------------------------|------------------------|------------------|------------------|

## ECOSYSTEM BENEFITS: %TARGETS ACHIEVED BY ZONE

■ ≥75%   
 ■ 50-74%   
 ■ <50%

### WCA 3: 495,000 ACRES IMPROVED

| ZONE             | FWO | PLAN |
|------------------|-----|------|
| Northeast WCA 3A | 24  | 74   |
| Northwest WCA 3A | 43  | 77   |
| Miami Canal      | 35  | 70   |
| Central WCA 3A   | 77  | 81   |
| WCA 3B           | 57  | 69   |



### EVERGLADES NATIONAL PARK (ENP): 499,000 ACRES IMPROVED

|               |    |    |
|---------------|----|----|
| Northern ENP  | 44 | 79 |
| Southern ENP  | 53 | 71 |
| Southeast ENP | 60 | 62 |



### FLORIDA BAY / CALOOSAHATCHEE AND ST. LUCIE ESTUARIES: 476,000 / 86,000 ACRES IMPROVED

|                        |    |    |
|------------------------|----|----|
| Florida Bay West       | 13 | 26 |
| Florida Bay Central    | 10 | 18 |
| Florida Bay South      | 15 | 29 |
| Florida Bay E. Central | 23 | 39 |
| Florida Bay North      | 16 | 21 |
| Florida Bay East       | 23 | 26 |
| Caloosahatchee Estuary | 48 | 55 |
| St. Lucie Estuary      | 16 | 55 |



**TOTAL: 1,556,000 ACRES**

# RECOMMENDED PLAN SUMMARY OF PROJECT COST

(FY14 Discount Rate of 3.5% and October 2013 Price Level)

|   | Federal Cost   | Non-Federal Cost | Total            |
|---|----------------|------------------|------------------|
| Total First Cost  | \$ 950,875,000 | \$ 949,125,000   | \$ 1,900,000,000 |
| Annual OMRR&R New CEPP Features                             | \$ 2,075,000   | \$ 2,075,000     | \$ 4,150,000     |
| Annual OMRR&R State Facilities                              | \$ 2,000,000   | \$ 2,000,000     | \$ 4,000,000     |
| Annual OMRR&R Invasive Species                              | \$ 1,550,000   | \$ 1,550,000     | \$ 3,100,000     |
| Ecological Performance Monitoring (per year for 10 years)   | \$ 1,350,000   | \$ 1,350,000     | \$ 2,700,000     |
| Statutorily Required Monitoring (per year for project life) | \$ 1,400,000   | \$ 1,400,000     | \$ 2,800,000     |



