

CENTRAL EVERGLADES PLANNING PROJECT



Status Update

Working Group Science Coordination Group Meeting

PRESENTED BY

Kim Taplin,
Central Everglades Branch,
Planning & Policy Division

US Army Corps of Engineers

September 20, 2012

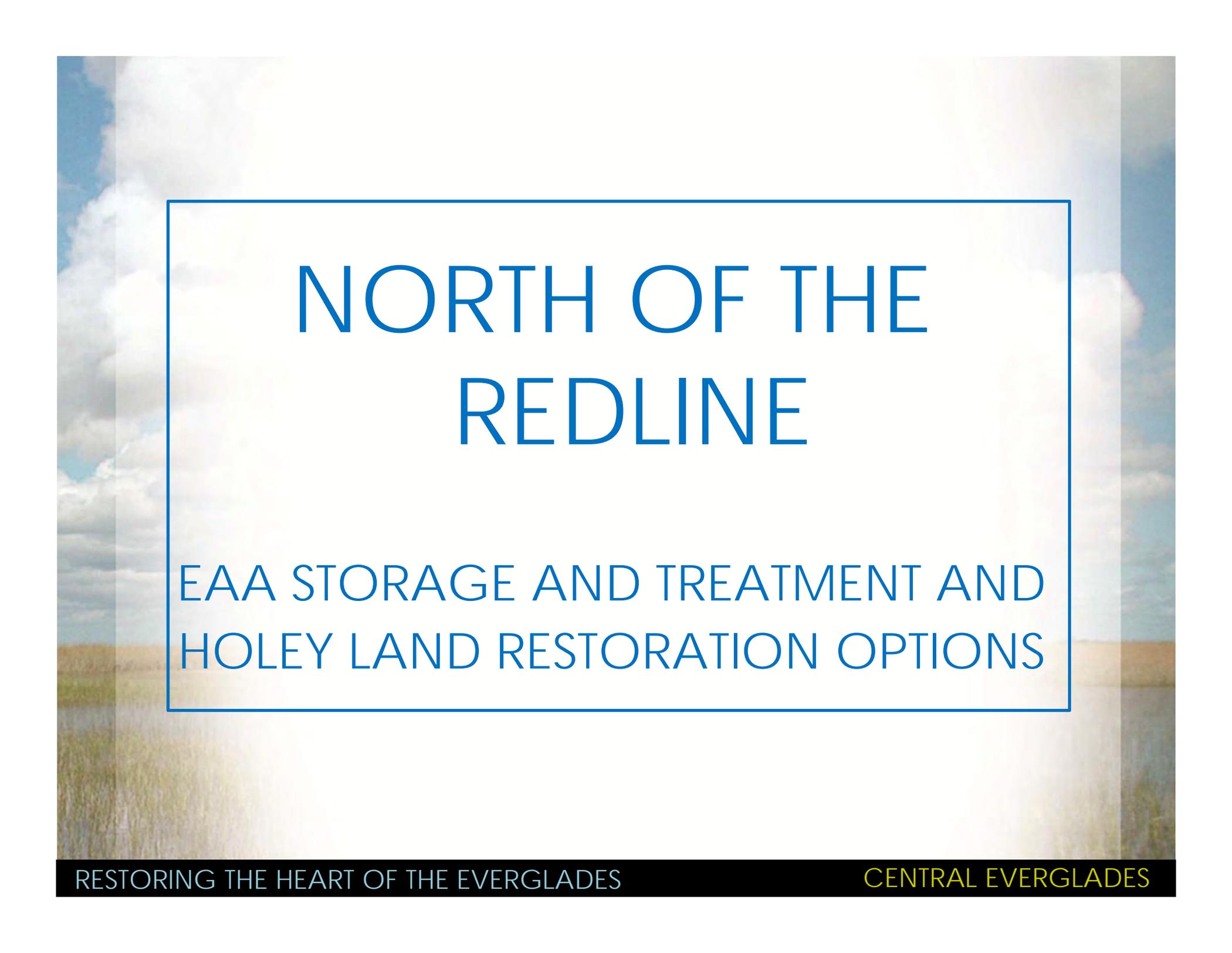
UPDATE OF CEPP ACTIVITIES

- Working Group Sponsored Workshops
 - ▶ Recreation Workshop - August 29th
 - ▶ Public Workshop – August 30th

- Project Delivery Team Meetings – September 4th and 5th

- Plan Formulation and Configurations North of the Redline
 - ▶ EAA Storage and Treatment
 - ▶ Holey Land Restoration Option

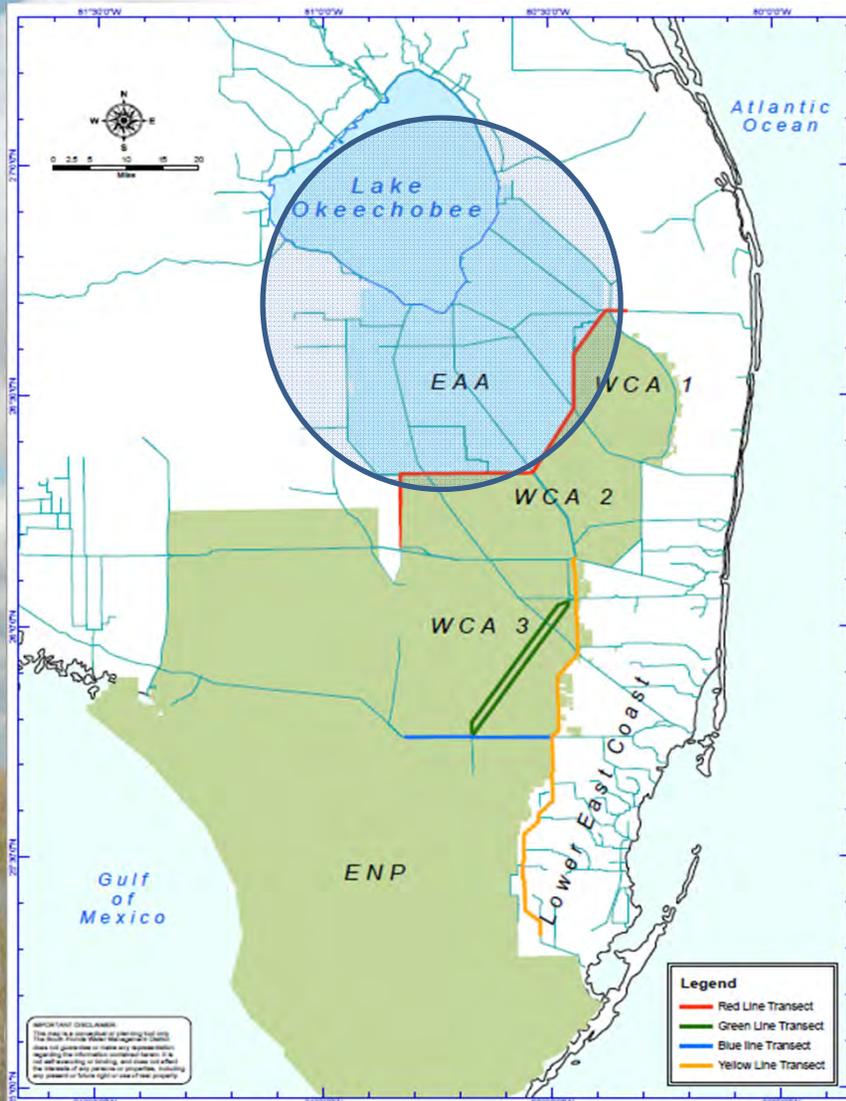
- Plan Formulation and Configurations South of the Redline
 - ▶ Northern WCA 3A Options
 - L-6 Diversion
 - WCA 3A Hydropattern Restoration Feature
 - Miami Canal Backfilling
 - Triangle Rehydration Project



NORTH OF THE REDLINE

EAA STORAGE AND TREATMENT AND
HOLEY LAND RESTORATION OPTIONS

SPATIAL PERSPECTIVE

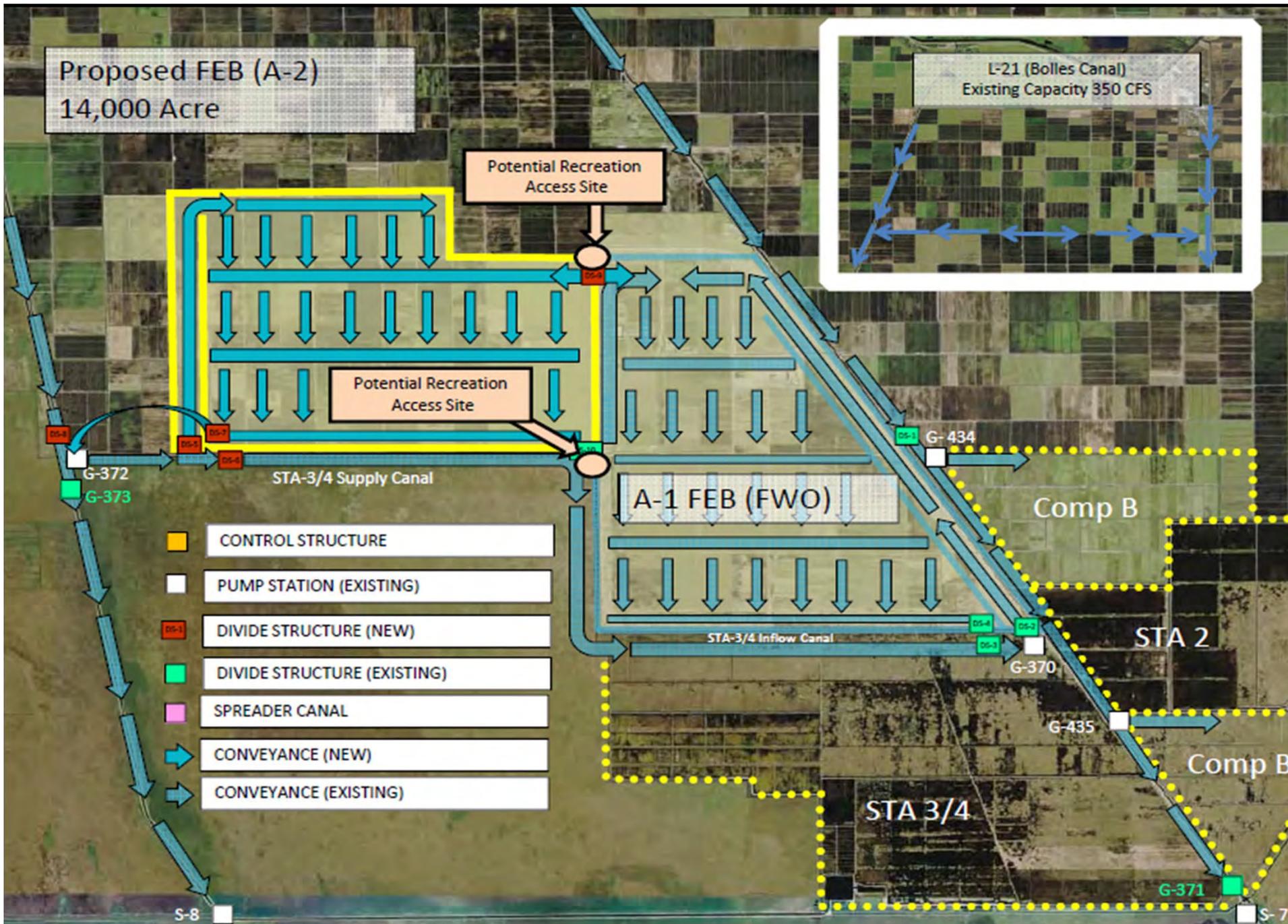


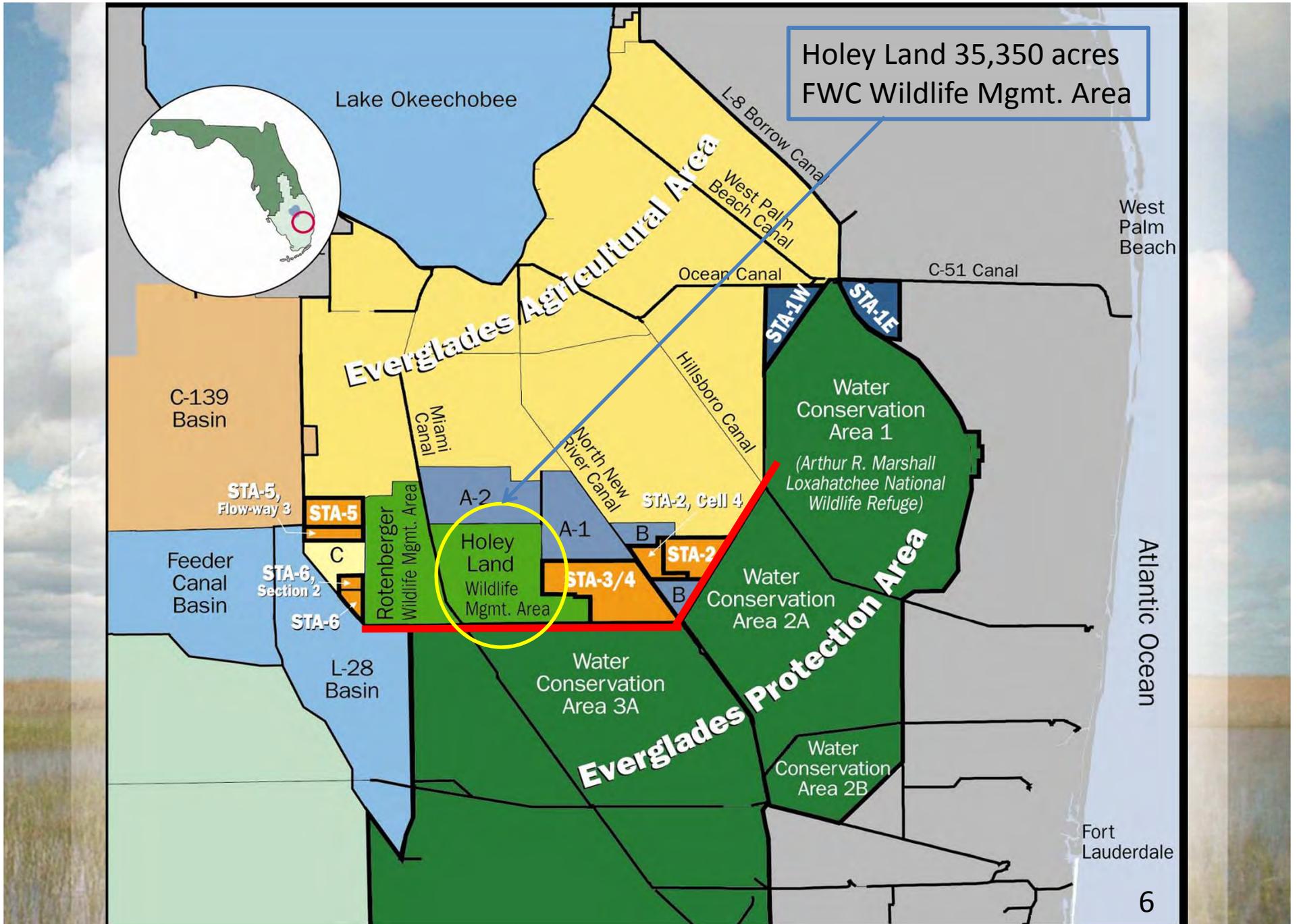
REDLINE –Flows from the Everglades Agricultural Area (EAA) into WCA 3A (L-4, L-5 and L-6 levees and canals)

