BISCAYNE BAY
Dry Season Operations 2012-2013

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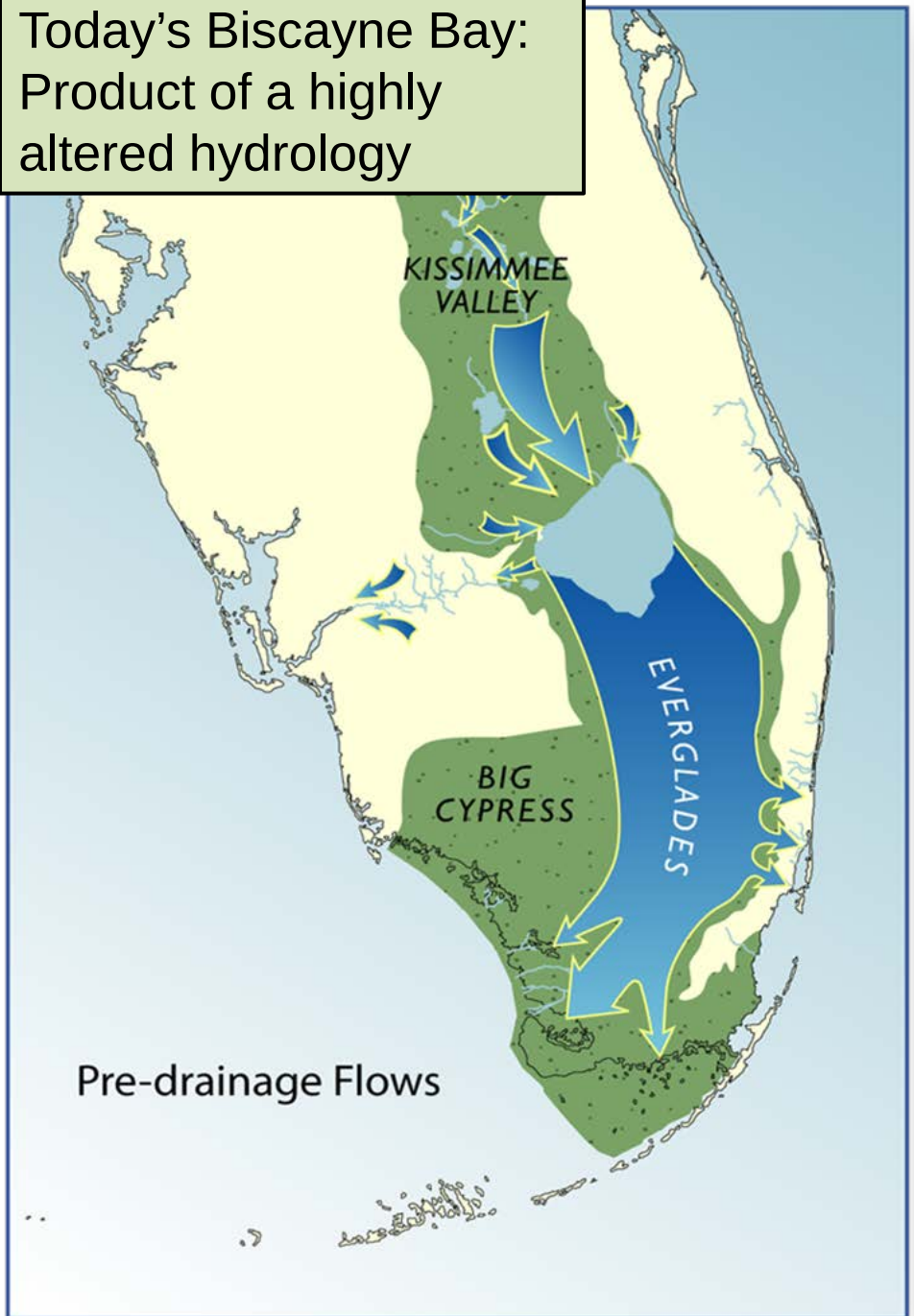
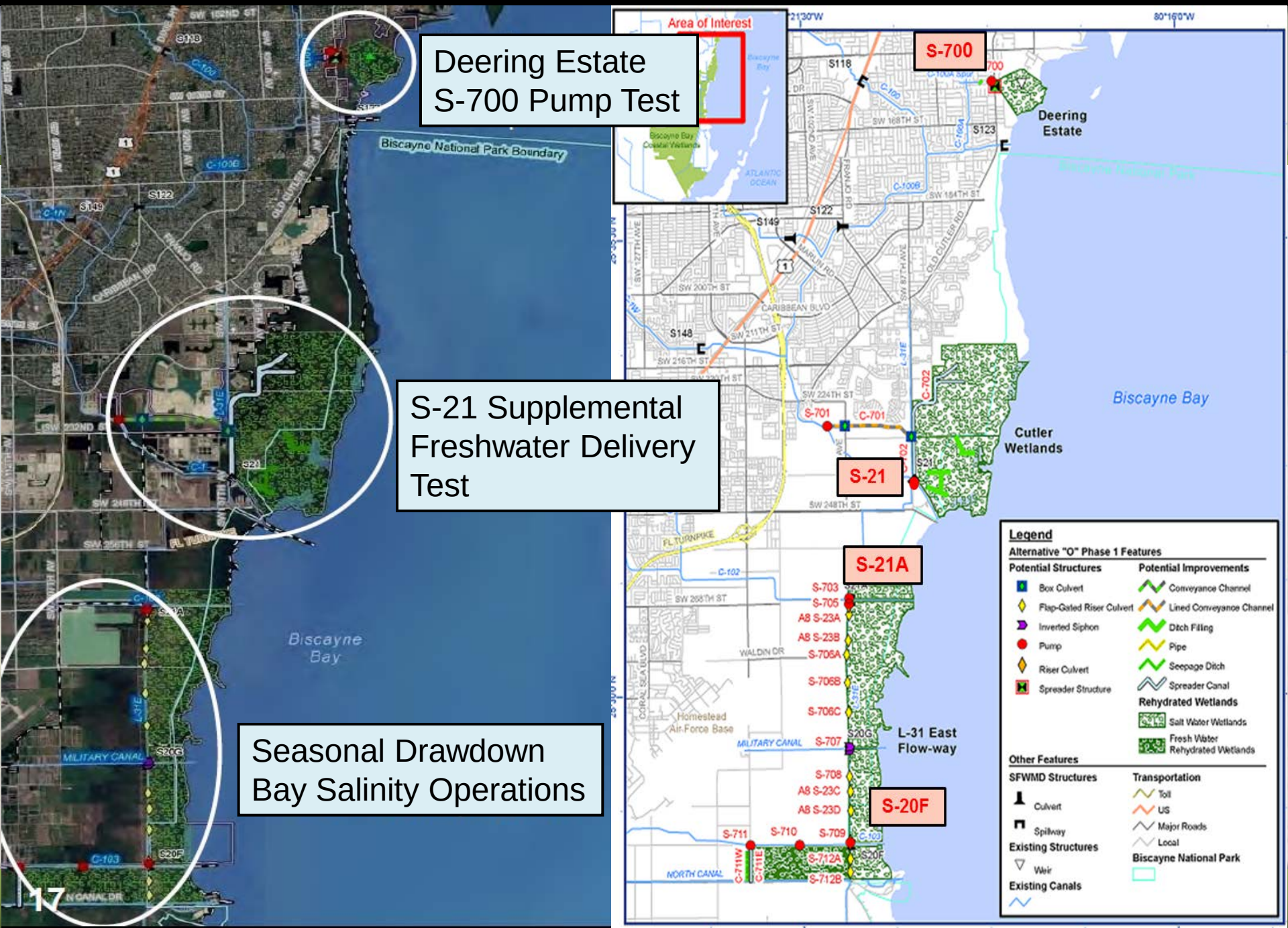
Governing Board Meeting
June 13, 2013