**BUILDING STRONG®**

# CENTRAL EVERGLADES THE BENEFITS



**IMPROVED  
HABITAT/  
LANDSCAPE  
PATTERNS  
TO SUPPORT  
BIOLOGICAL  
DIVERSITY**

-----  
**994,000  
ACRES  
IMPROVED IN  
WCA 3 & ENP**



**REDUCED  
SOIL LOSS  
BY OXIDATION  
& FIRES**

-----  
**213,000  
ACRE-FEET  
OF PEAT SOILS  
RESTORED**

**REDUCED  
GREENHOUSE  
GAS**

**REDUCED TAX  
PAYER COSTS,  
HEALTH RISKS,  
AND ROAD  
CLOSURES**

**MORE DAYS OF  
RECREATION  
ANNUALLY**



**DECREASED  
THREAT  
TO 68 LISTED  
SPECIES**

-----  
**1.5 MILLION  
ACRES OF  
IMPROVED  
HABITAT**



**IMPROVED  
HEALTH  
OF COASTAL  
ESTUARIES  
& ECONOMIES  
DEPENDENT  
ON THEM**

-----  
**86,000  
ACRES  
IMPROVED  
IN NORTHERN  
ESTUARIES**  
**COMMERCIAL  
SHRIMP FISHERIES  
IMPROVED**

**INCREASED  
SALTWATER  
FISHING  
OPPORTUNITIES**

**REDUCED TAX  
PAYER COSTS  
(REDUCED  
SEDIMENTATION)**



**MORE  
OPPORTUNITIES  
TO ADDRESS  
WATER  
SUPPLY NEEDS  
OF ALL USERS**

-----  
**MORE  
WATER FOR  
ENVIRONMENT**

**\$25 MILLION  
MORE IN  
DRINKING  
WATER  
(~200,000  
MORE  
PEOPLE)**



**IMPROVED  
OPPORTUNITY  
FOR CLIMATE  
ADAPTATION  
TO DELAY  
SEA-LEVEL  
CHANGE EFFECTS  
BY REDUCING  
SALTWATER  
INTRUSION**

-----  
**476,000  
ACRES  
IMPROVED  
IN FLORIDA  
BAY**

# SEA-LEVEL CHANGE (SLC): PROJECT BUFFERS SLC IMPACTS

- Used current guidance (EC 1165-2-212)
- Analysis for 20,50, and 100 year periods, 2022 – 2122:

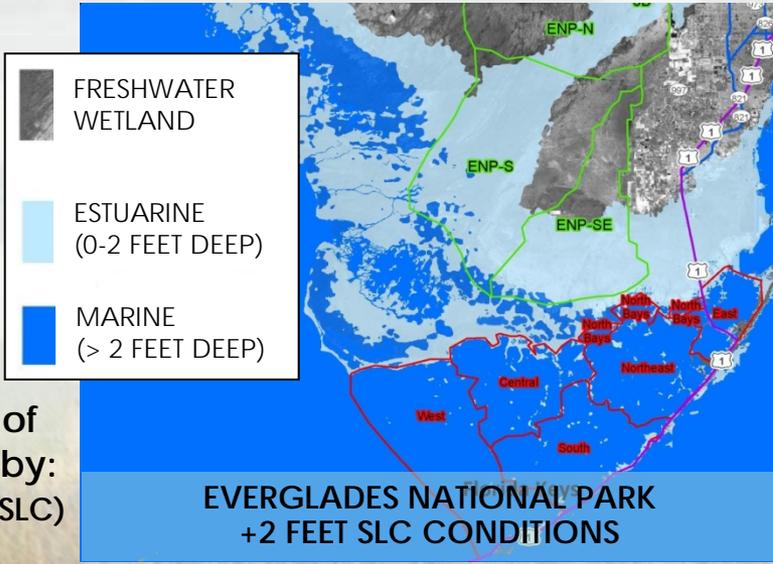
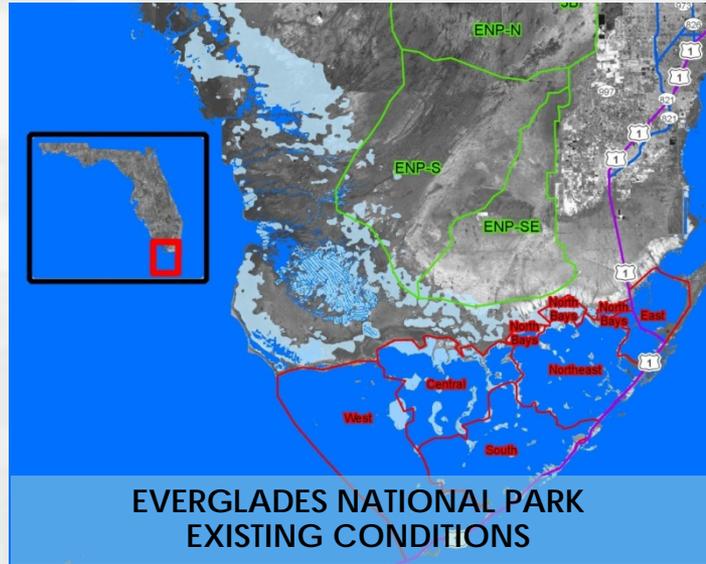
| TIME EPOCH (years) | DATE | LOW PROJECTION based on historic rate at Key West (inches) | INTERMEDIATE based on NRC curve I (inches) | HIGH based on NRC curve III (inches) |
|--------------------|------|--|--|--------------------------------------|
| 20                 | 2042 | 4.3  | 7.0  | 15.5                                 |
| 50                 | 2072 | 7.0  | 13.8                                       | 35.4                                 |
| 100                | 2122 | 11.3   | 29.3                                       | 86.4                                 |