GREENLINE – Flows through WCA 3A and WCA 3B (L-67A and C levees and associated canals)

BLUELINE – Flows from WCA 3A/3B into Everglades National Park (ENP) (Tamiami Trail roadway and L-29)

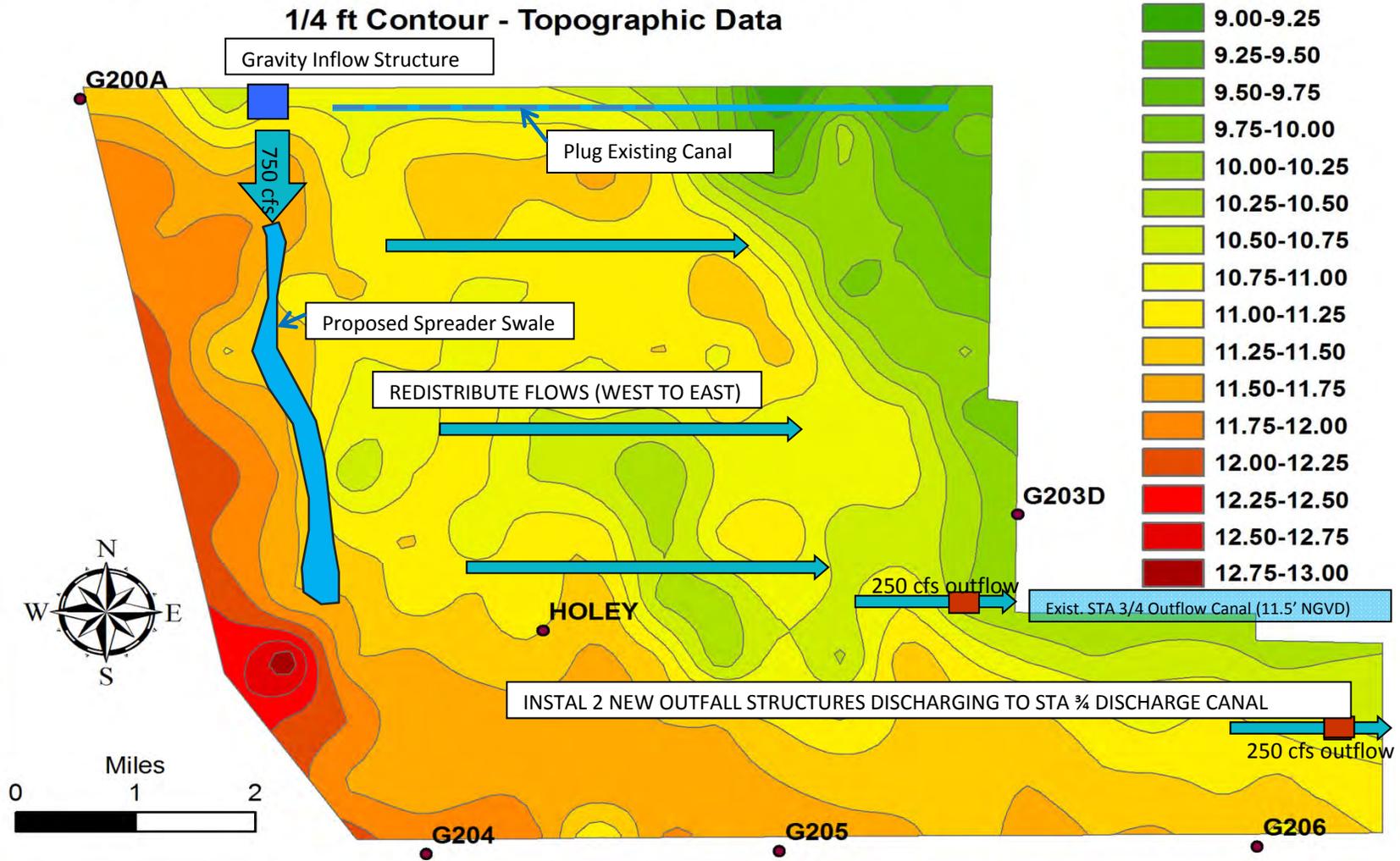
YELLOWLINE –Flows from WCA 3A/3B and ENP to the lower east coast (east coast protective levee system, the L-30 and L-31N)





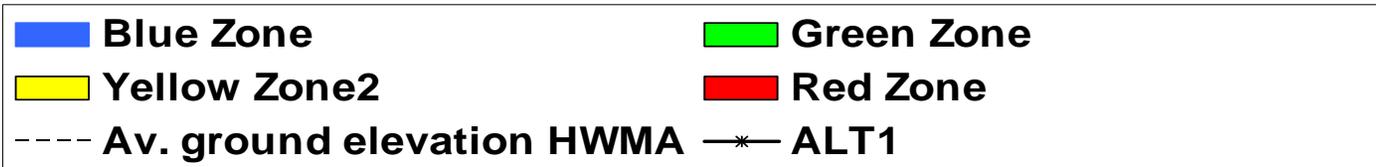
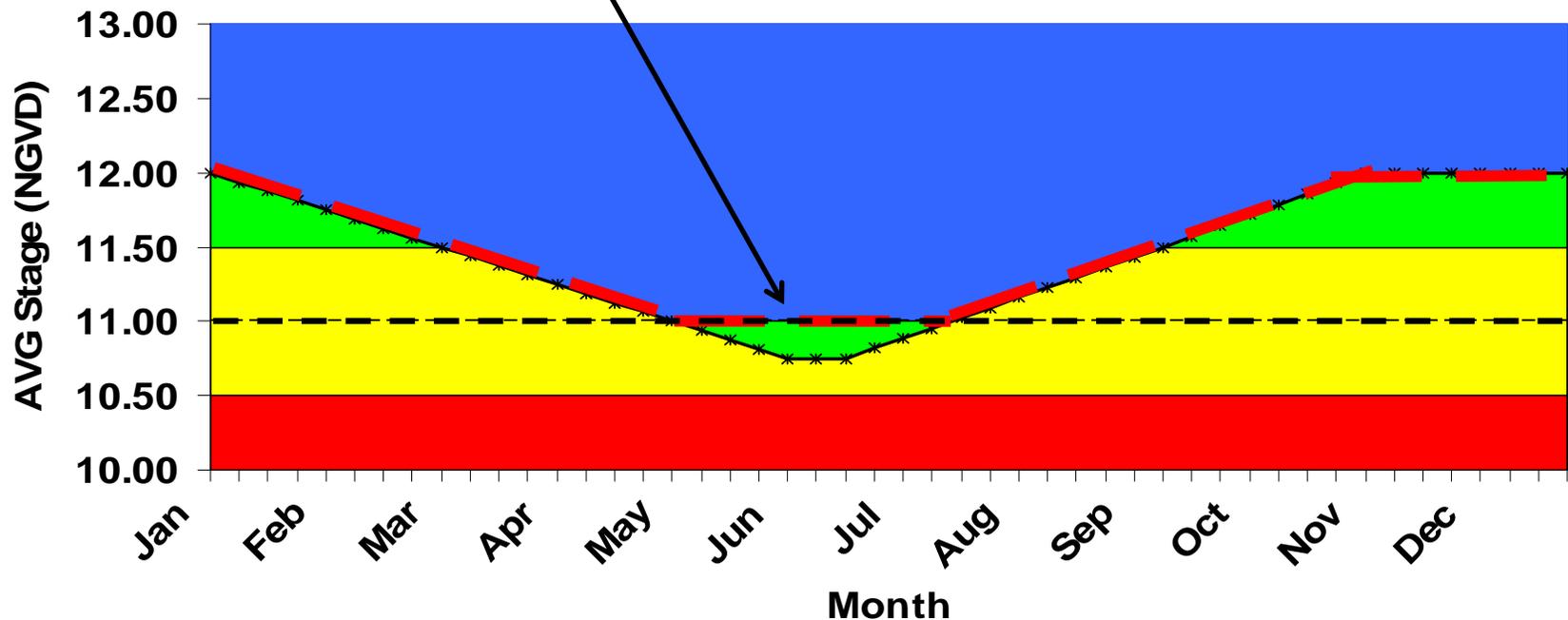
Option for Holey Land Restoration

Holeyland Wildlife Management Area



PROPOSED SCHEDULE REFINEMENT

CEPP Proposal: Raise a portion of the Yellow Zone 0.25' from the middle of May to middle of July to "average ground elevation" to prevent dry-outs and muck fires that cause loss of soils, vegetation and wildlife



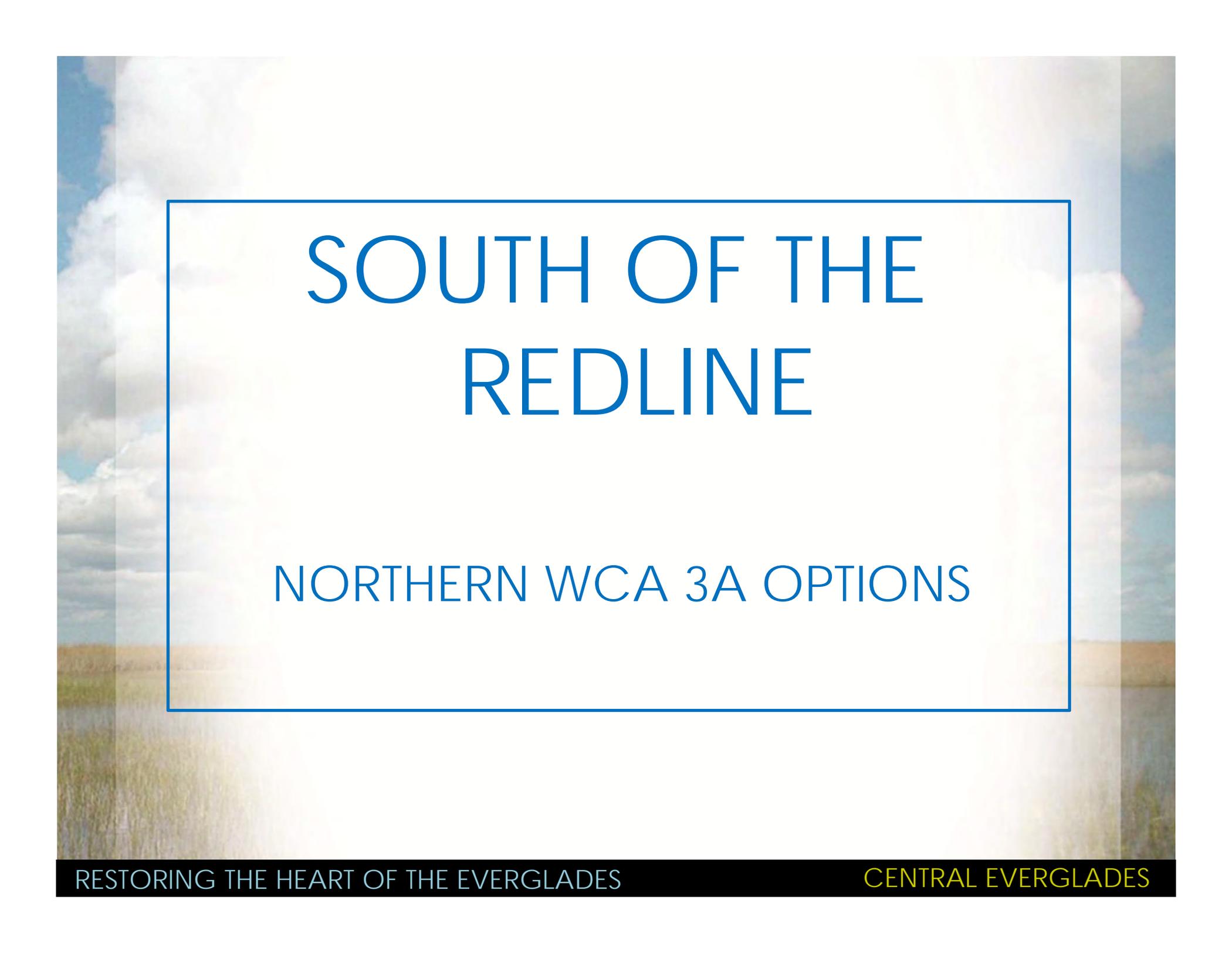
"WHAT WE'VE HEARD"

■ EAA Storage and Treatment

- ▶ Flow Equalization Basin access and recreational opportunities should be provided
- ▶ Provide deep water refugia to support fish and wildlife during dry periods

■ Holey Land Option

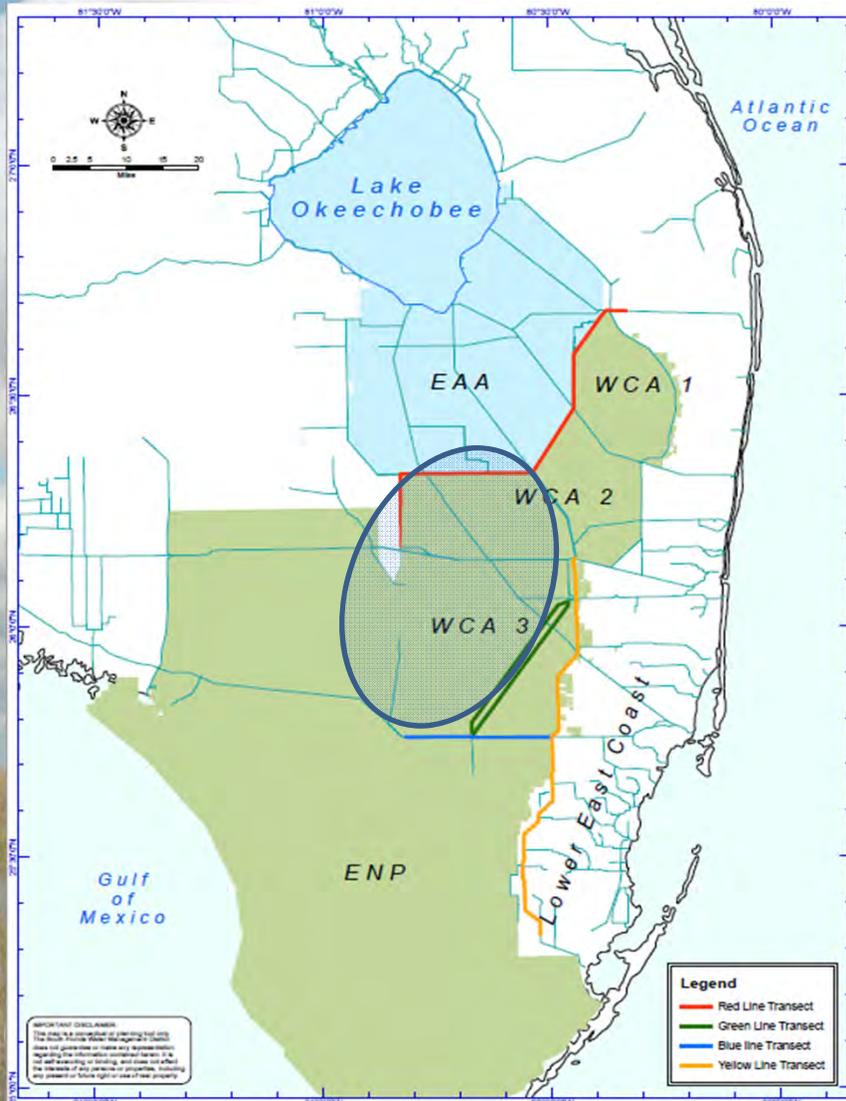
- ▶ Flow through system desirable
- ▶ Water depths need to consider terrestrial wildlife
- ▶ Water quality considerations
- ▶ Potential for cattail expansion
- ▶ Vegetation management plan needed
- ▶ More input and study is needed before including in CEPP



