Update on the Modified Water Deliveries to Everglades National Park

Technical Oversight Committee
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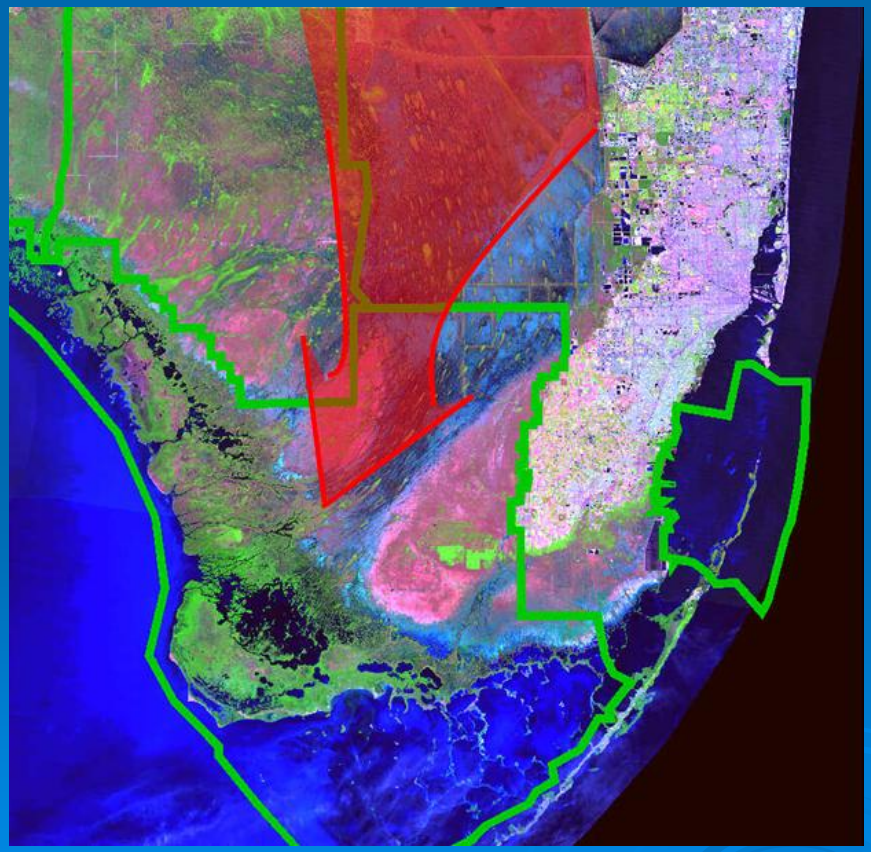
Objective

- Provide update on Mod Waters Project
- Describe hydrologic restoration benefits
- Preliminary estimate of phosphorus benefits