## Conclusion for Ecological Benefits:

| EST. PERCENT TOTAL HABITAT LOSS DUE TO SEA-LEVEL RISE |         |         |          |
|---|---------|---------|----------|
| SEA LEVEL SCENARIO                                    | 20 YEAR | 50 YEAR | 100 YEAR |
| HISTORIC  | 2%      | 4%      | 10%      |
| INTERMEDIATE  | 4%      | 10%     | 20%      |
| HIGH  | 8%      | 22%     | 39%      |

Project related increased flow and stage will delay conversion of freshwater wetland habitat to estuarine habitat in northern ENP by:

- 60 yrs (historic SLC)
- 30 yrs (intermediate rate SLC)
- 10 yrs (high rate SLC)



# AGENCY AND PUBLIC INVOLVEMENT

## Scoping

- Scoping letters issued, 2011
- Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) published in Federal Register, 2011
- 2 Public Scoping Meetings

## Agency and Public Coordination

- 26 Project Delivery Team Meetings
- 15 Working Group Sponsored Public Workshops
- 17 Water Resources Advisory Committee Meetings
- 18 SFWMD Governing Board Meetings
- 1 Ten County Coalition Meetings
- 7 Science Group/Working Group Meetings
- 6 Task Force Meetings
- 69 Cultural Resource Meetings
- 10 Corps Hosted Public Meetings



171 PUBLIC  
ENGAGEMENTS  
IN 29 MONTHS



# ENVIRONMENTAL COMPLIANCE

- Endangered Species Act
- Clean Water Act
- Coastal Zone Management Act
- National Historic Preservation Act
- Clean Air Act
- Environmental Justice (E.O. 12898)



# USACE COMPLIANCE REVIEWS

- 23 Vertical Team In Progress Review Meetings
- Policy Review of Draft Report Nov 2013
- Value Engineering: June 2013
- Independent External Peer Review (IEPR): November 2013
- Final Agency Technical Review (ATR): March 2014
- Ecosystem Services: November 2013 (IEPR and ATR)
- Cost Certification: March 2014
- Legal Certification: March 2014
- ECO-PCX and HQ Approval for Use of Planning Model: August 2013
- Hydrologic Models Approval: November 2012



# PROJECT IMPLEMENTATION (Key Dates)

## Feasibility Phase

- Chief of Engineers Report: July 2014

## Preconstruction Engineering and Design (PED) Phase

- Phased concurrently with construction

## Construction Phase

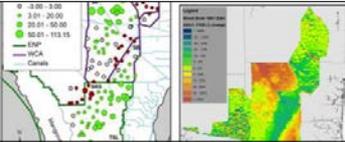
- Multi-year construction phase assuming \$50 M/year Federal and \$50M/year non-federal
- Subject to Authorization and Appropriations