SOUTH OF THE REDLINE

NORTHERN WCA 3A OPTIONS

SPATIAL PERSPECTIVE



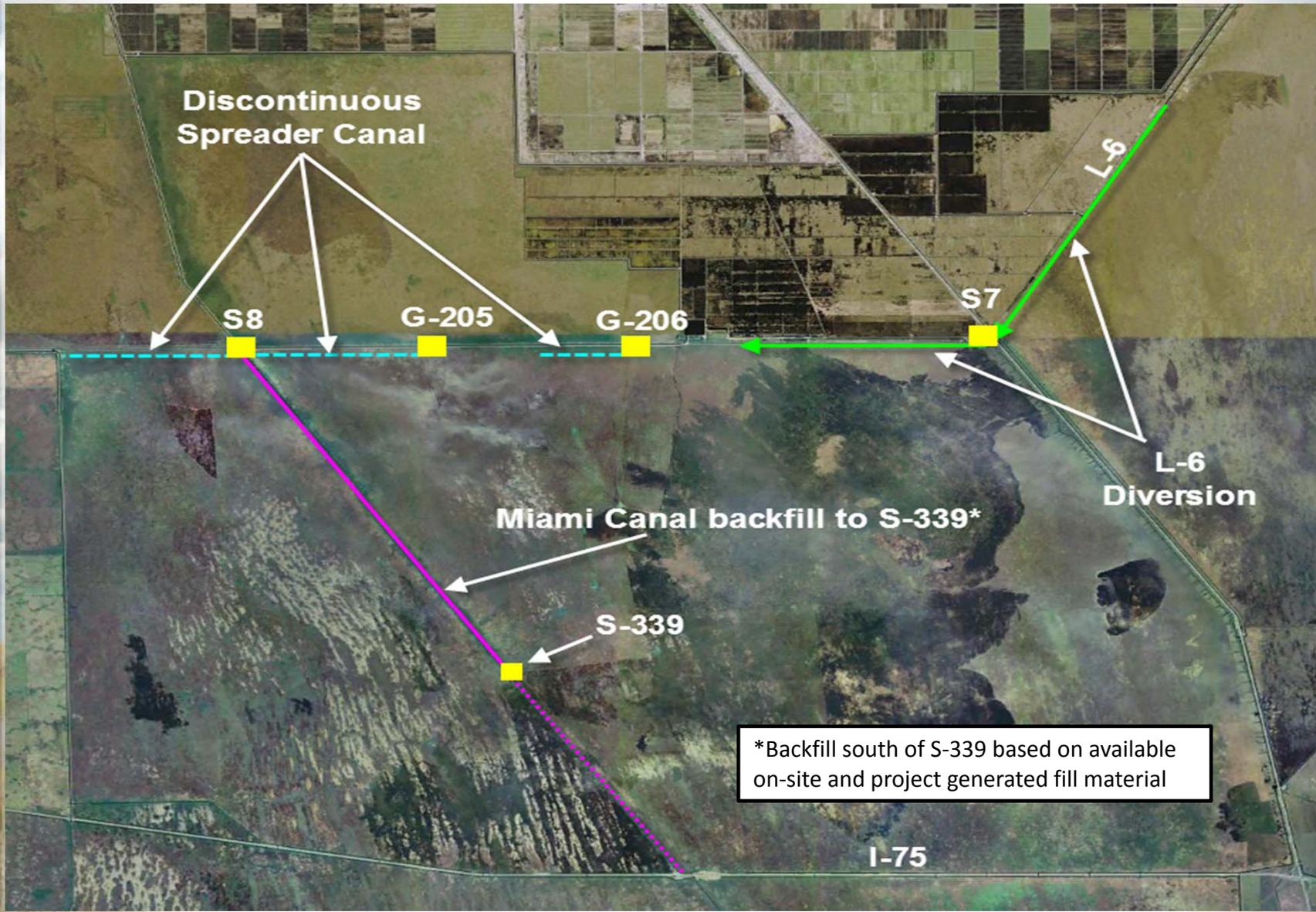
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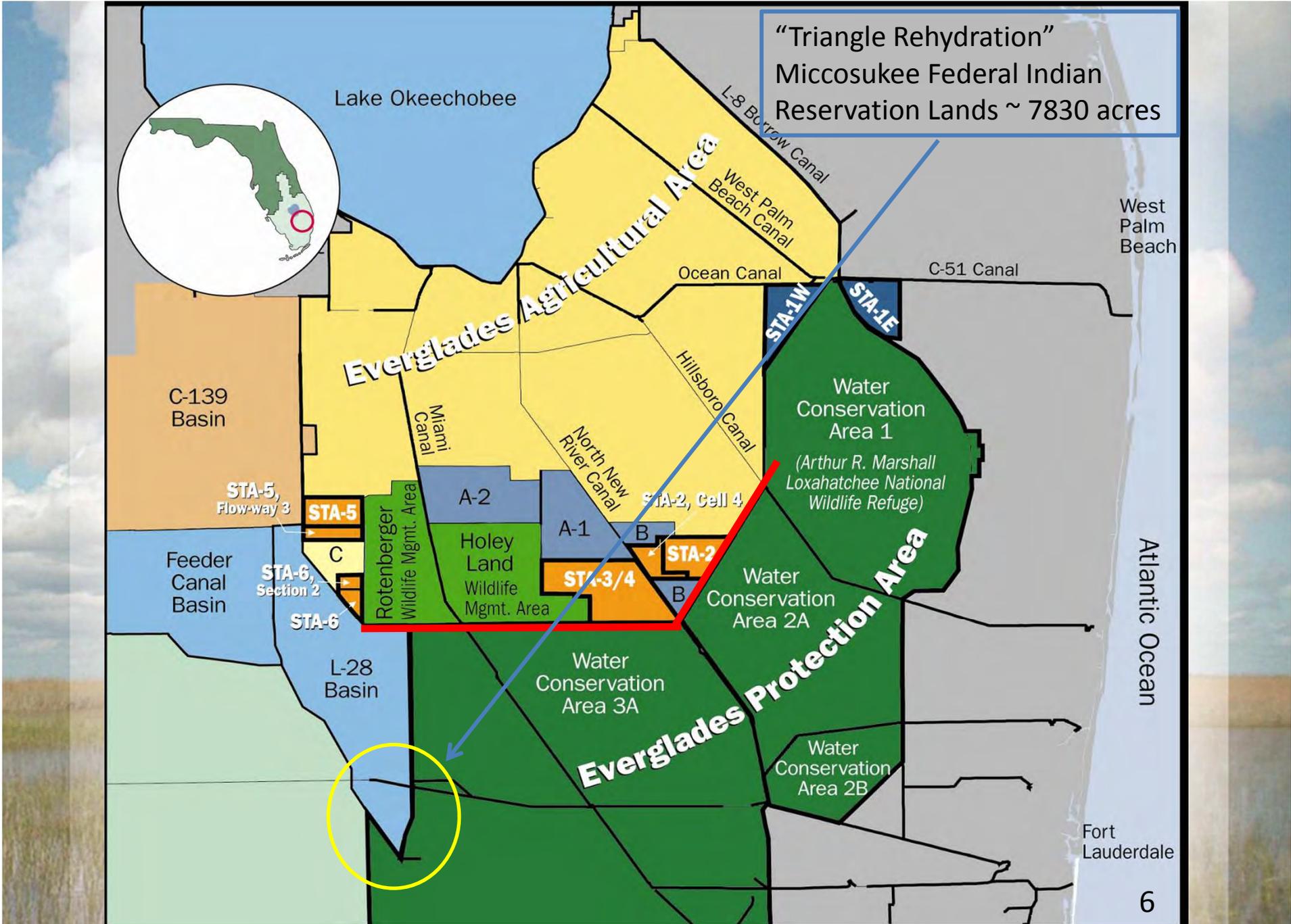
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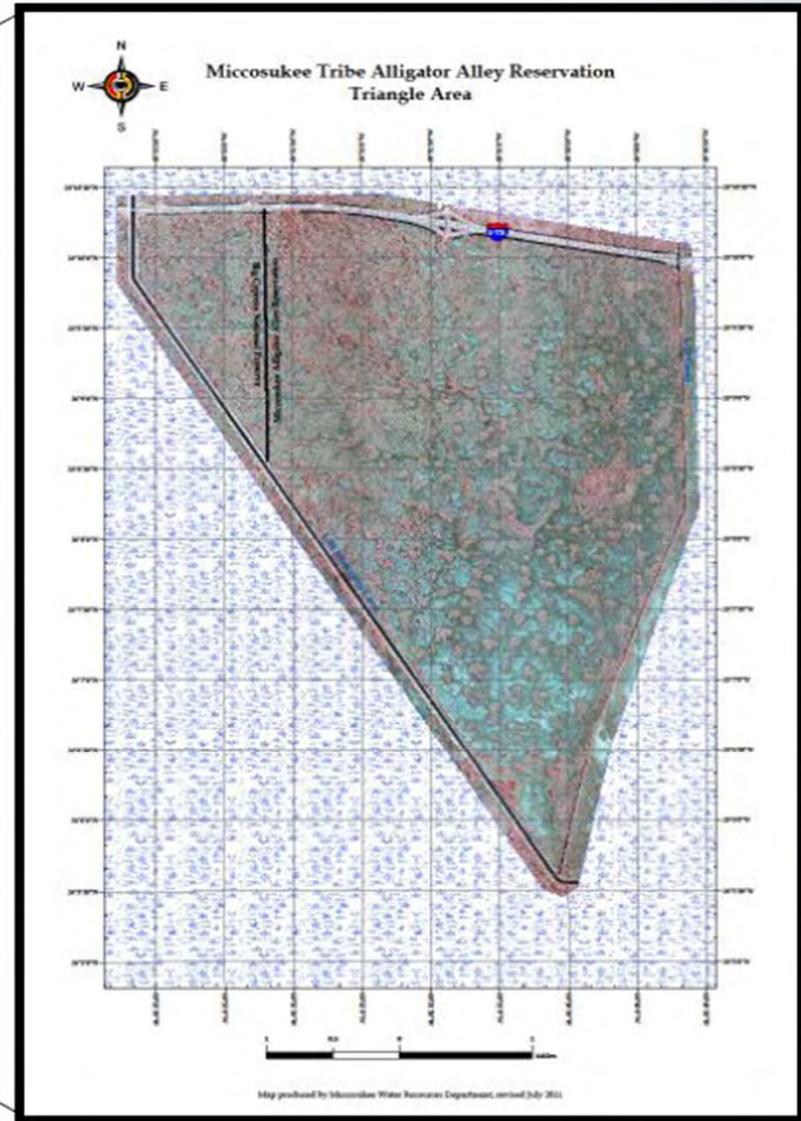
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NORTHERN WCA 3A OPTIONS





TRIANGLE REHYDRATION PROJECT



“WHAT WE’VE HEARD”

- Allow fishing in HRF to offset access impacts due to Miami Canal backfilling
- Provide deep water refugia to support fish and wildlife during dry periods
- Consider recreation access from US 27 to the L-5 Canal
- New water control structures should accommodate vehicular access
- Include boat ramps in Recreation Plan
- Concerns over removing Miami Canal spoil banks and effects on “fur bearing” animals

RECOVER System-wide Evaluation of CEPP

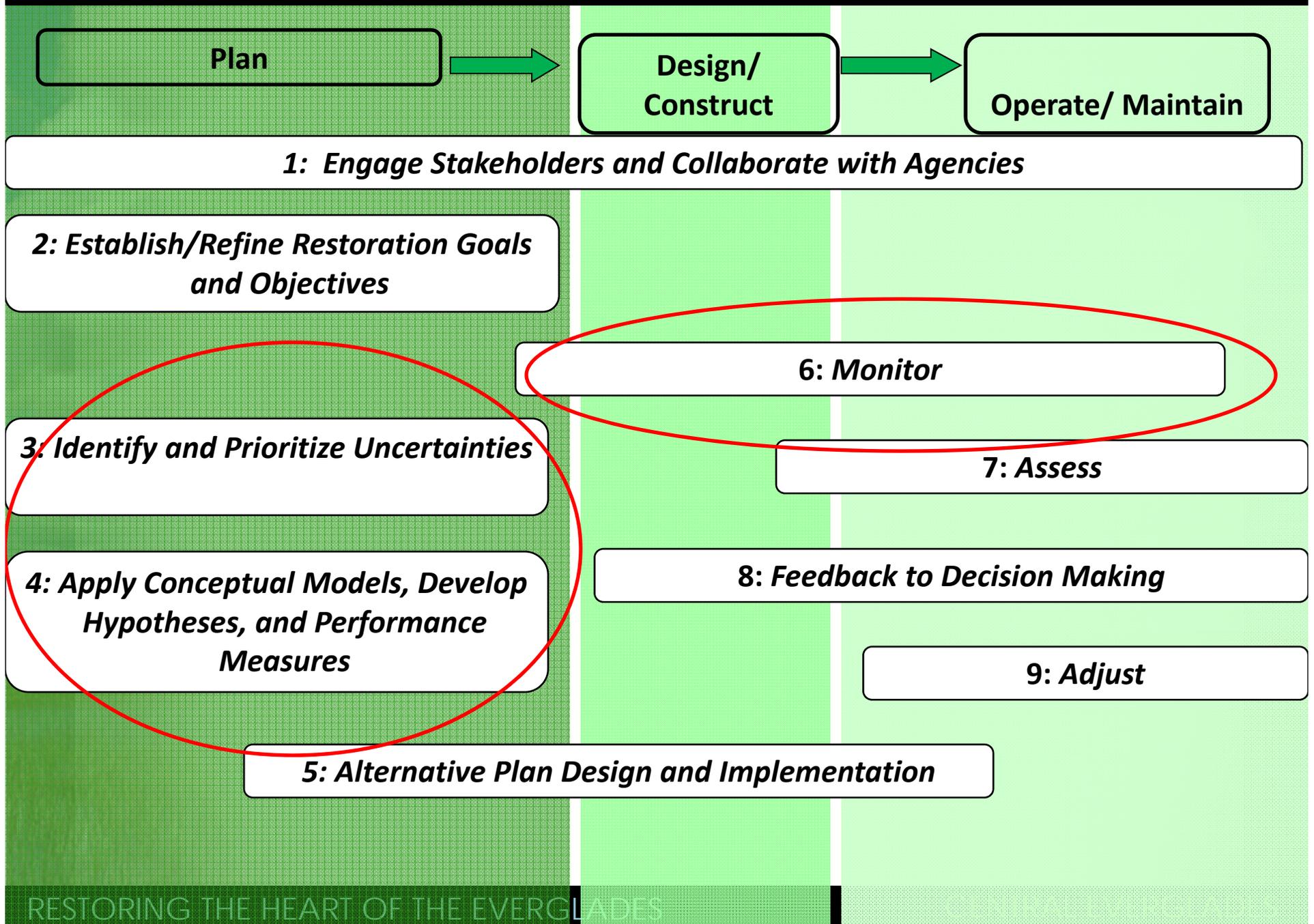
- Opportunity to check how well a project supports and achieves CERP system-wide objectives
- Potentially identify performance issues and suggest project improvements (operations, adaptive management, future project increments)
- Suggest monitoring and analysis for adaptive management and continued improvement of restoration
- Required by CERP Programmatic Regulations
- CEPP Lake Okeechobee and northern estuaries evaluation was initiated September 17-18, 2012