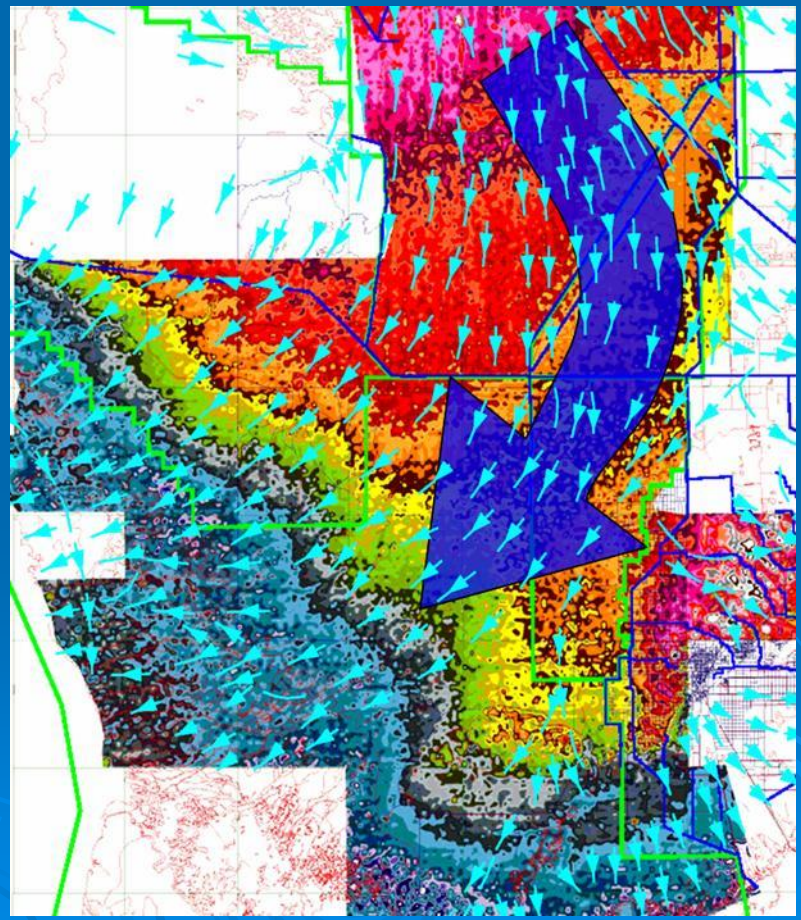
MWD ENP Project

- MWD ENP designed to facilitate more flows (timing and distribution) flow into ENP
  - Improved flows to Northeastern Shark Slough by conveying water from Water Conservation Area-3A (WCA-3A) through Water Conservation Area-3B (WCA-3B) to Northeastern Shark Slough (ENP expansion area).
- Project authorized by Congress in 1989
  - General Design Memorandum prepared in 1992; approved May 1993
  - Project Cooperation Agreement executed Sept 1994
  - Construction initiated in 1995

Current Shark Slough Flow Patterns



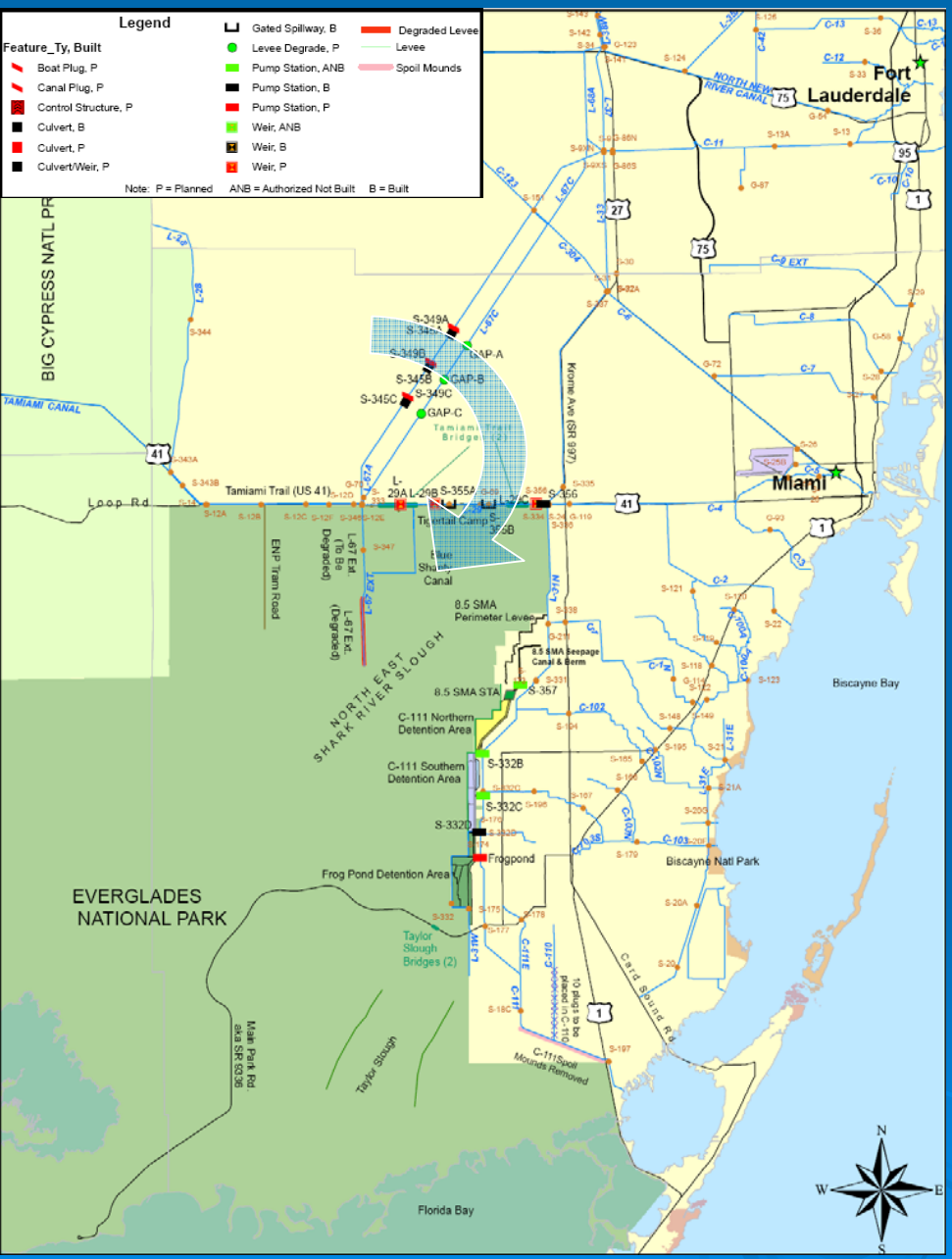
Desired Shark Slough Flow Patterns (Parker 1956)