| CONSTRAINED CEPP IMPLEMENTATION/CONSTRUCTION DURATION (SCENARIO 1) |                                      |          |     |      |      |      |      |      |      |       |       |       |       | DEPENDENCIES |       |       |  |
|--|--------------------------------------|----------|-----|------|------|------|------|------|------|-------|-------|-------|-------|--------------|-------|-------|--|
| Duration (Days)  | CEPP                                 | Cnt. No. | PPA | YR 1 | YR 3 | YR 4 | YR 6 | YR 7 | YR 9 | YR 10 | YR 12 | YR 13 | YR 15 | YR 16        | YR 18 | YR 19 |  |
| <b>A-1 FEB &amp; Restoration Strategies meeting WQBEL</b>          |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| <b>8.5 SMA, C-111 SD, Existing S-356 Operational</b>               |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| <b>MWD 1- Mile Bridge &amp; Road Raising</b>                       |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | L-6 Diversion                        | 1        | N   |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 730  | S-8 Pump Modifications               | 1        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 730  | L-4 Levee Degrade and Pump Station   | 1        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 540  | L-5 Canal Improvements               | 2        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 913  | Backfill Miami Canal                 | 2        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| <b>BWPA C-11 Impoundment</b>                                       |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | L-67A 500 CFS Structure North        | 3        | S   |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 180  | Spoil Mound Removal West L-67A (N)   | 3        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 180  | L-67C 6000' Levee Gap                | 3        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| <b>TTNS Bridging &amp; Road Raising</b>                            |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 1186   | Increase S-356                       | 4        | S   |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | Increase S-333                       | 4a       |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | L-29 Gated Spillway                  | 4b       |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 270  | L-67A 500 CFS Structures 2 & 3 South | 5        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 180  | Spoil Mound Removal West L-67A (S)   | 5        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 730  | L-67C Levee Degrade in BS (~8 miles) | 6        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 730  | 8.5 Mile Blue Shanty Levee           | 6        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | Remove L-67 Extension Levee          | 6        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | Remove L-29 Levee in Blue Shanty     | 7        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 730  | Remove Old Tamiami Trail *           | X        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| <b>IRL-S C-44 Reservoir</b>  |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| <b>LO Regulation Schedule Revisions</b>                            |                                      |          |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 365  | Seepage Barrier L-31N                | 8        | NW  |      |      |      |      |      |      |       |       |       |       |              |       |       |  |
| 1825   | A-2 FFB (8 sub contracts)            | 9        |     |      |      |      |      |      |      |       |       |       |       |              |       |       |  |

# ENVIRONMENTAL OPERATING PRINCIPLES



Foster sustainability



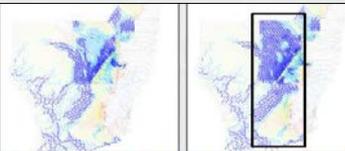
Proactive consideration of environmental consequences



Mutually supporting economic and environmentally sustainable solutions



Accountability for activities which may impact human and natural environments



Collaborative leveraging of scientific, economic, and social knowledge to understand environmental context



Consideration of environment and risk management in context of project and program lifecycle



Open, transparent process respecting views of individuals and groups interested in Corps activities

# RECOMMENDED NATIONAL PRIORITIES



Preserve and protect the environment



Improve quality of life



Improve resiliency and safety



Increase energy independence



Maintain global competitiveness



Create jobs/restore economy



Reduce deficit

# CONCLUSION

- CEPP provides the next increment toward accomplishing the goals of the Comprehensive Everglades Restoration Plan (CERP)
- Florida is defined by its unique natural environment - its health directly benefits Florida economies such as tourism and recreation
- The project enjoys broad agency and stakeholder support

**Achieves ~ 70%**  
of restoration  
targets for the  
central Everglades

**Increases water  
flow by >20%**  
to the central  
Everglades  
and Florida Bay

**> 20% reduction  
in undesirable  
freshwater  
discharges**  
to St. Lucie and  
Caloosahatchee  
estuaries from  
Lake Okeechobee



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# CENTRAL EVERGLADES THE BENEFITS