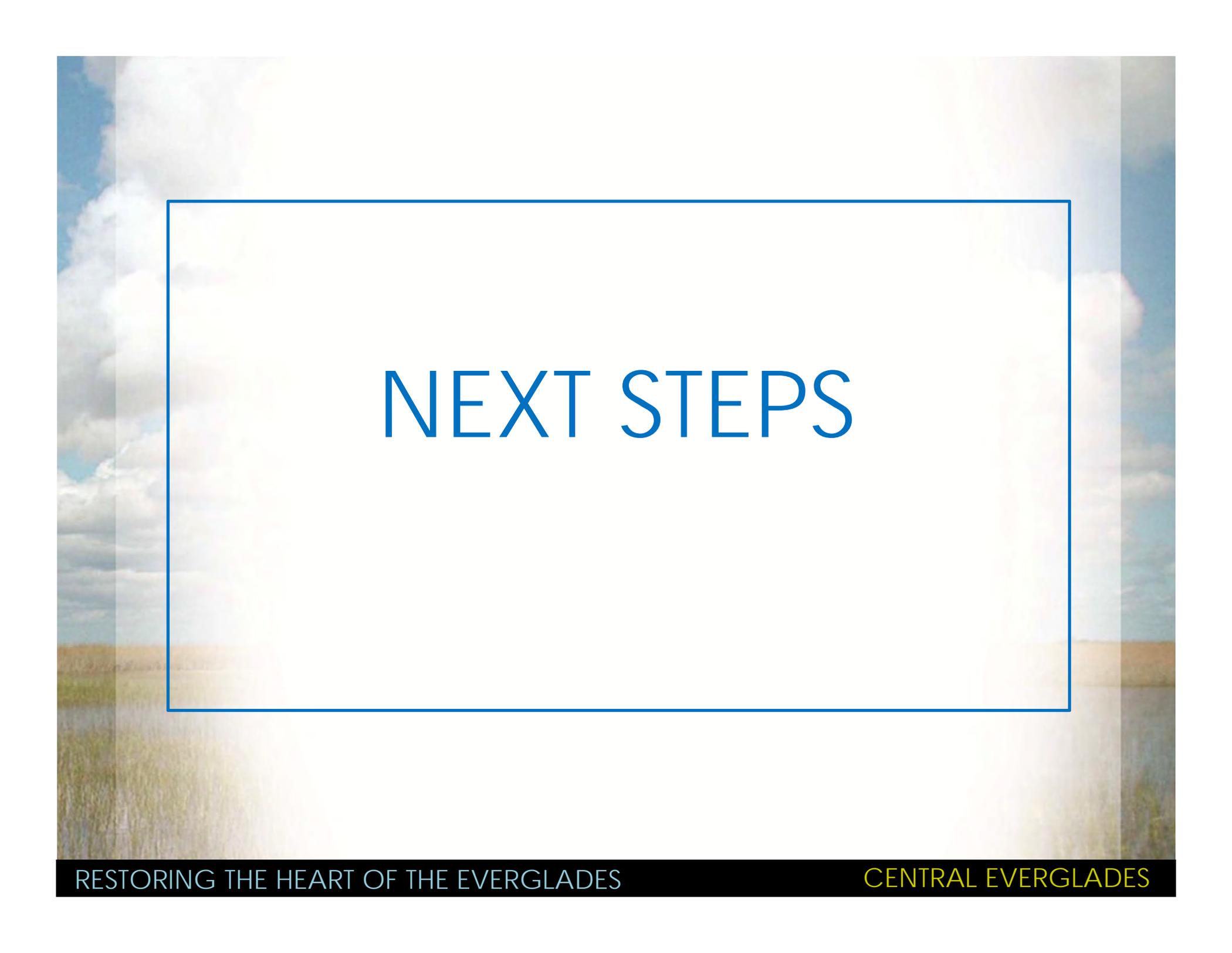
CEPP Ecosystem Services

“Ecosystem services” are the resources and processes of ecosystems that are integral to human well-being, described in monetary terms (dollars).

- Not being used to select the CEPP plan; parallel effort.
- Not limited to or a replacement for calculating Habitat Units
- Describing many values of the Everglades that will be improved by CEPP, compared to future without CEPP
- Not a panacea! Some of the most important values are also the most difficult to quantify, E.g., “Existence value”
- Preliminary results should be available in Dec 2012

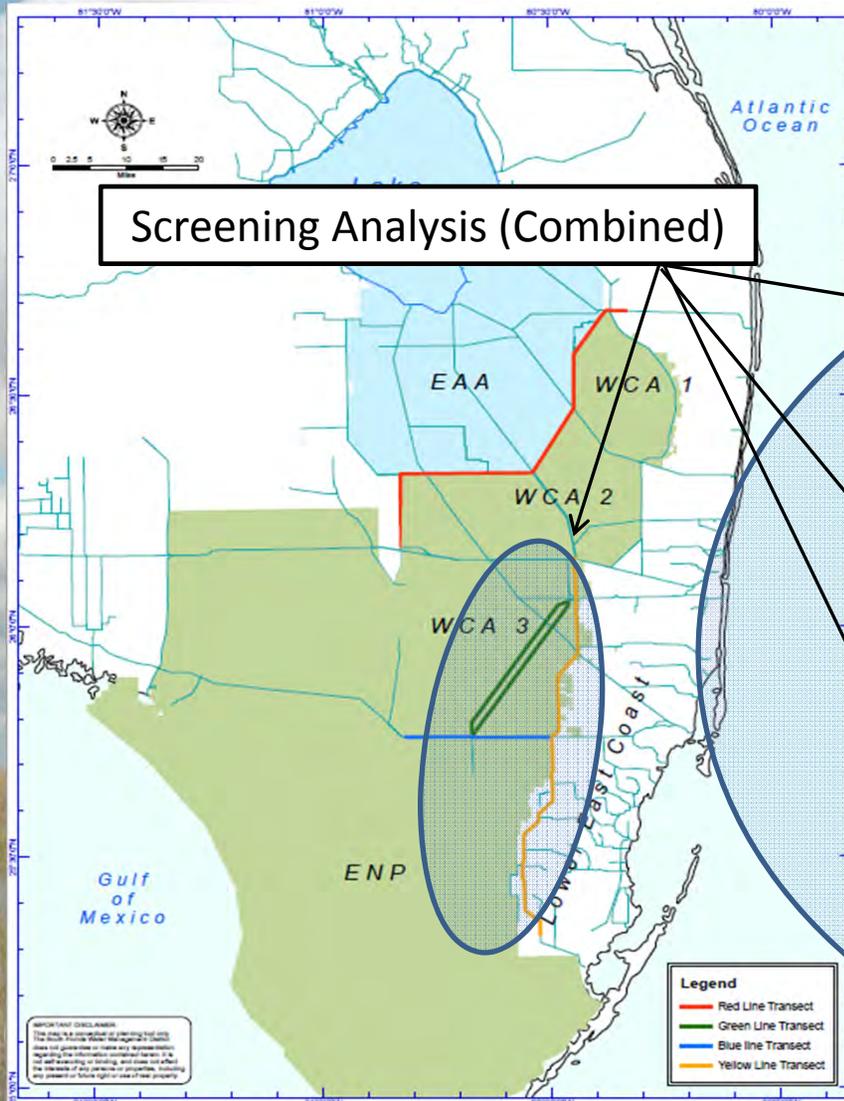
Nine Activities to Integrate Adaptive Management into CERP Process





NEXT STEPS

SPATIAL PERSPECTIVE



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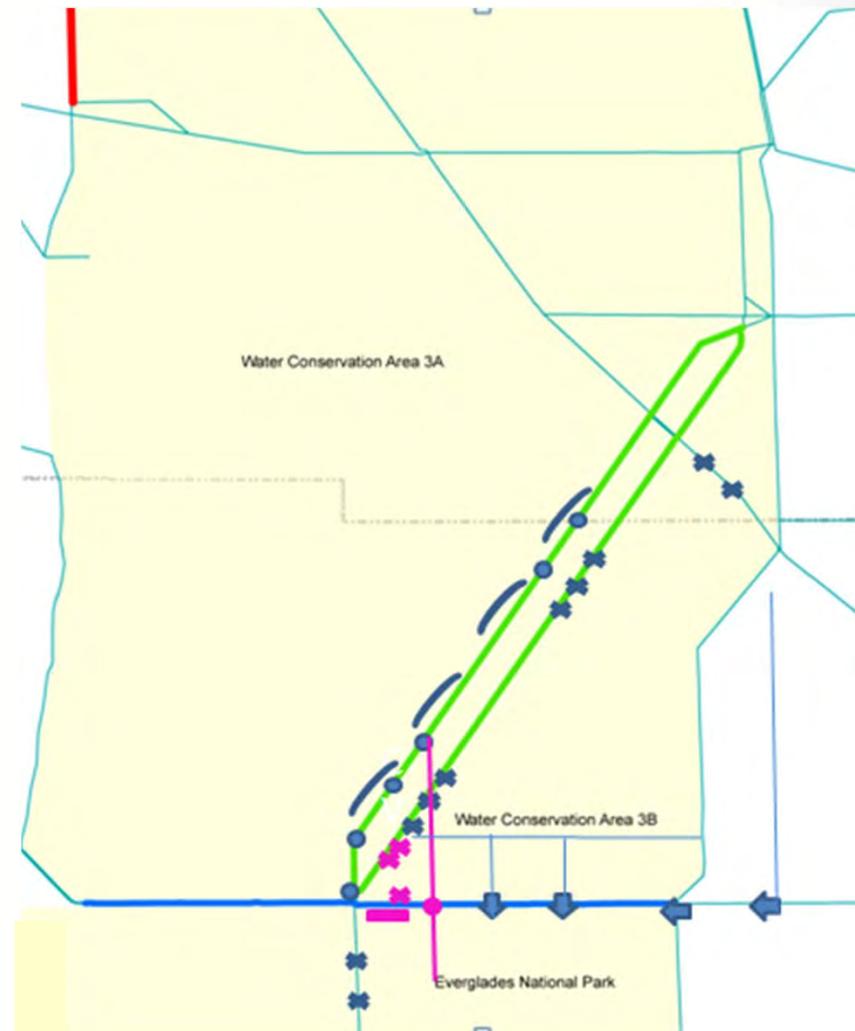
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FEATURE TYPES UNDER CONSIDERATION FOR L-67 A/C AND L-29 LEVEES

- Water Control Structures
- ✳ Levee Degrade
- ↓ Pump Stations
- Roadway Bridge
- | Berm
- ⤵ Spoil Mound Removal



“WHAT WE’VE HEARD”

- L-67 Canals are important for boating and fishing access – no plugs or bypass channels
- Provide additional recreational access to L-67C near S-151
- Incorporate results from Decomp Physical Model (DPM) in plan formulation and detailed design
- Open connection between L-29 and WCA 3B for fisheries
- Include “Greenway and Blueway” trails along L-29 and L-31 N Canals
- Include boat ramps in Recreation Plan

UPCOMING MEETINGS*

- September:
 - ▶ 26 – Recreation Workshop (Miami Dade County)
- October
 - ▶ 1 – Project Delivery Team (District)
 - ▶ 2 – Working Group Public Workshop (District)
 - ▶ 25 - Project Delivery Team (District)

*See www.sfrestore.org for updated calendar



QUESTIONS?

Visit www.evergladesplan.org for updates and current information

CENTRAL EVERGLADES PLANNING PROJECT



Draft iModel Hydrological Screening Targets for WCA3A, WCA3B and ENP

Presentation by the CEPP Eco-
subteam

Fred Sklar, Everglades Systems
Assessment, Applied Sci.
Bureau, SFWMD

SCG Meeting
September 20, 2012

iModel for CEPP Screening

- iModel is a computer optimization program that provides flow scenarios (solutions) to meet numerous, restoration targets simultaneously
- Modeling team needs hydrologic targets in WCA3A, WCA3B and ENP for the iModel
- iModel will show percent of target achieved and changes in infrastructure/operations, to achieve an increment of CEPP restoration

Hydrological and Ecological iModel Targets

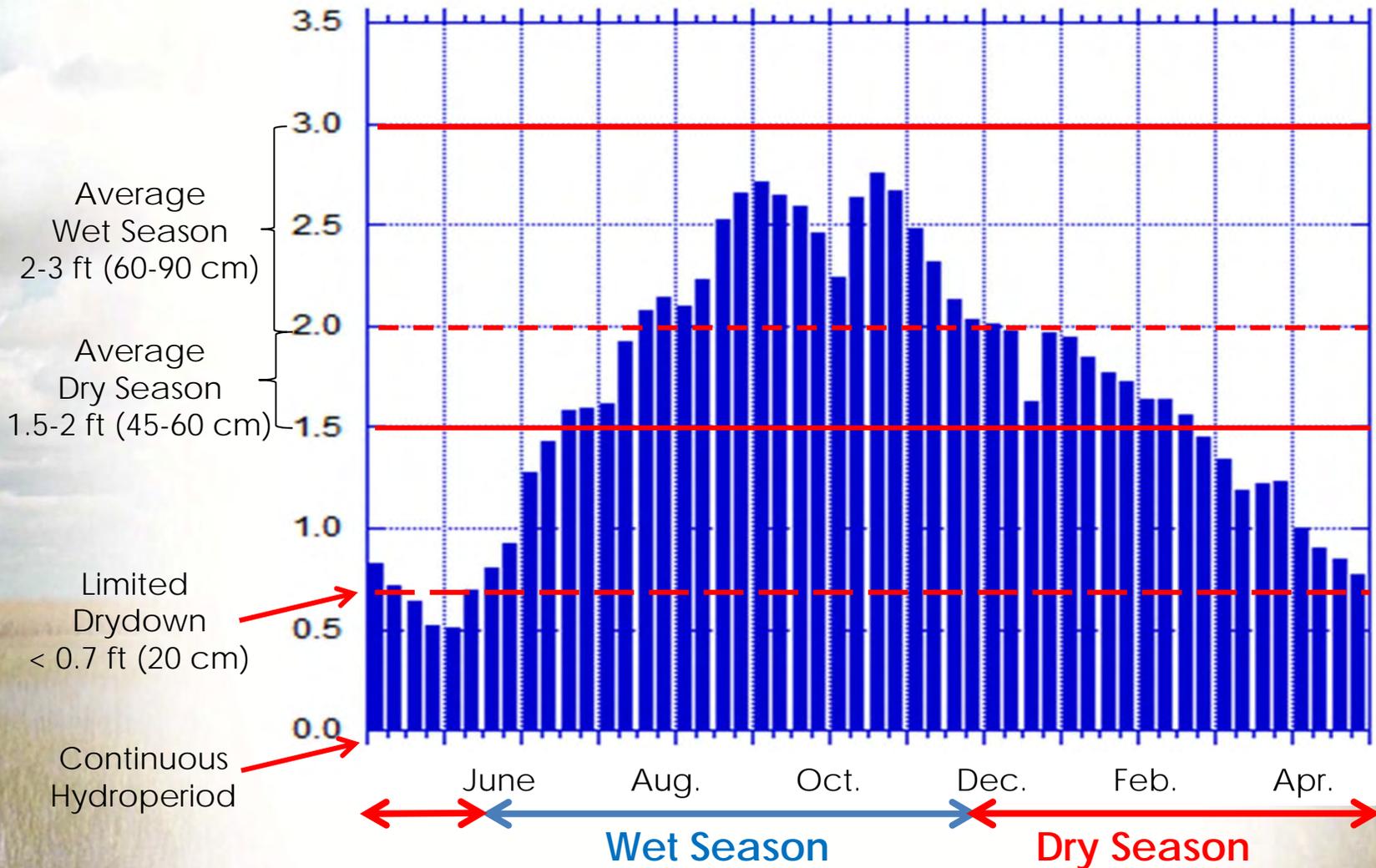
- Targets designed to achieve a natural system hydrology needed for ridge and slough landscape conservation and restoration
- CEPP targets aim for an increment of restoration that will benefit the areas given the current ecology and elevations
- Assumption is to test possibility of gravity flow from WCA3A to WCA3B to ENP
- Targets are mainly based on the RECOVER-approved Slough Vegetation Performance Measure (PM) with the caveat that this hydrology may not be suitable for all places during this first increment of CEPP