Today's Biscayne Bay: Product of a highly altered hydrology

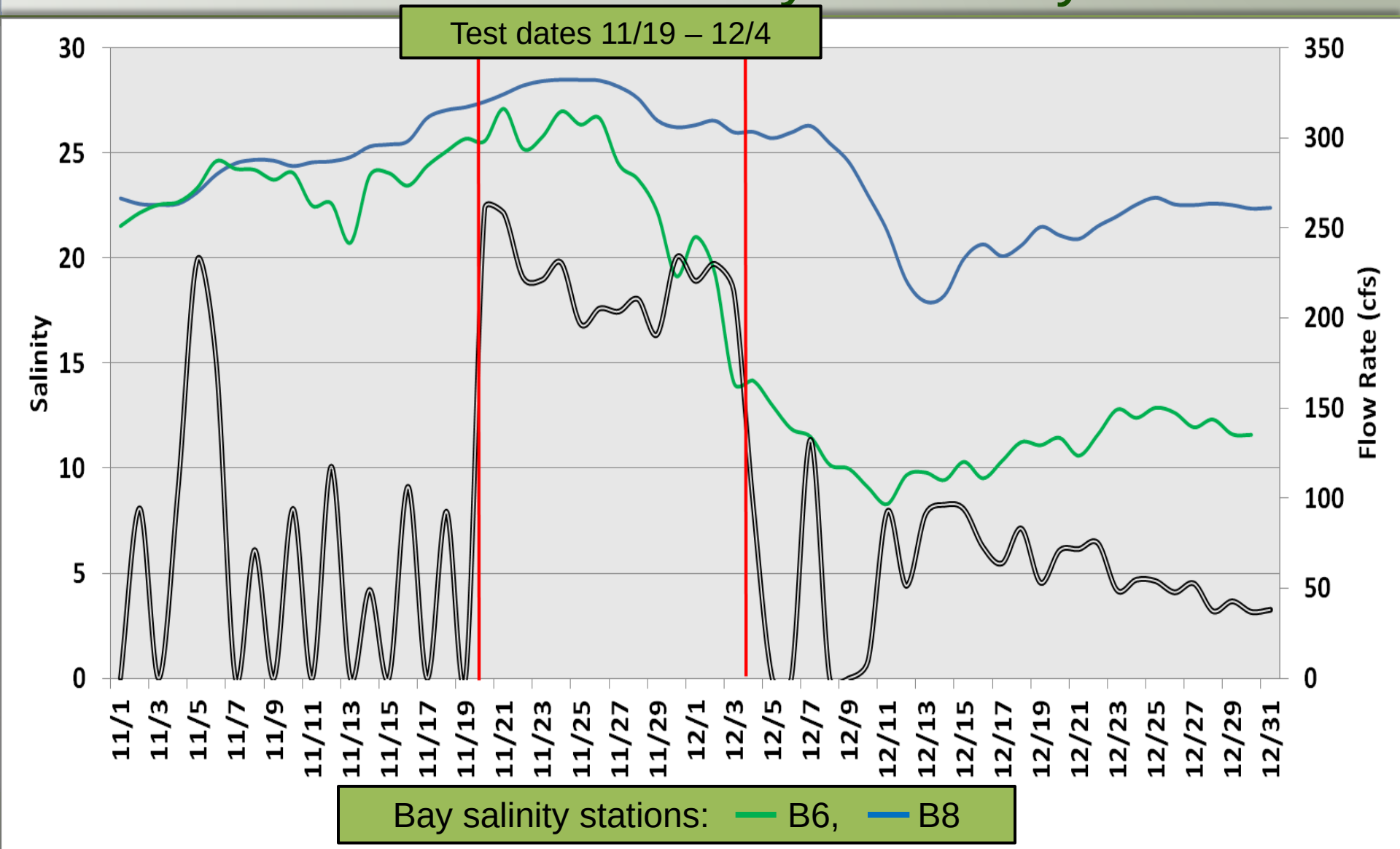



Deering Estate
S-700 Pump Test
S-21 Supplemental
Freshwater Delivery
Test
Seasonal Drawdown
Bay Salinity Operations
Biscayne National Park Boundary
Biscayne Bay
MILITARY CANAL
Area of Interest
S-700
Deering Estate
Biscayne Bay
Cutler Wetlands
S-21
S-21A
L-31 East Flow-way
S-20F
Homestead Air Force Base
Legend
Alternative "O" Phase 1 Features
Potential Structures
Box Culvert
Flap-Gated Riser Culvert
Inverted Siphon
Pump
Riser Culvert
Spreader Structure
Potential Improvements
Conveyance Channel
Lined Conveyance Channel
Ditch Filling
Pipe
Seepage Ditch
Spreader Canal
Rehydrated Wetlands
Salt Water Wetlands
Fresh Water Rehydrated Wetlands
Other Features
SFWMD Structures
Culvert
Spillway
Existing Structures
Weir
Existing Canals
Transportation
Toll
US
Major Roads
Local
Biscayne National Park