Description of major components

- Flow from WCA-3A into WCA-3B
  - S-345A, S-345B, & S-345C through L-67A Levee
  - A corresponding ~ 6,000 feet long gap in the L-67C Levee located downstream of each S-345
- Flow from WCA-3B into ENP
  - Existing S-355A and S-355B and three new 200 feet wide weirs through the L-29 Levee
  - These structures increase flow from essentially zero (9,000 acre-feet per year) to an average annual flow of about 300,000 acre-feet per year.

Modified Water Deliveries Project Update



Conveyance Features

- L-67A and L-67C
- S-355A (L-29) - *Complete*
- S-355B (L-29) - *Complete*
- Tamiami Trail - *RGRR/ROD Complete*
- L-67 Extension - *4 of 9 miles complete*

Mitigation Features

- 8.5 Square Mile Area - *Constr. Underway*
- Osceola Camp - *Negotiations underway*
- Tigertail Camp- *Complete*

Seepage Control Features

- S-356 (L-31N) – *500 cfs of 950 cfs complete (temporary pump)*

Other Project Activities

- CSOP - *NEPA evaluation of final conveyance features and operational plan*

Preliminary Estimates of TP Improvements to Shark River Slough

1. CSOP Water Quality Sub-Team
   - **C**ombined **S**tructural **O**peration **P**lan (CSOP)
   - Evaluation of Alternatives in support of CSOP Environmental Impact Statement (January 2006)
   - *Hansen, I., J. Riley, G. Payne, J. Castro and M. Zimmerman 2006. Water Quality Evaluation of CSOP Alternatives. Prepared for the U.S. Army Corps of Engineers and the CSOP Project Delivery Team to supplement the Environmental Impact Statement for CSOP. January 20, 2006.*
2. Independent evaluation – G. Goforth

CSOP Evaluation

- Interagency Team (FDEP, USACE, ENP)
- Evaluated "Existing Condition" and 5 alternatives
- Considered hydroperiod and TP benefits, as well as potential water quality impacts
  - Re-direction through WCA-3B ranged from 19% to 64% of flows
    - 7-51% of flow across northern boundary of Park passed through WCA-3B
    - Flow through S-333* ranged from 1% to 35%
  - Set TP concentration at 8 ppb in outflows from WCA-3B
    - Median value of WCA-3A TP concentrations near L-67A
    - Conservative estimate – likely lower TP concentrations in WCA-3B
  - "Existing condition" – 10.3 ppb (10.9 metric tons/yr) for S-12s/S-333 & 25% through S-333*
    - Actual WY2002-2006 condition: 9.3 ppb (10.1 MT/yr) & 12% through S-333*
  - Preferred alternatives decreased TP from -2.0 to -2.3 ppb (8.0–8.3 ppb)
  - Preferred alternatives decreased loads from 2.04 to 2.83 MT/yr

* S-333 minus S-334 flows

Independent Evaluation

- Used WY2002-2006 flows and TP for S-12s/S-333*
  - Should improve as upstream basins reduce TP levels
- TP concentration at outflow from WCA-3B:
  - Used steady-state design model
  - Assumed 55% of flow passed through WCA-3B
  - Adj. K = 20 m/yr (STA-2 prior emergent wetland)
  - Used average WY2002-2006 TP at S-151 as inflow = 17 ppb
  - Forecast TP from WCA-3B of <6 ppb
    - Below calibration range, but within observed range in WCA-3
    - *Set to median of WCA-3B of 7 ppb*
- Combined inflows to Shark River Slough <8 ppb
  - Reduction of ~1.5 ppb (1.2 MT/yr) from current conditions
  - Reduction in concentration almost identical to CSOP evaluation

* S-333 minus S-334 flows

Summary

- The MWD ENP project is designed to meaningfully re-establish flow to Northeastern Shark Slough
- Separate analyses estimated TP concentration reduction of 1.5-2.3 ppb in Shark River Slough inflows
- The forecast average annual TP concentration ranges from 7-8 ppb