Slough Vegetation Performance Measure (PM)

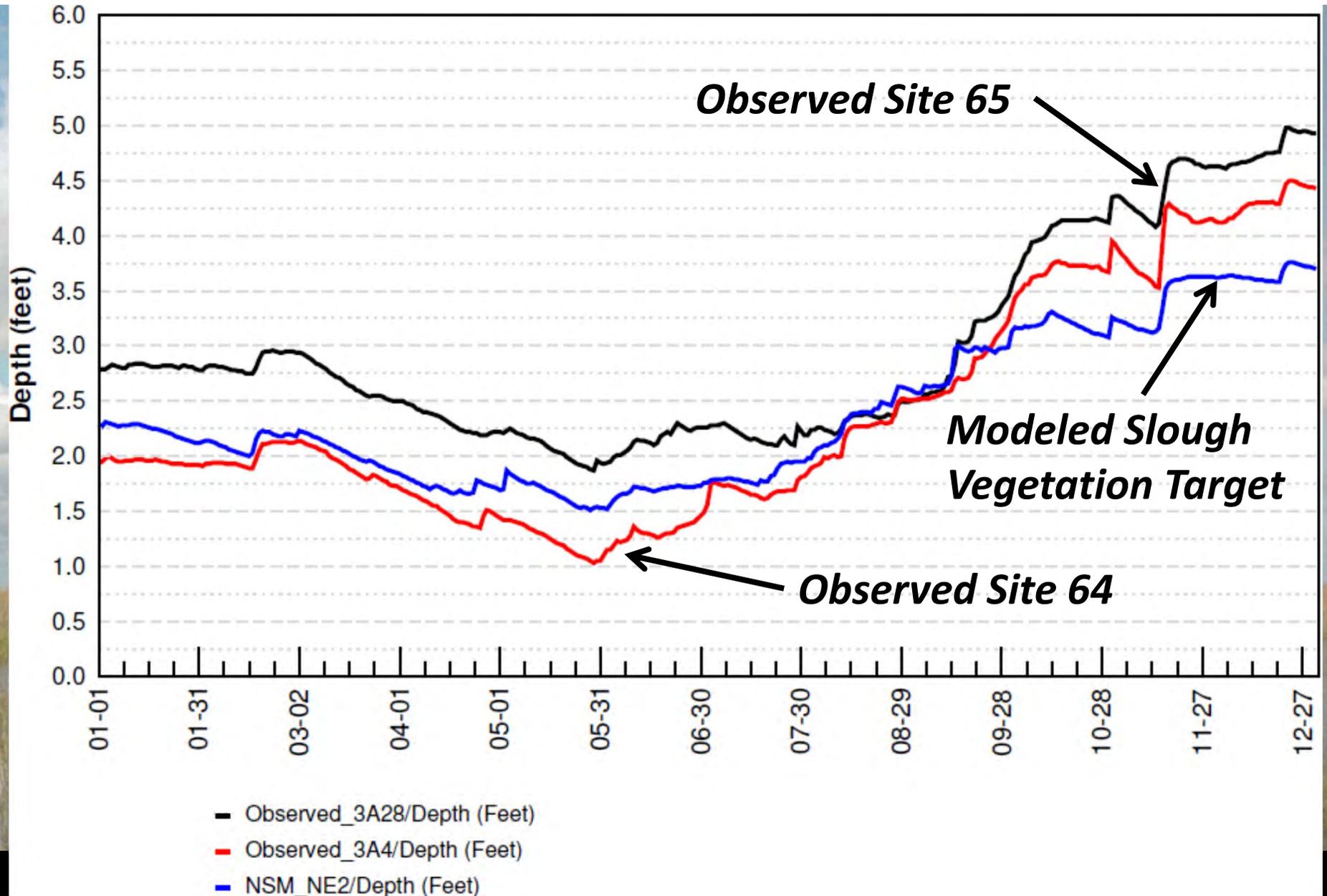
- This RECOVER PM provides a target that describes a full-restoration, pre-drainage pattern of hydroperiods within sloughs, with the expectation that suitable water depths for slough vegetation will provide the desired restoration condition for the entire ridge and slough landscape
- Four hydrologic metrics are combined to determine suitability for slough vegetation: 1) continuous hydroperiod; 2) continuous dry-down duration below 0.7 ft (20 cm); 3) wet season average water depth; and 4) dry season average water depth

Weekly Average Water Depth (2000-2011)

3A4 (Site 64)

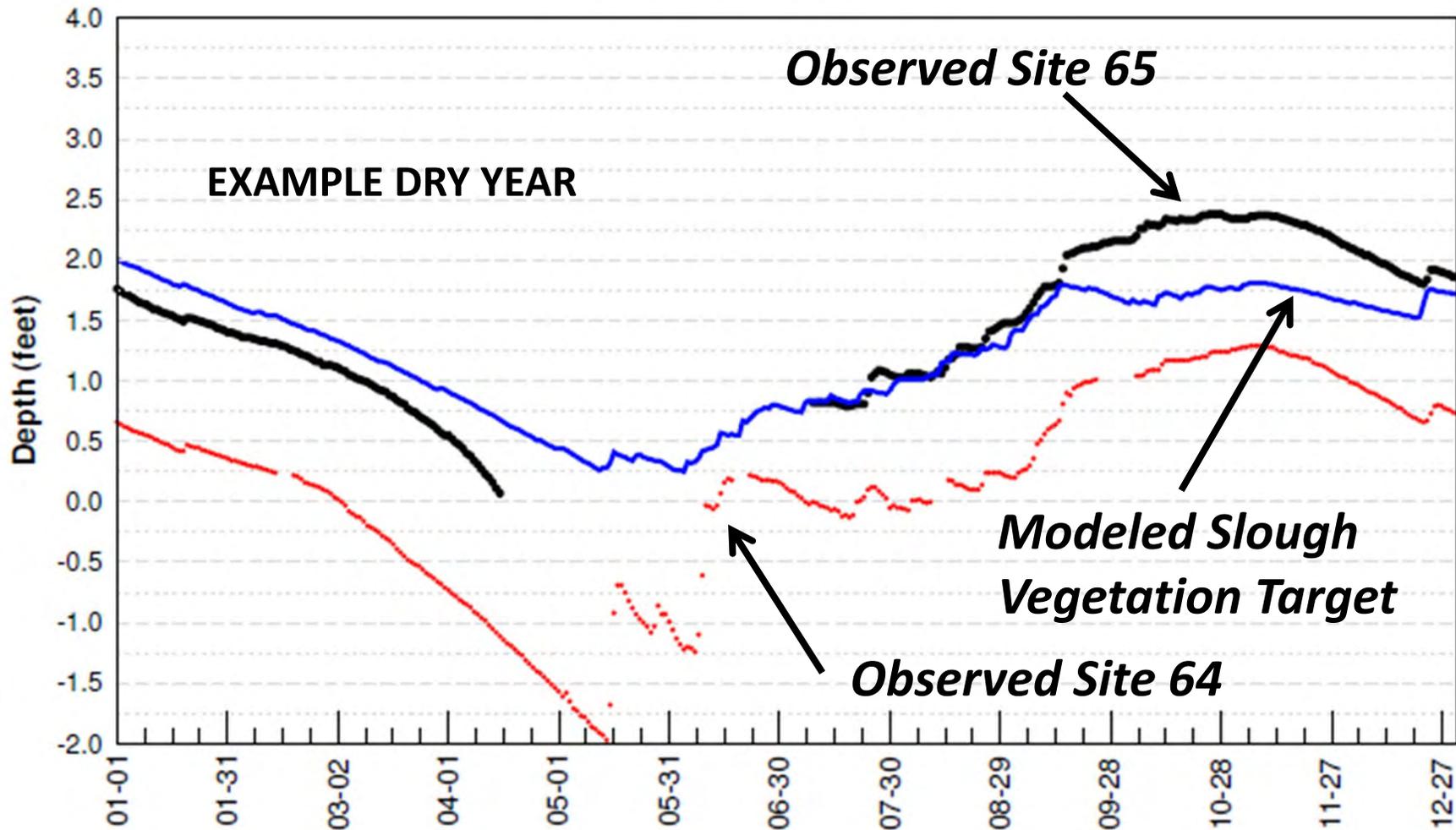


Daily Observed Water Depths and Modeled Slough Vegetation Targets for 1994



Observed Water Depths and Modeled Slough Vegetation Targets

Daily Water Depths From 1971



- Observed_3A28 (Site 65) Depth
- Observed_3A4 (Site 64) Depth
- Slough Vegetation PM Target Depth

Major features of the ridge and slough landscape in WCA-3A and WCA-3B

Too dry, remnant ridge & slough pattern, no slough vegetation, invasion of willow

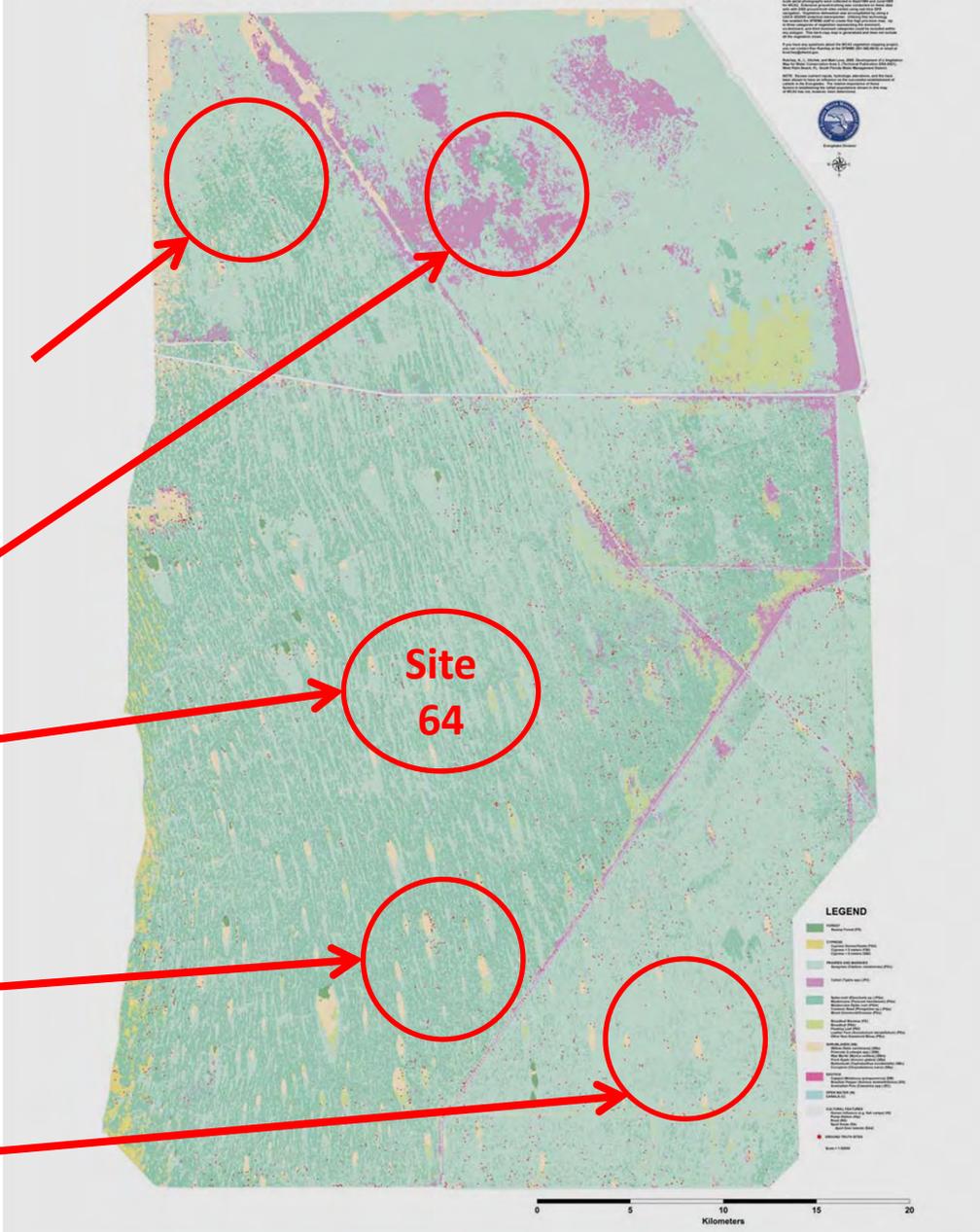
Too dry, loss of peat, no ridge & slough pattern, invasion of cattail