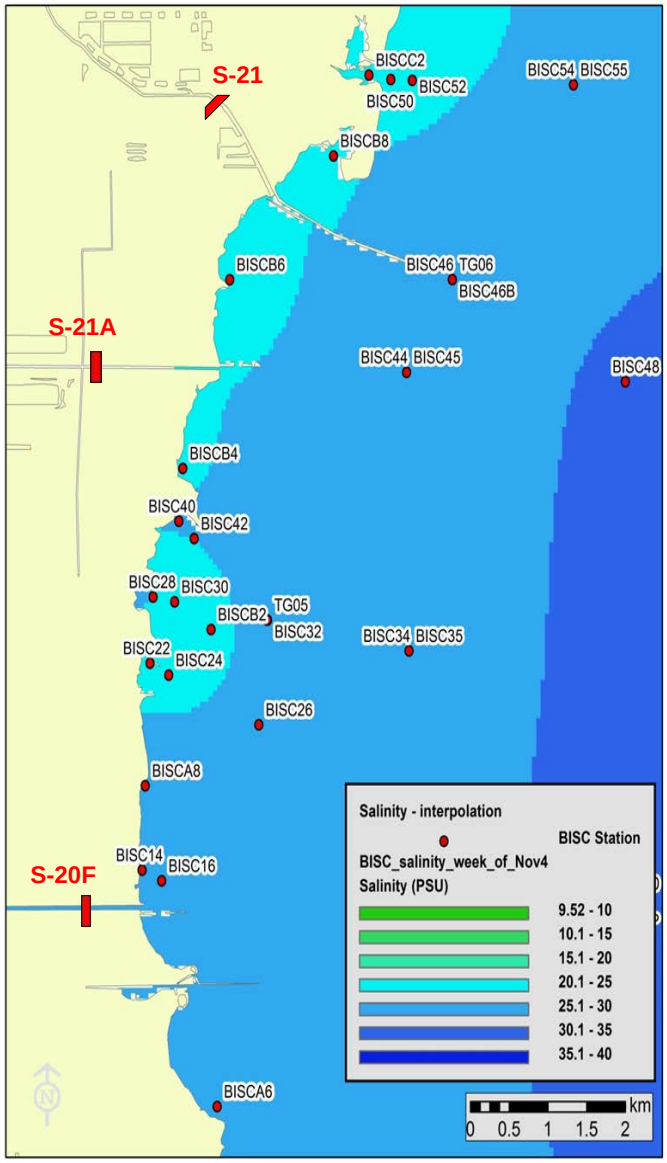
S-21 Supplemental Freshwater Deliveries

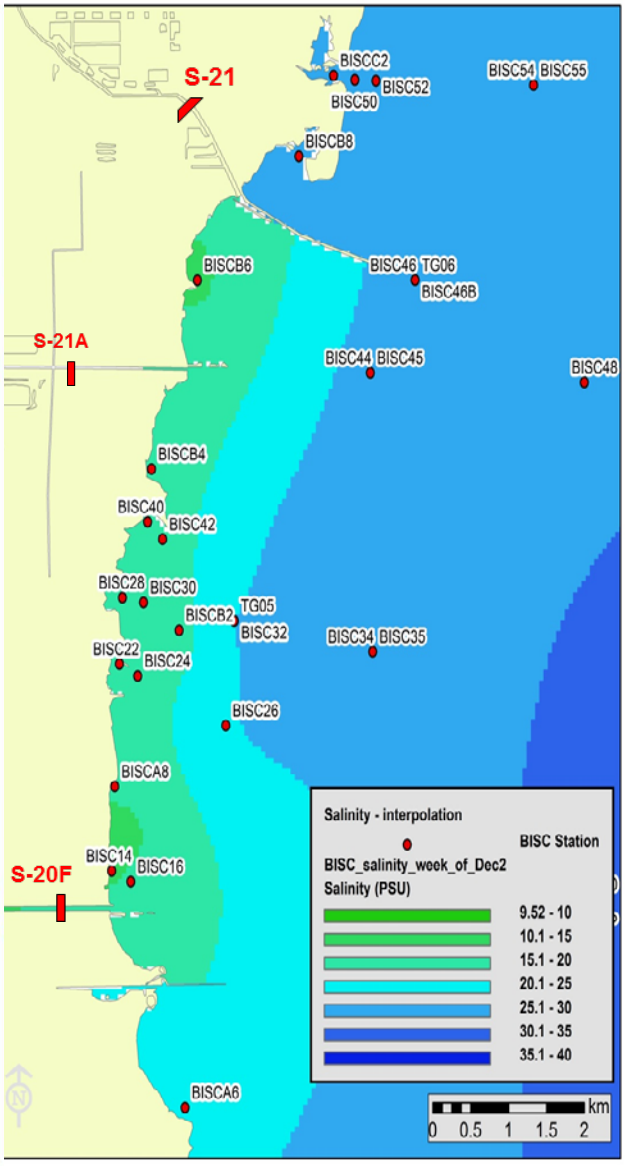
- **Opportunities for a test**
  - November nearshore Bay salinity levels elevated
  - Water levels in WCA 3 above normal and regulatory discharges were being implemented
  - Wet conditions in Everglades National Park