**IMPROVED  
HABITAT/  
LANDSCAPE  
PATTERNS  
TO SUPPORT  
BIOLOGICAL  
DIVERSITY**

-----  
**994,000  
ACRES  
IMPROVED IN  
WCA 3 & ENP**



**REDUCED  
SOIL LOSS  
BY OXIDATION  
& FIRES**

-----  
**213,000  
ACRE-FEET  
OF PEAT SOILS  
RESTORED**

**REDUCED  
GREENHOUSE  
GAS**

**REDUCED TAX  
PAYER COSTS,  
HEALTH RISKS,  
AND ROAD  
CLOSURES**

**MORE DAYS OF  
RECREATION  
ANNUALLY**



**DECREASED  
THREAT  
TO 68 LISTED  
SPECIES**

-----  
**1.5 MILLION  
ACRES OF  
IMPROVED  
HABITAT**



**IMPROVED  
HEALTH  
OF COASTAL  
ESTUARIES  
& ECONOMIES  
DEPENDENT  
ON THEM**

-----  
**86,000  
ACRES  
IMPROVED  
IN NORTHERN  
ESTUARIES**  
**COMMERCIAL  
SHRIMP FISHERIES  
IMPROVED**

**INCREASED  
SALTWATER  
FISHING  
OPPORTUNITIES**

**REDUCED TAX  
PAYER COSTS  
(REDUCED  
SEDIMENTATION)**



**MORE  
OPPORTUNITIES  
TO ADDRESS  
WATER  
SUPPLY NEEDS  
OF ALL USERS**

-----  
**MORE  
WATER FOR  
ENVIRONMENT**

**\$25 MILLION  
MORE IN  
DRINKING  
WATER  
(~200,000  
MORE  
PEOPLE)**



**IMPROVED  
OPPORTUNITY  
FOR CLIMATE  
ADAPTATION  
TO DELAY  
SEA-LEVEL  
CHANGE EFFECTS  
BY REDUCING  
SALTWATER  
INTRUSION**

-----  
**476,000  
ACRES  
IMPROVED  
IN FLORIDA  
BAY**



**OTHER**

Presentation  
to the

## Civil Works Review Board

# Comprehensive Everglades Restoration Plan Central Everglades Planning Project, Final Integrated Project Implementation Report and Environmental Impact Statement

by

**COL Donald Walker**

Commander  
South Atlantic Division  
22 April 2014



US Army Corps of Engineers  
**BUILDING STRONG**



# Commander's Endorsement

**Recommendation:** Approve Final Report, Release for State and Agency Review, Complete Chief's Report

## **Rationale:**

- Concur with District Commander's findings & recommendations.
- Report complies with all applicable policy & laws in place at this time.
- Plan supported by sponsor, stakeholder groups, and congressional delegation.
- Plan is consistent with Comprehensive Everglades Restoration Plan
- Plan will provide positive environmental benefits
- Project supports Everglades - an ecosystem of national significance and an Administration "We Can't Wait" Project

## **Justification:**

- Legal certification of the final Project Implementation Report provided by SAJ District Counsel.
- Technical and Policy Compliance:
  - External ATR certification complete, all ATR comments from 7 separate ATR reviews have been resolved.
  - Ecosystem PCX : Certification of Performance Measures and Models
  - Policy compliance concerns in the PIR have been resolved.



# **CENTRAL EVERGLADES PLANNING PROJECT, FLORIDA**

## **Project Implementation Report**

### **Agency Technical Review (ATR)**

Michelle Kniep, ATR Lead

St. Paul District

22 April 2014



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# ATR REVIEW OUTCOMES

- All ATR activities are complete and all comments have been closed
  - ▶ ATR 4 (Draft Report) District ATR Certification on [3 Mar 2014](#)
  - ▶ ATR 4 (Draft Report) Statement of Completion on [11 Mar 2014](#)
  - ▶ ATR 5 (Final Report) Memorandum for Record on [10 March 2014](#)
  - ▶ Cost Engineering MCX Certification on [14 March 2014](#)



# ATR EVENTS

ATR 1 Planning Framework (April 2012)

ATR 1.5 H&H Models (November 2012)

ATR 2 Management Measure Formulation and Screening (March 2013)

ATR 3 Final Array Evaluation (March 2013)

ATR 3.5 Cultural Resources (July 2013)

ATR 4 Draft Report (February 2014)

ATR 5 Final Report (March 2014)