Loss of microtopography, "healthy" ridge & slough pattern

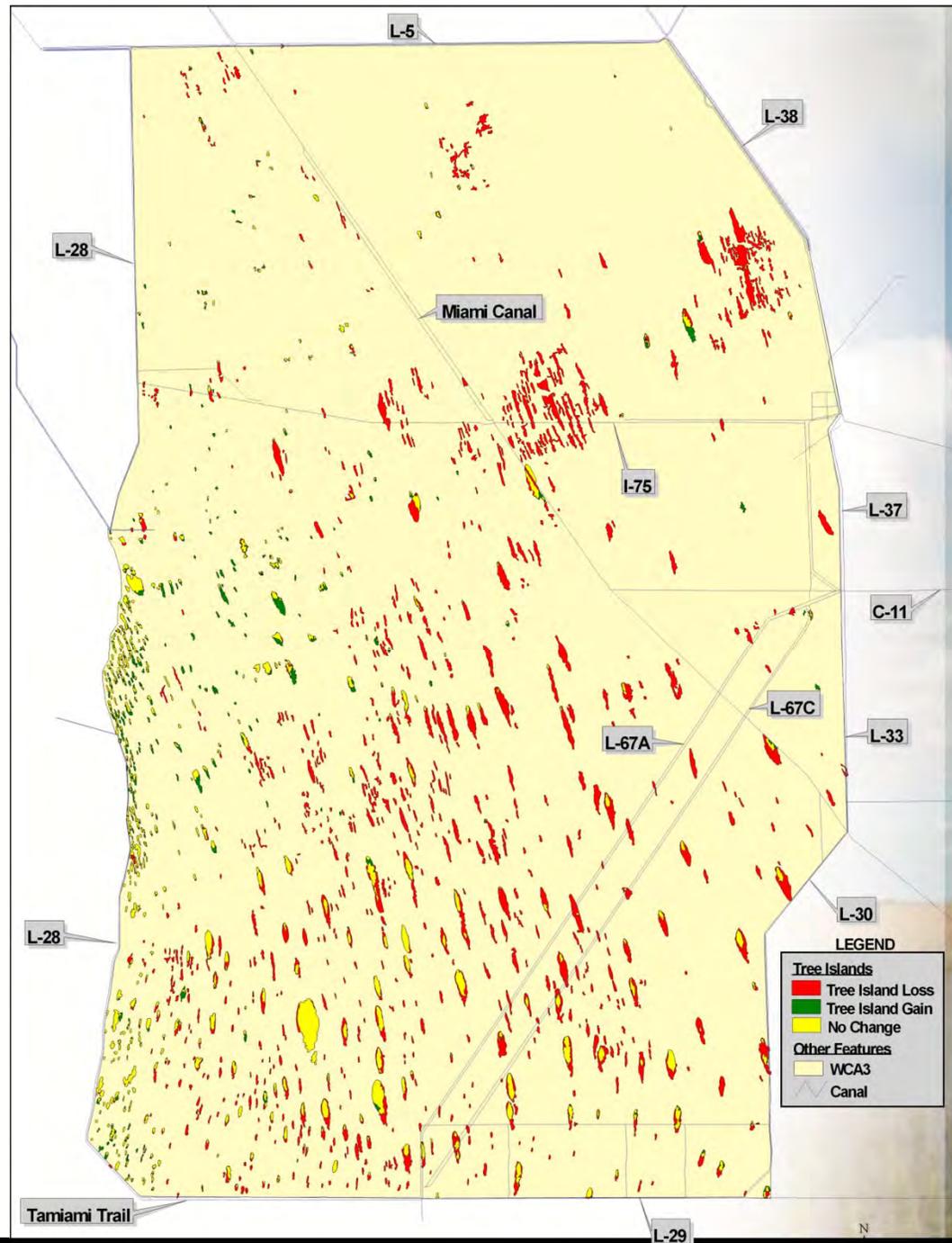
Too wet, remnant ridge & slough pattern

Loss of peat, no ridge & slough pattern

WATER CONSERVATION AREA 3 VEGETATION MAP



Cumulative Tree Island Changes in WCA3 from 1940 until 2004

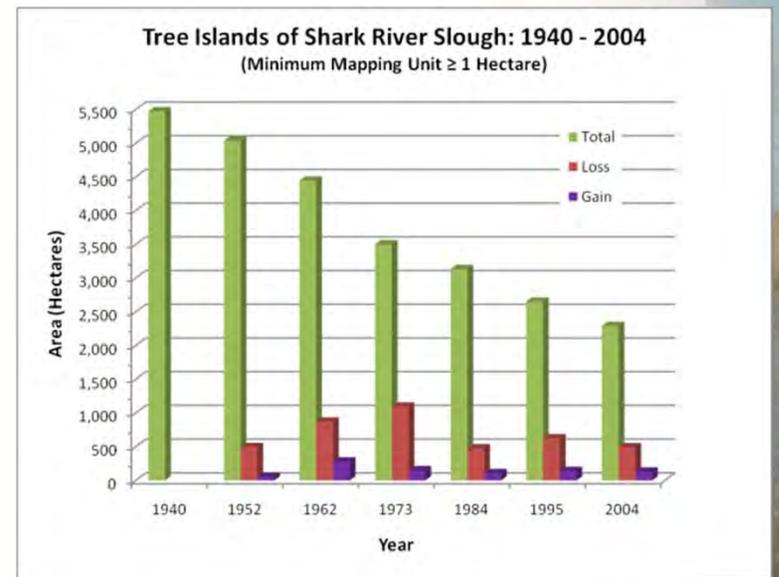
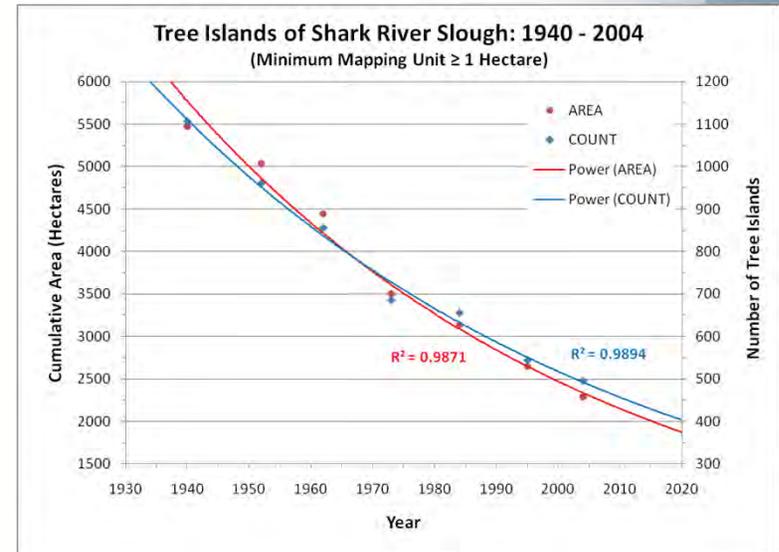
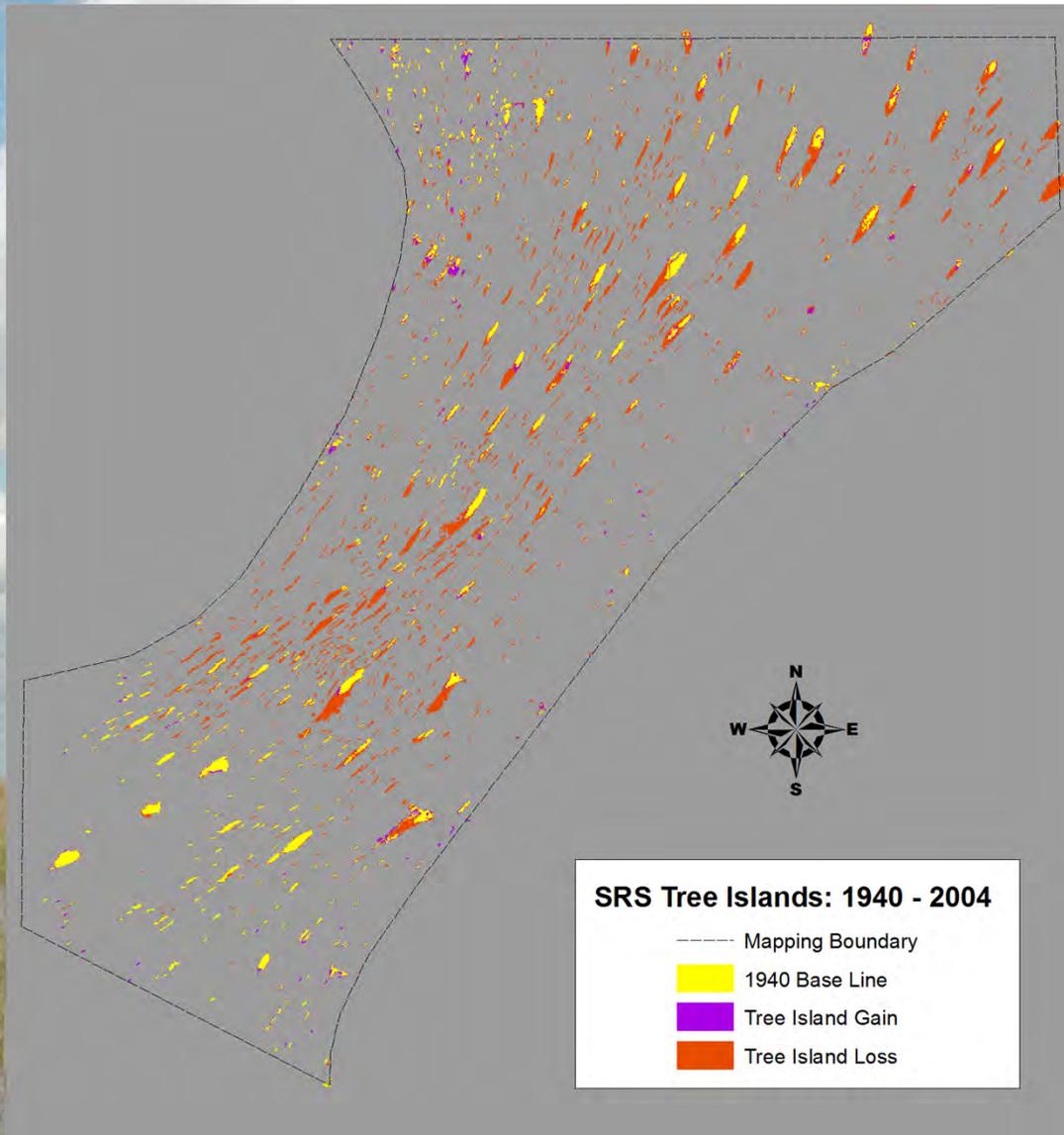


RECOVER Tree Island Mapping – SRS Results

Date: 2004

Count: 496 (-55.2%)

Hectares: 2,291.3 (-58.1%)



Selecting iModel Targets

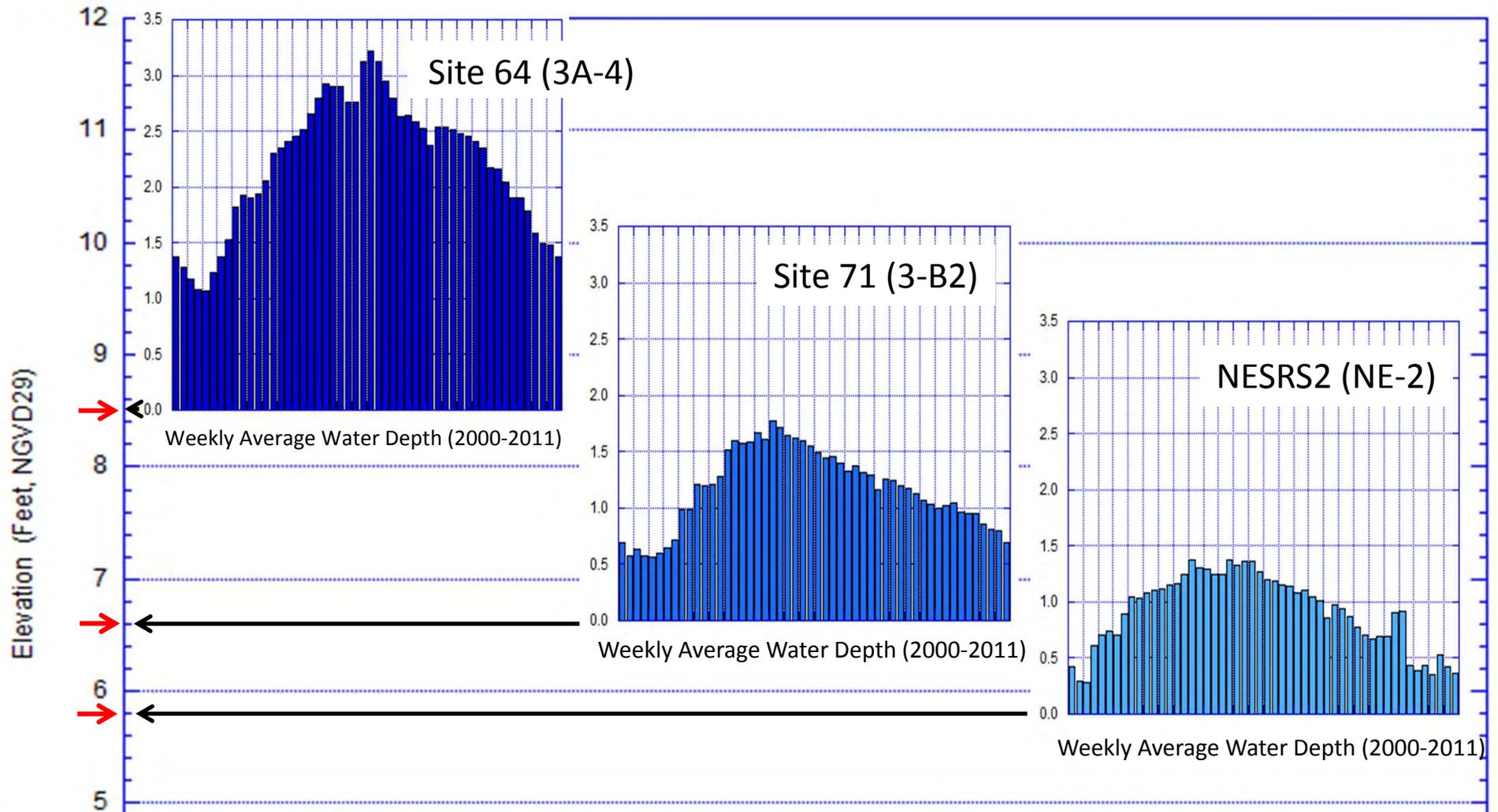
- Identify targets:
 - ▶ Use PMs for 1) slough vegetation suitability, and 2) recession rates
 - ▶ Considering site specific adjustments where appropriate.
- Site 64 in WCA 3A identified as having the best hydrology and the best remaining ridge and slough habitat
 - ▶ Use these conditions for comparisons

Evidence for the use of Site 64 (from Clark, et al 2010 and Cohen, et al 2011)

Site 64 (Conserved 2 block) evidences the most robust landscape patterning throughout WCA 3 and ENP. The elevation bimodality (ca. 25 cm difference between ridge and slough) results in significantly differing hydroperiods between these two landscape types.