- **Coordination among agencies**
  - Everglades & Biscayne National Park Superintendents, Department of Interior and District staff meeting
  - Test and associated operations cleared with USACOE
  - Coordination with Miami-Dade County

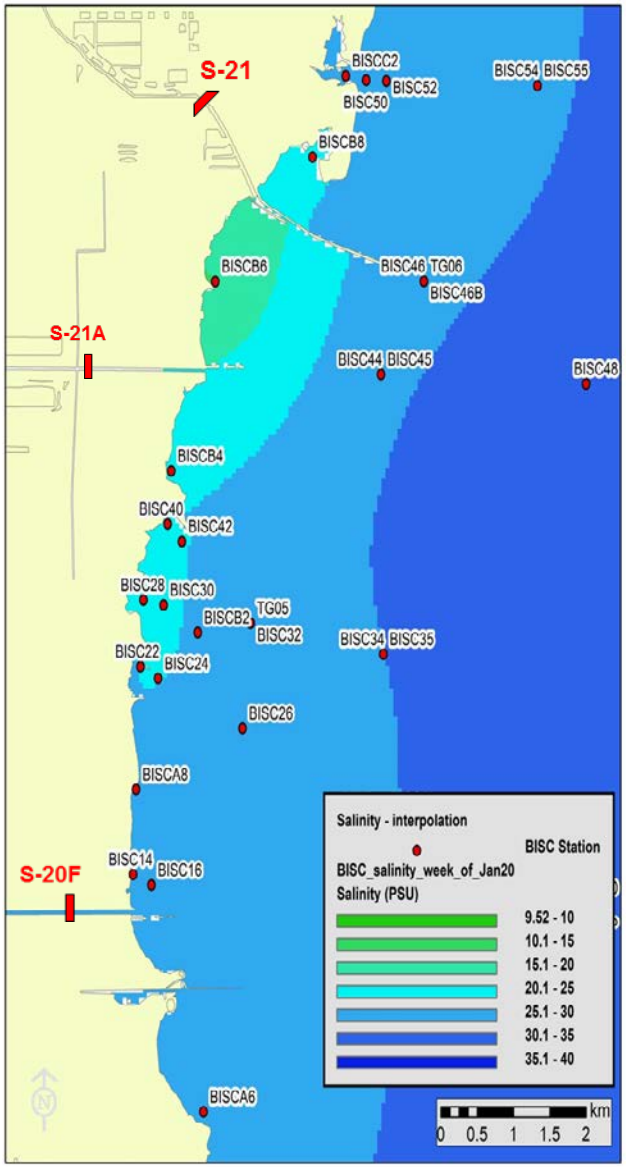
S-21 Discharge Versus Nearshore Bay Salinity