# ATR TEAM COMPOSITION

| Team Member       | Discipline(s)   | Organization |
|-------------------|---|--------------|
| Michelle Kniep    | ATR Lead  | CEMVP        |
| Scott Miner       | Plan Formulation, Economics,<br>Ecosystem Restoration | CESPK        |
| Matthew Davis     | Environmental/NEPA                                    | CESPK        |
| William Brostoff  | Restoration Biologist                                 | CESPN        |
| Chuck Downer      | Planning Model Application                            | ERDC         |
| Frank Wu          | Hydrology and Hydraulics                              | CESPN        |
| Michael Wielputz  | Geotechnical Engineering                              | CESAS        |
| Richard Torbik    | Civil Engineering                                     | CESPK        |
| James Neubauer    | Cost Engineering                                      | CENWW        |
| James Sentz       | Cost Engineering                                      | CEMVP        |
| Belinda Estabrook | Real Estate   | CESAS        |
| James Barnes      | Cultural Resources                                    | CEMVS        |



# SIGNIFICANT ATR ISSUES/RESOLUTION

- Water Supply as an Objective

- ▶ Concern: In early report versions, it was unclear if water supply was an objective being formulated for or simply an incidental benefit.

- ▶ Resolution: The issue was raised to the vertical team during an IPR after ATR 1. Water supply was determined to be an objective though no features were formulated for water supply.

Water supply was increased through operational refinements of the ecosystem restoration features.



# SIGNIFICANT ATR ISSUES/RESOLUTION

- Planning Model Application
  - ▶ Concern: Due to uncertainties associated with the regional hydraulic model, the reviewer was not confident that the model could accurately represent the actual changes in habitat units.
  - ▶ Resolution: This concern was elevated to the vertical team by documenting the concerns in the risk register. Additional analyses were conducted to specifically address how error in the hydrologic model could reflect alternative results. The HQUSACE Model Review Panel approved the Planning Model for single use on CEPP on 13 August 2013.



# SIGNIFICANT ATR ISSUES/RESOLUTION

- Lake Okeechobee Regulation Schedule (LORS)
  - ▶ Concern: The report indicated that changes to the 2008 LORS would be required to achieve the complete ecological benefits. The reviewer questioned whether the TSP was a complete plan because it did not include the LORS changes.
  - ▶ Resolution: Section 6 of the report was modified to include information on what could potentially happen in the absence of a LORS revision and provided additional information on assumptions and actual modifications.



# Independent External Peer Review (IEPR) Central Everglades Planning Project (CEPP) Draft Project Implementation Report and Environmental Impact Statement

Presented to the USACE CWRB on April 22, 2014

Karen Johnson-Young, PMP  
*Program Manager*

Richard Uhler, PMP  
*Project Manager*



# IEPR - Panel and Schedule

| CEPP Panel Members               | Panel Discipline                        |
|----------------------------------|---|
| David Luckie (Panel Lead)        | Economics/Civil Works Planning          |
| Kris Thoenke, Ph.D.              | Environmental and Ecological Evaluation |
| Patrick Tara, P.E.               | Hydraulic Engineering                   |
| B. Daniel Marks III, P.E., Ph.D. | Geotechnical Engineering                |

## CEPP IEPR was conducted in August/September 2013

- The Panel reviewed the August 2013 versions of the review documents:
  - CEPP Draft Project Implementation Report and Environmental Impact Statement
  - Assessment of Ecosystem Service Values for the CEPP

# IEPR Bottom Line Up Front

The Panel concurred with all PDT Responses to the Final Panel Comments.

# IEPR - Results

Final CEPP IEPR Reports submitted on October 10, 2013

## CEPP DPIR/EIS IEPR Final Report Results:

- 8 Final Panel Comments
  - 2 high significance
  - 4 medium significance
  - 2 low significance

## CEPP Ecosystem Service Values IEPR Final Report Results:

- 3 Final Panel Comments
  - 1 medium significance
  - 2 low significance

# IEPR - Results

Post-Final Panel Comments/Response Results documented on November 11 , 2013

## CEPP DPIR/EIS IEPR Results:

- PDT Evaluator Responses to Final Panel Comments
  - 6 concurs, 2 non-concur
- Panel BackCheck Responses to the PDT Responses
  - 8 concurs