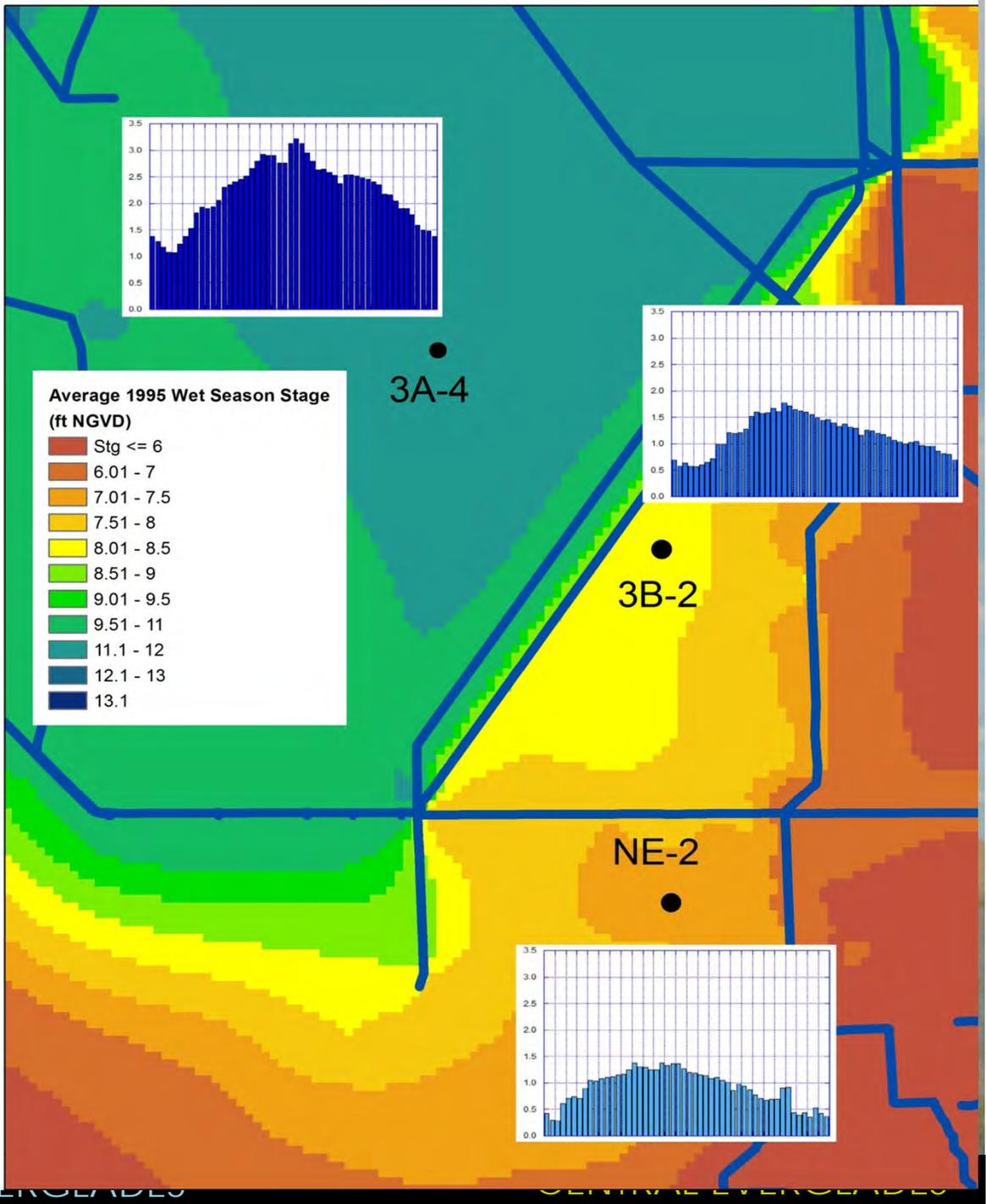
WCA-3A, 3B, ENP Water Level/Depth Comparisons



- Current elevations show the possibility of gravity feed from WCA3A to WCA3B to ENP

WCA-3A, 3B, ENP Water Level/Depth Comparisons

Average 1995 Wet Season Stage (ft NGVD)



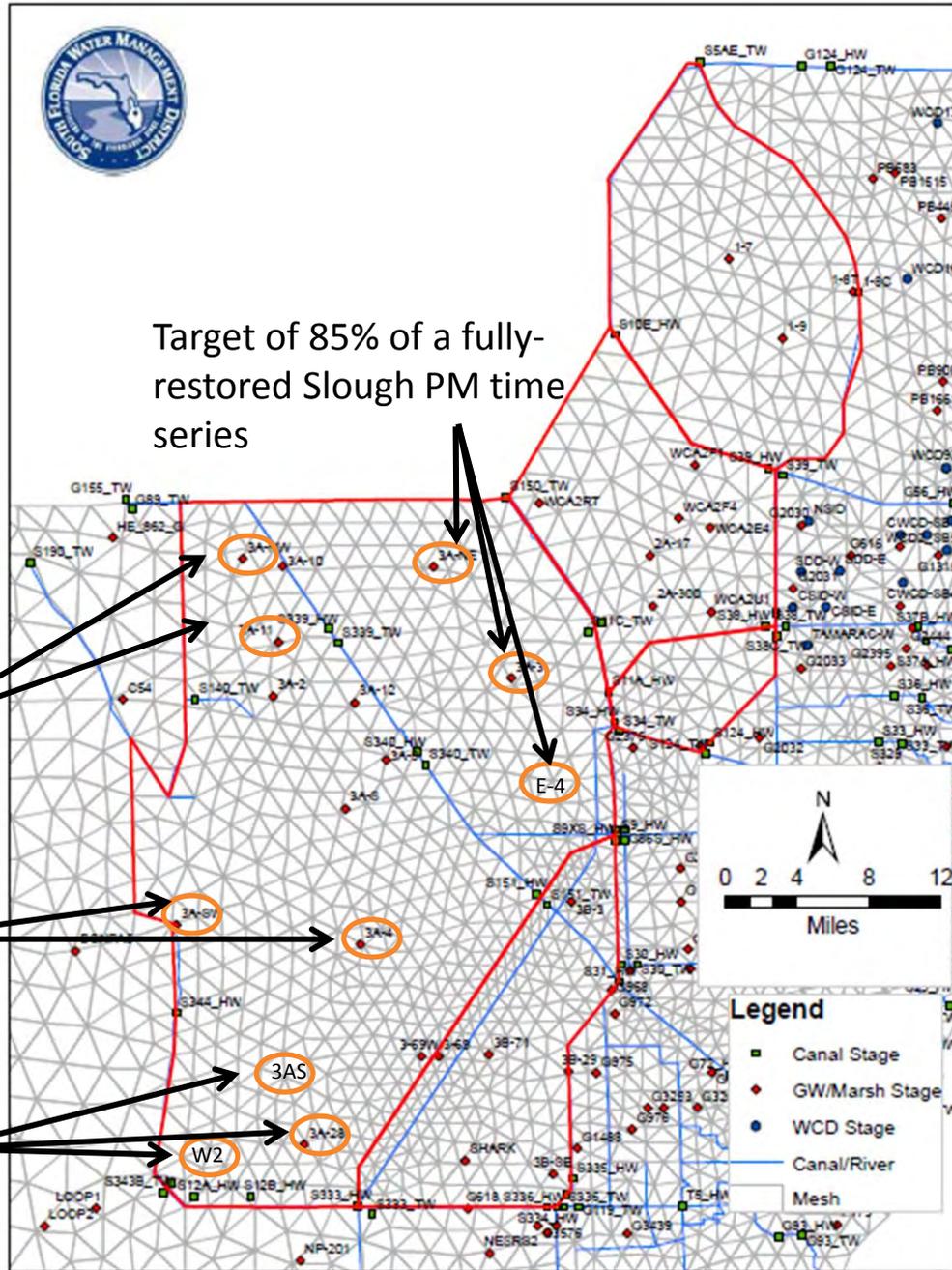
Location of Gages in WCA3 A and iModel Targets

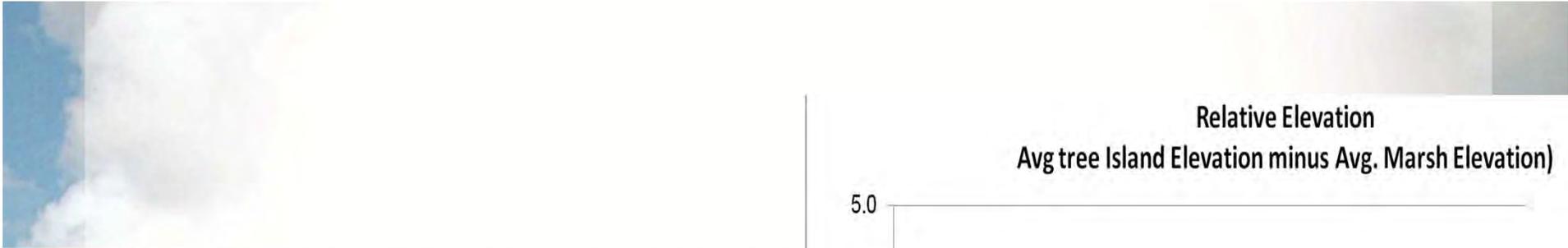
Target Recession Rates - based on FWS Multi-Species Transition Strategy (MSTS) for wood storks, wading birds, snail kites and apple snails in 3A

Target of 92% of a fully-restored Slough PM time series

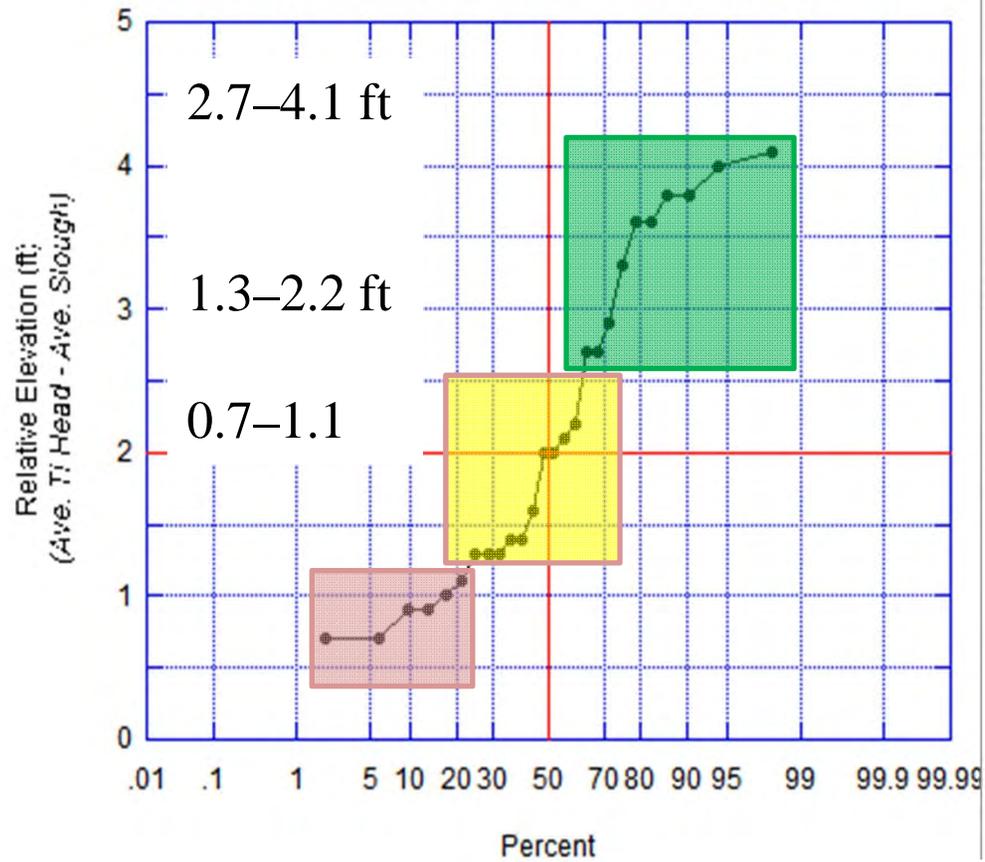
Target is a fully-restored Slough PM time series

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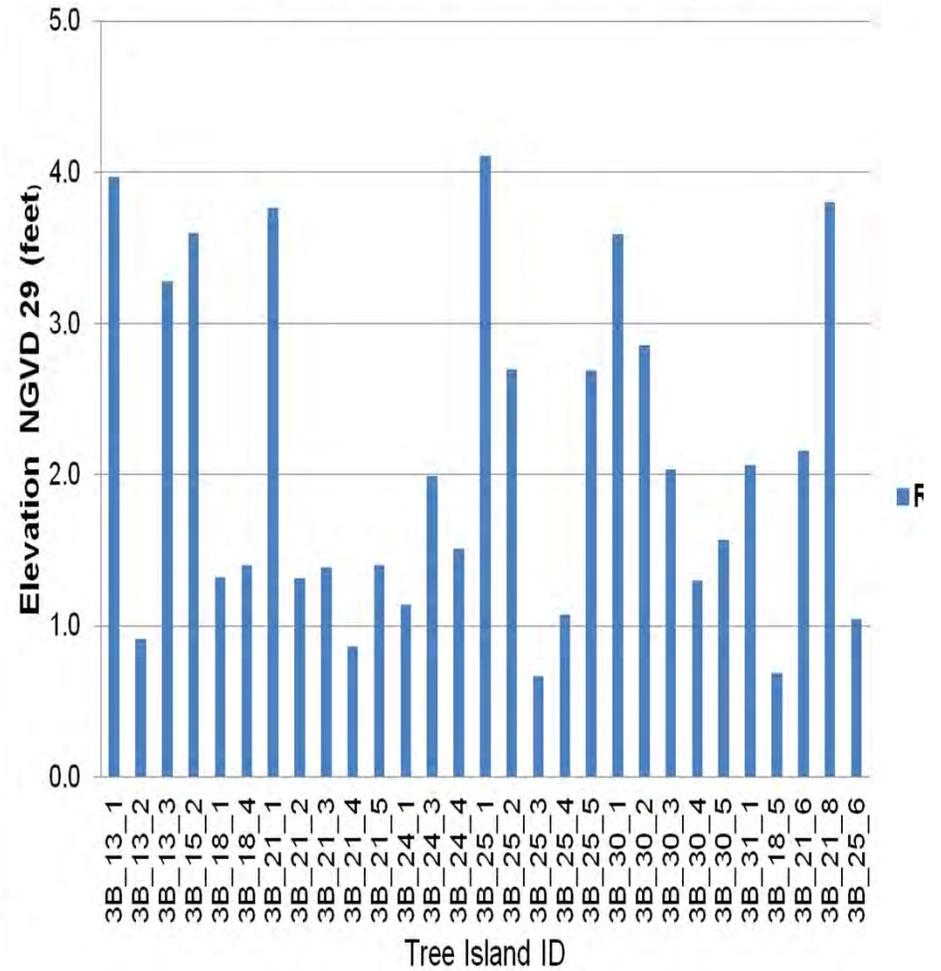