Test Salinities in the Nearshore Bay Area



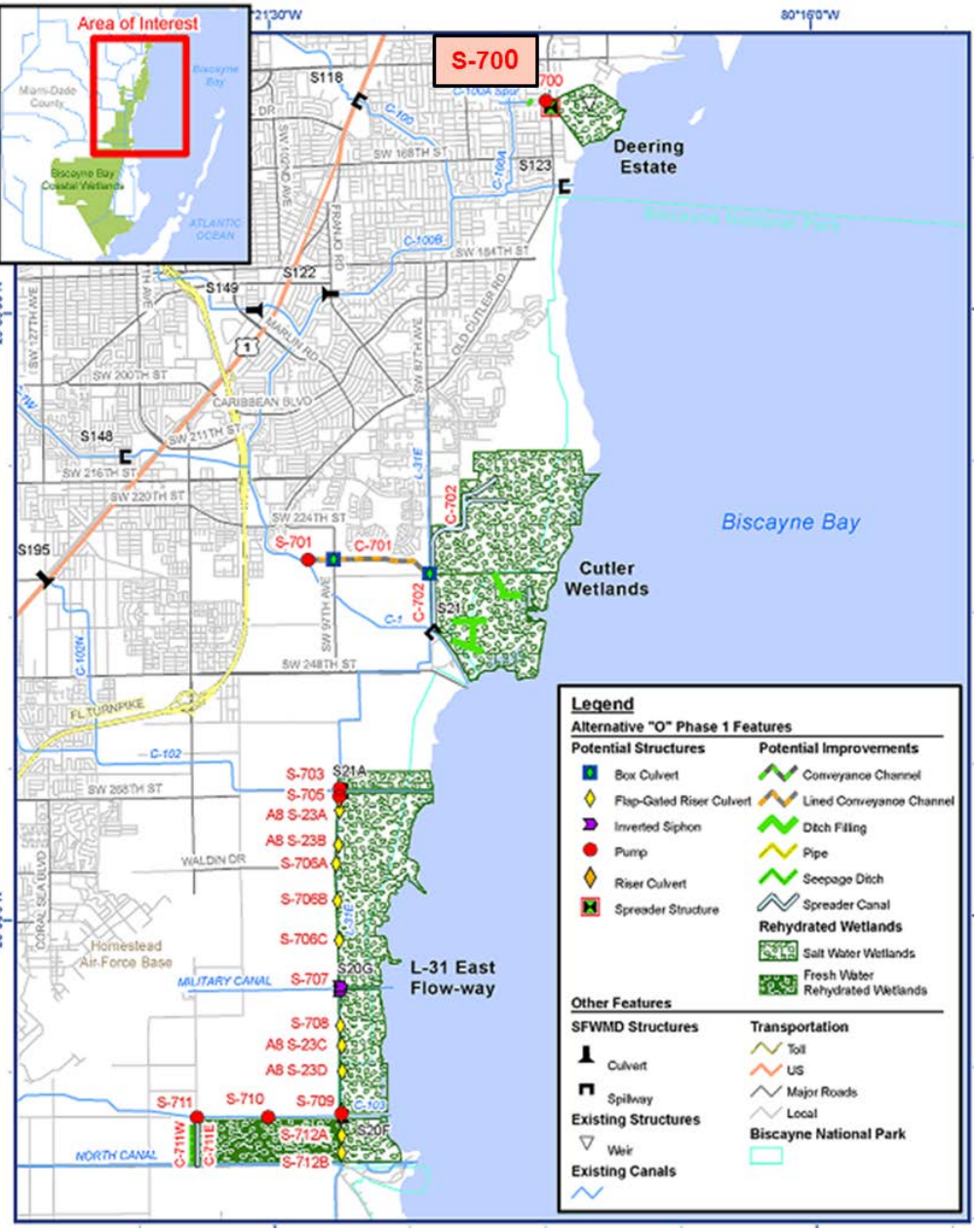


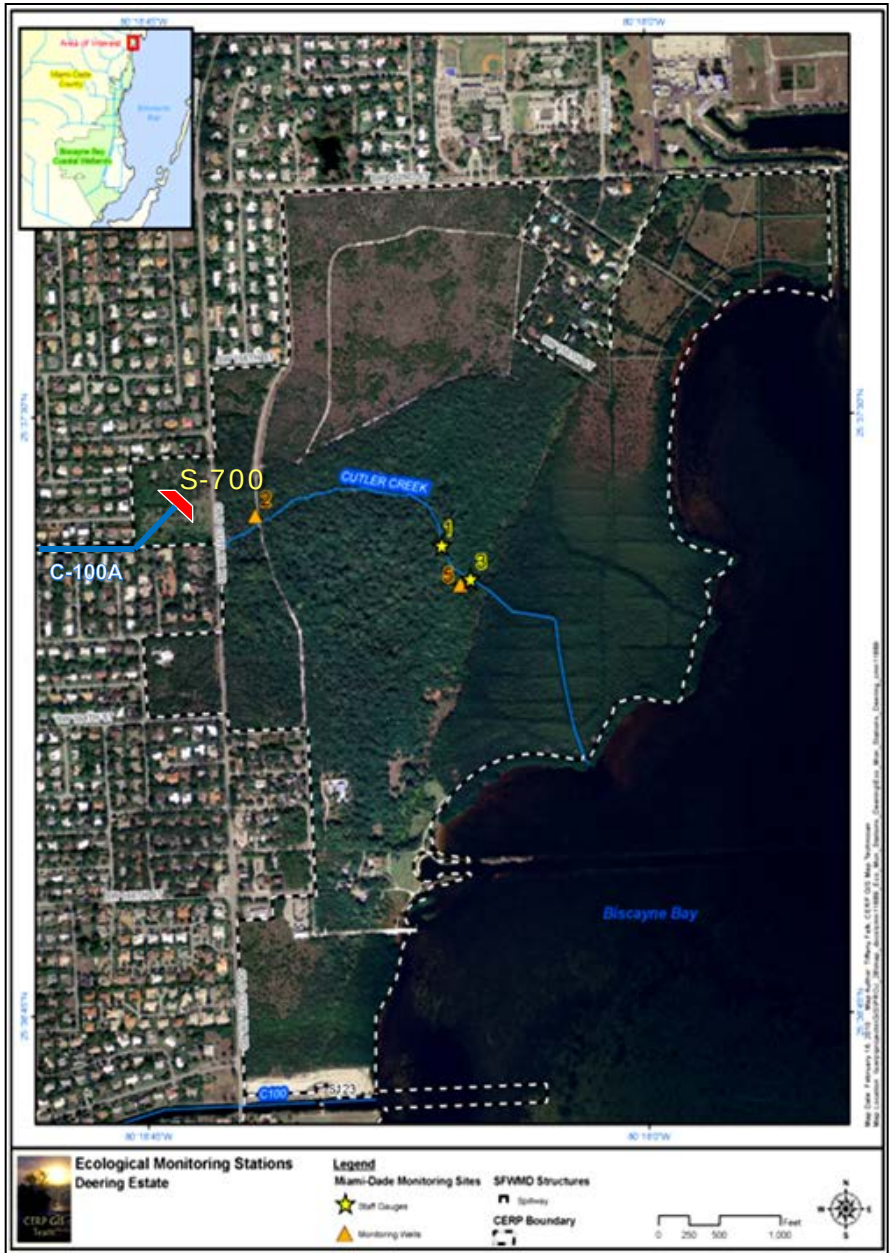


Conclusions From The Test

- Transfer of supplemental water from WCA-3 to Bay requires careful coordination and broad consensus
- Significant limits on regional dry season water availability. Not likely these operations could be repeated often
- Supplemental water deliveries were successful in improving nearshore Bay salinity levels