## CEPP Ecosystem Service Values Results:

- PDT Evaluator Responses to Final Panel Comments
  - 3 concurs
- Panel BackCheck Responses to the PDT Responses
  - 3 concurs

# IEPR - Notable Findings

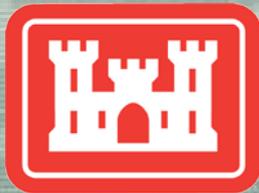
- Impacts to navigation on the Okeechobee Intercoastal Waterway as a result of the Tentatively Selected Plan had not been addressed.
- Unresolved issues between USACE and the Seminole and Miccosukee Tribes related to possible impacts to cultural resources, including human remains/burial sites, within the project area could affect project implementation.
- The Seminole Tribe's concern with what they consider an inadequate water supply for the western basins had not been addressed.
- The process for screening management measures did not detail benefits to the Everglades system versus estimated costs.
- Using discount rates that were not consistent with current USACE policy could have led to confusion when interpreting monetized ecological benefits.

# CENTRAL EVERGLADES PLANNING PROJECT

## HQUSACE Policy Compliance Review Civil Works Review Board

Jeanette Gallihugh  
Office of Water Project Review  
Planning and Policy Division

22 April 2014



US Army Corps of Engineers  
**PLANNING SMART  
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# HQUSACE Team Reviews

- Pilot Project
- Decision Point Meetings:
  - ▶ DP 1 in January 2012
  - ▶ DP 2 in August 2013
  - ▶ Draft PIR/EIS review October 2013
- Final PIR/EIS being reviewed. Policy and Legal Compliance reviews are not completed.



# Significant Policy Concerns

- Cost Sharing OMRR&R of State/C&SF facilities.
- Modified Waters Delivery Project and CEPP.
- Separable Elements and Multiple PPAs.
- Level of Detail, Cost Risks and Implementation Uncertainties.
- Compliance with Endangered Species Act/Other Environmental Requirements.
- Non-Federal Sponsor's Letter of Support.



# Institutional Controls

Due to the high risks and uncertainties of the Federal investment with the CEPP, the long implementation time, and the significant dependencies on other CERP and non-CERP projects, a number of “Institutional Controls” have been developed to ensure future coordination with USACE Headquarters and, as needed, the Office of the Assistant Secretary of the Army (Civil Works).



# Institutional Controls continued

- Annual Vertical Reporting/Briefing
- Analysis of operations at State facilities
- Cost share of OMRR&R of additional State facilities
- Federal cost share of replacement & rehab actions at State facilities
- Defining activities as repair, replacement, or rehab
- Changes to CEPP implementation phases
- Water quality compliance
- Biological Opinions (ESA)
- NEPA documents or supplements
- PPAs, PACs, Modifications to Federal Projects - 408 (with early vertical coordination as necessary)



# Cost-Sharing OMRR&R of State and C&SF Water Quality Facilities

## Concern:

- Corps cost-share OMRR&R of State water quality treatment facilities and C&SF facilities currently operated and maintained at 100% non-Federal expense, that will be used by CEPP for treatment of “new” flows.

## Reasons:

- Section 528(e) WRDA 1996 prohibition from cost sharing State’s Everglades Construction Project.
- C&SF is a Federally authorized and completed Corps project that has 100% non-Federal OMRR&R.



# Cost-Sharing OMRR&R continued

## Resolution:

- ASA(CW): CEPP will contribute 19% to OMRR&R of State/C&SF facilities and Corps will pay 50% of such, in accordance with CERP cost sharing requirements.
- The Report of the Chief of Engineers will seek specific Congressional authorization to modify past legislative requirements/constraints.

**Risks and Uncertainties:** Water quality exceedences; Excess capacity availability.

**Accept Risks. Manage with Institutional Controls.**



# Modified Waters Delivery (MWD) Project

## Concern:

- 1989 ENP Protection & Expansion Act. (DOI/Army)
- Some features of MWD are constructed; some are in construction (FWOP); some are not being pursued for construction.
- Features similar to those not being pursued in MWD are proposed for inclusion in CEPP.