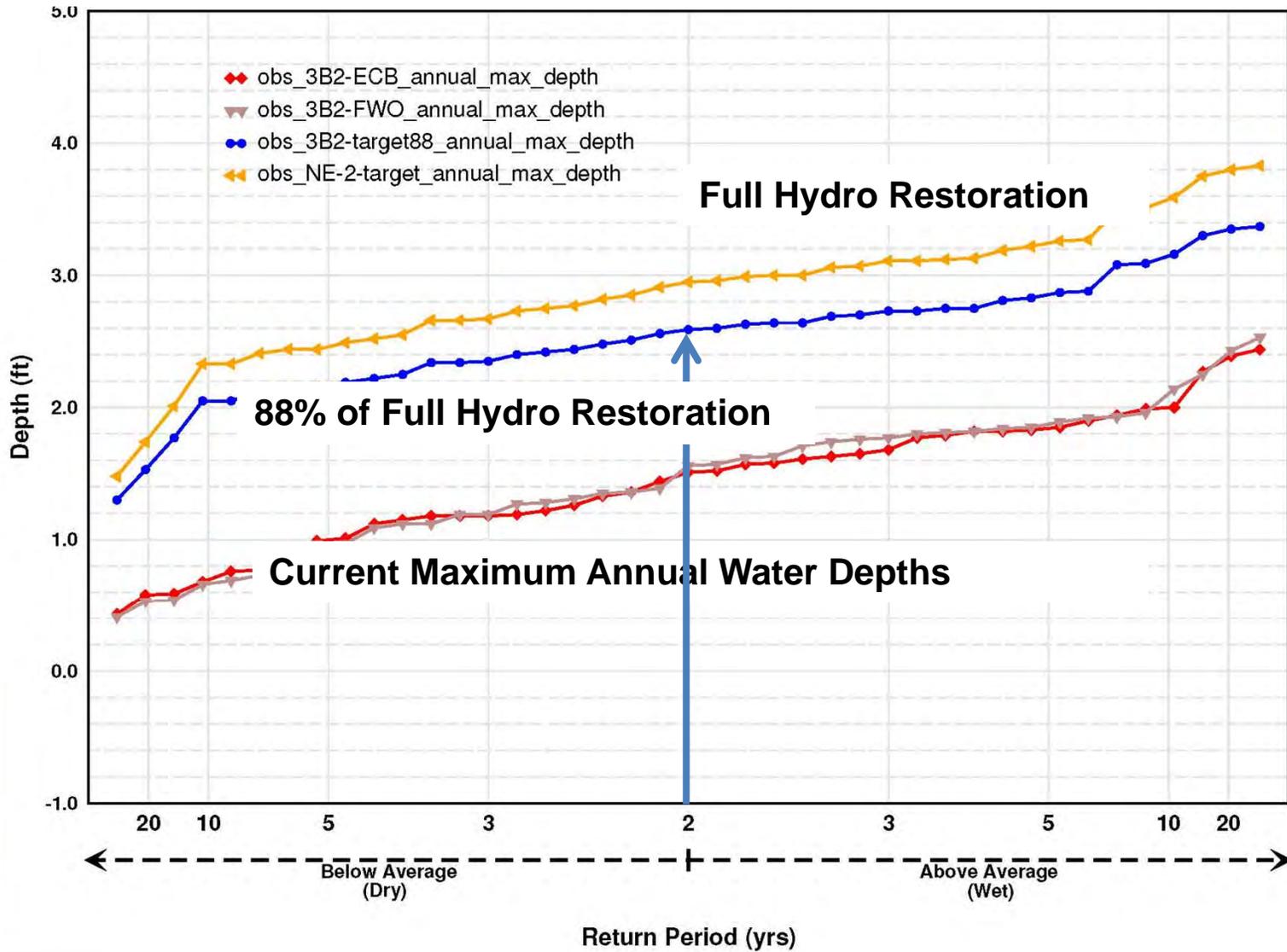
Pdf of Relative Elevations of Tree Islands in WCA 3B



Relative Elevation
Avg tree Island Elevation minus Avg. Marsh Elevation)



Empirical Frequency Curves: 3B2-ECB , 3B2-FWO , 3B2-target88 , NE-2-target Maximum Annual Water Depths (1965 – 2005)



Location of Gages in ENP and iModel Targets

Target is a fully restored Slough PM time series at NE-2

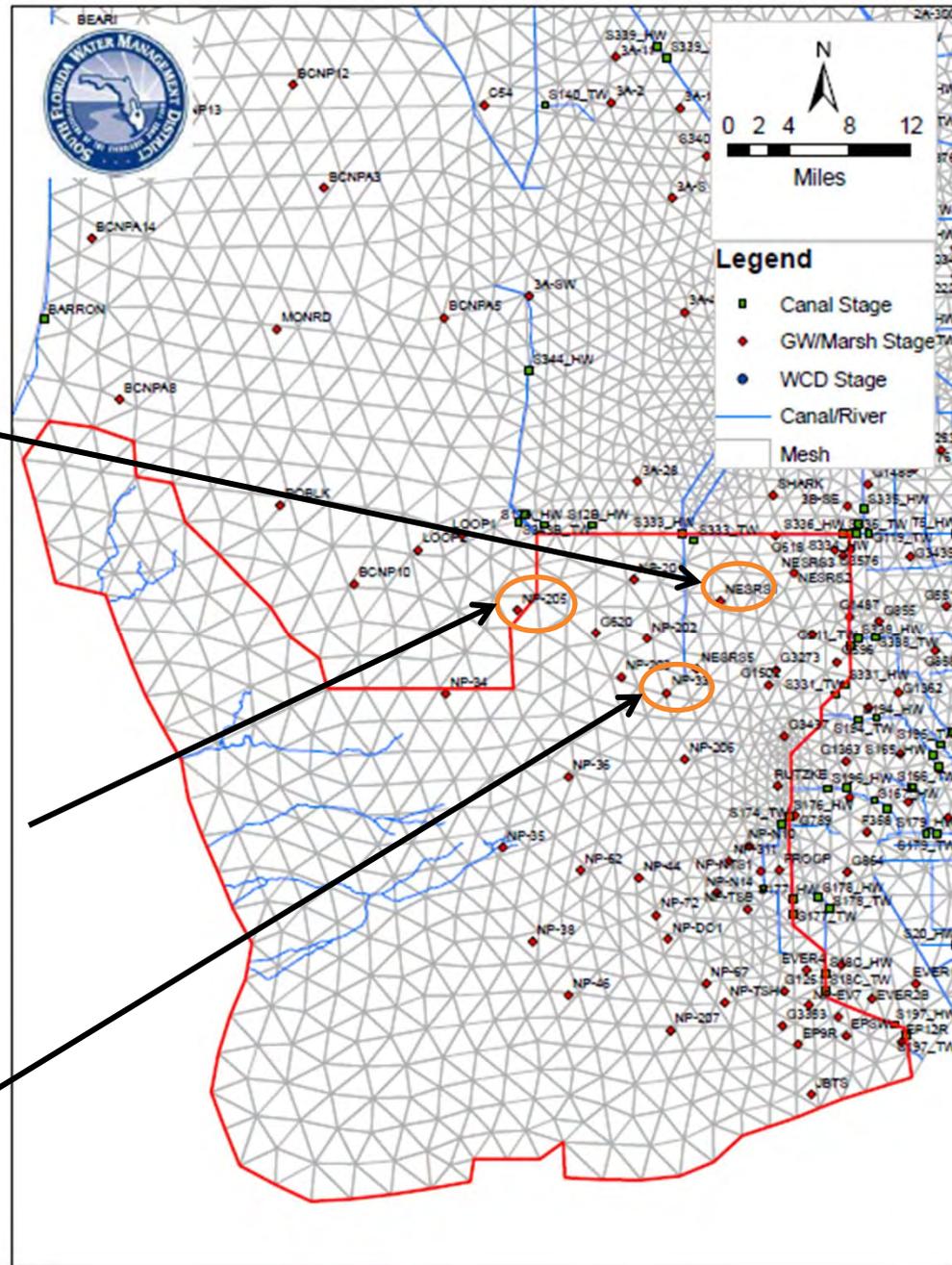
Mimic a Preserved Marl Prairie

1. Hydroperiod of 90-210 days & Water depths of -0.5-1.25 ft

or

2. Apply the NP-46 time series at NP-205 (mimic a preserved marl prairie)

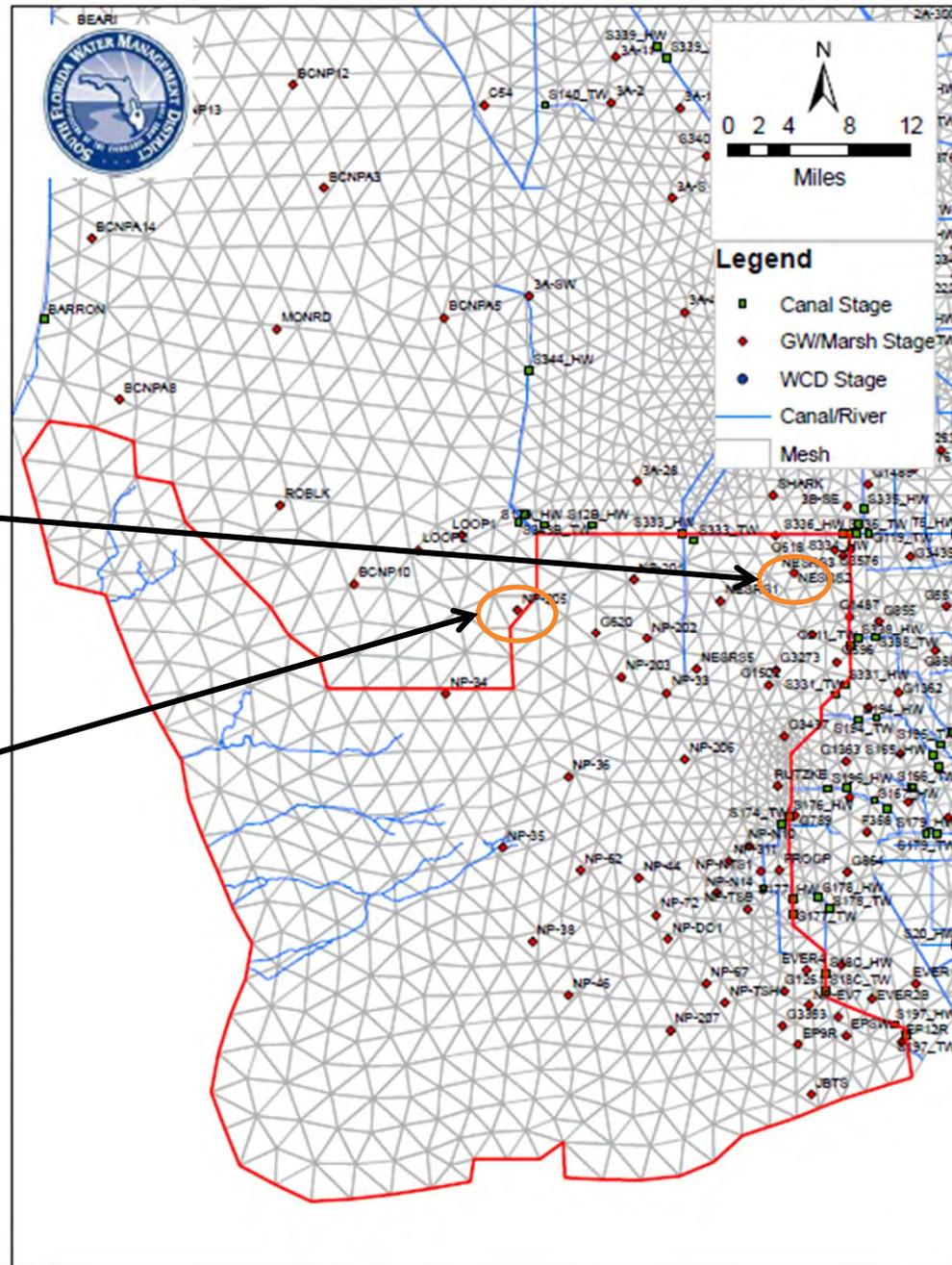
Paleo adjusted stage at P-33 from the Florida Bay Salinity PM time series



Location of Gages in ENP and Draft Proposed Targets

Target is a fully restored Slough PM time series at NE-2

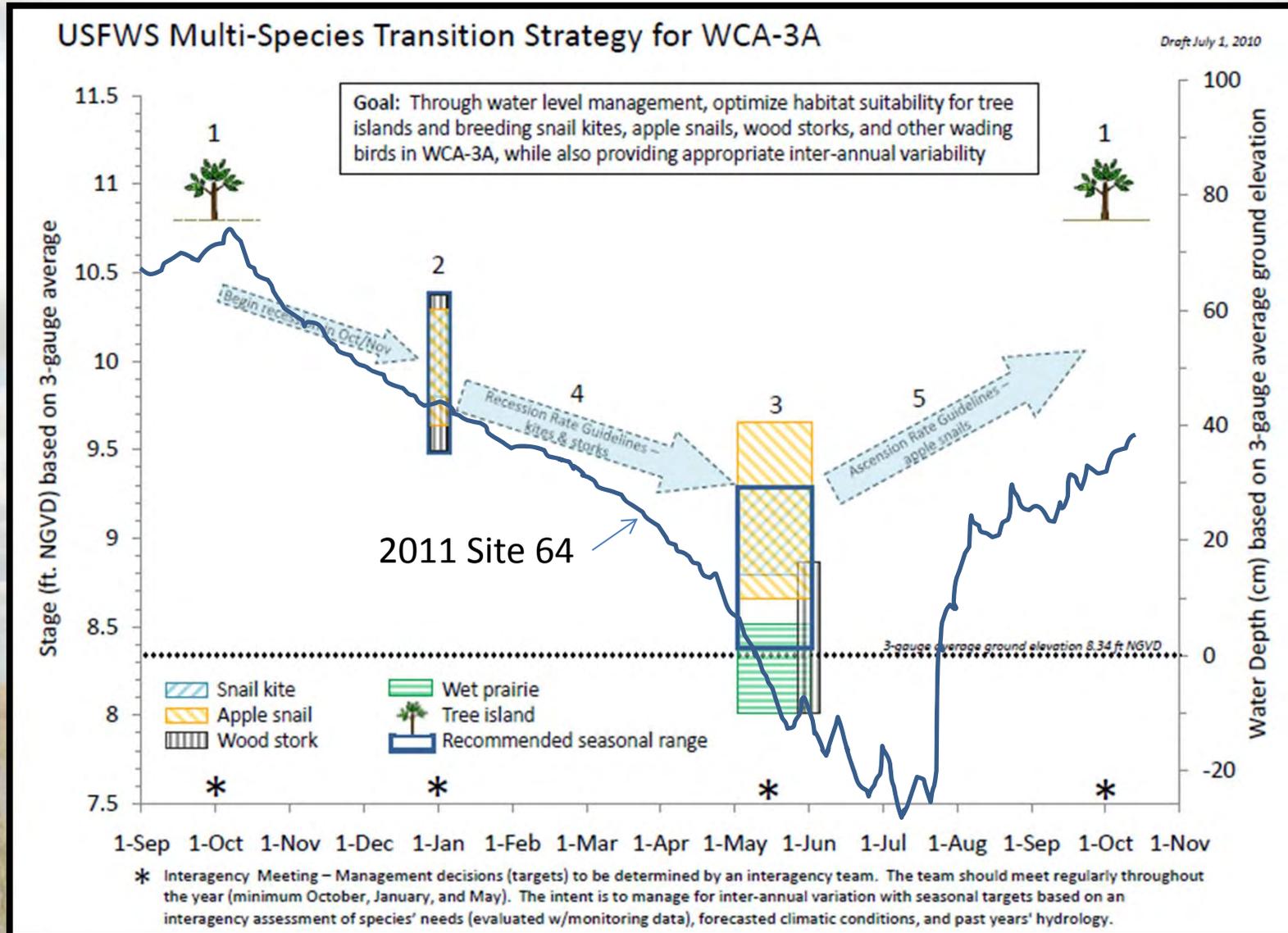
Target is a time series that mimics a preserved marl prairie water depths (approx. -0.5 to 1.25 ft)



Recession Rate Targets

- Recession rates are based on FWS Multi-Species Transition Strategy (MSTS) for wood storks, wading birds, snail kites and apple snails in 3A
 - ▶ The MSTS was a collaboration between snail kite and apple snail researchers, SFWMD, FWCC, and USFWS scientists with input from other agencies and tribes
 - ▶ The MSTS includes species-specific ranges (windows) which reflect water levels or water depths identified by faunal experts and based on the best available science that provide optimal conditions for breeding and foraging

FWS Multi-Species Transition Strategy (MSTS)



Recession Rate Cont'd

- Timing of flows through system is critical to many species of wildlife and is inextricably linked to recession and ascension rates
- Recession rates based upon WCA-3AVG (Average of Sites 63, 64 and 65) but can be used at individual sites
- Assumptions:
 - ▶ CEPP will move toward a rain driven system
 - ▶ Recession/ascension rates are largely driven by rainfall and evapotranspiration



Florida Softshell Turtle

Questions?



Healthy Ridge and Slough Fire Pattern