## Reasons:

- Per statute, no appropriation shall be made to construct certain CERP projects until completion of MWD. Some of these CERP components are in CEPP. MWD not determined complete yet.
- Responsibility for funding shifted to Corps and SFWMD for features in CEPP that function similar to those not being pursued in MWD.



# MWD Project continued

## Resolution:

- Comply with statutes. Appropriations not to be used for construction of listed CERP features that are included in CEPP, until MWD is complete.
- Continue coordination with DOI and non-Federal sponsor to determine completion of MWD project.
- Inform Congressional committees.

**Risks and Uncertainties:** Ability to implement; Timeliness/Costs.

**Accept Risks. Manage with Institutional Controls.**



# Justification of Separable Elements Multiple PPAs

**Concern:** CEPP formulated on a system-wide basis, not incrementally per policy. Multiple PPAs proposed for implementation.

**Reason:** PPAs cannot be signed for anything less than a separable element per statute.

**Resolution:** Although incremental analysis for NER planning was not done, a qualitative evaluation was provided for three separable elements/phases.

**Risks and Uncertainties:** Phasing changes; Benefits not realized for incremental investments.

**Accept Risks. Manage with Institutional Controls.**



# Level of Detail, Cost Risks and Implementation Uncertainties

**Concern:** High Cost Contingencies and PED/EDC; dependencies on prerequisite projects; long implementation time; FWOP conditions uncertainties; testing and monitoring and adaptive implementation plan.

**Reason:** Sufficient level of detail is needed to have confidence in cost estimates and ability to implement project within Section 902 authorized cost; sufficiently analyze project impacts and benefits; and comply with environmental requirements.

**Resolution:** Accept high risks and uncertainties. Recommend, by using phased approach, require ASA(CW) approval of LRR/GRR prior to implementing Phase New Water. Others may be needed prior to Phase New Water.

+ *Institutional Controls.*



# Endangered Species Act

## [Other Environmental Compliance]

**Concern:** Due to lack of specific information on environmental conditions on project lands and potential impacts due to implementation and operation, ESA consultation was not completed.

**Reason:** Policy requires environmental compliance at final report/decision. Risk with unknown environmental requirements and obligations; costs; implementability or operations of project features.

**Resolution:** Accept and Manage Risks. Section 7 Consultation will not be completed prior to authorization. A programmatic Biological Opinion received with preliminary no jeopardy/no adverse modification to critical habitats determination.

+ *Institutional Controls*



# Non-Federal Sponsor's Letter of Support

**Concern:** SFWMD letter of support based upon Governing Board's passage of Resolution. Expressed support and financial capability, but conditioned implementation, approval, or operation of CEPP projects upon:

- ▶ Budgets/Funding
- ▶ Future ESA consultation requirements
- ▶ Water Quality Issues (Consent Decree):
  - Revise water quality compliance methodology
  - Develop joint measures to address exceedence events



# Letter of Support continued

## Reason:

- Conditions regarding water quality require specific outcomes prior to State fulfilling sponsor obligations.
- Consent Decree is judicially enforceable legal instrument overseen by Federal District Court Judge. Beyond control/authority of Army or State and not within scope of CEPP to change compliance methodology.
- Conditions in the Board Resolution broadens scope of language previously negotiated with ASA(CW) and in the final PIR/EIS.

**Resolution:** Unresolved. However, negotiated language will remain in the final PIR/EIS and the Report of the Chief of Engineers.



# RECOMMENDATIONS



# LESSONS LEARNED

- Aggressive Schedule: “We Can’t Wait” Initiative Challenges
  - Moving Forward with Uncertainty
  - Buy-in on schedule
  - Agency Challenges
- Public workshops and meetings: Recommended even when not required by policy
- Vertical Team Integration: Involvement and decision making
- Ecosystem Services Evaluation: not used in plan formulation but very valuable for communication