Deering Estates S-700 Dry Season Pump Test





Hydrologic and Salinity Response

- Test initiated on December 18th and continued through March 12th
- Small daily rate of pumpage
- Over 8,400 acre-ft provided over the dry season

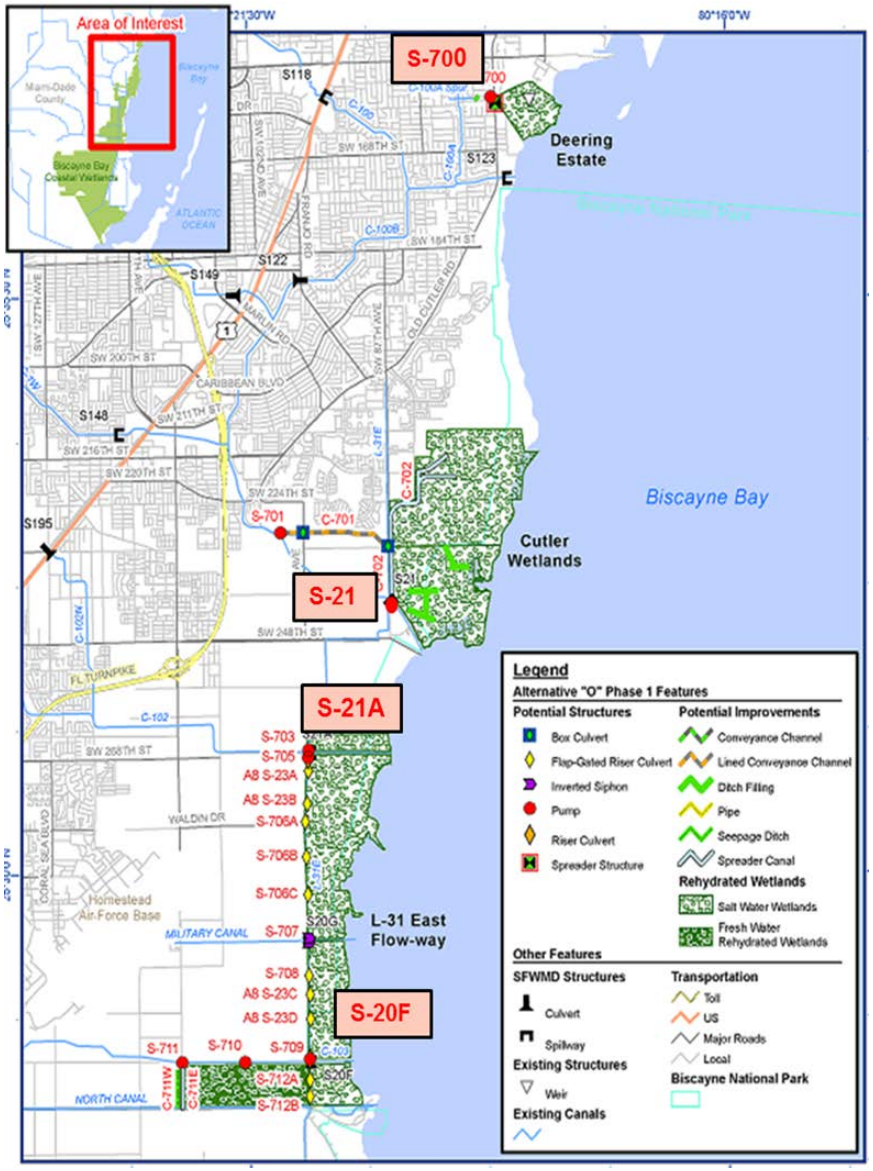
Hydrologic and Salinity Response

- Much of the freshwater wetlands rehydrated
- Local groundwater levels were elevated during test
- Reductions in groundwater and marine wetland salinity levels documented

Conclusions From The Test

- Canal water from upstream basins can be transferred to the S-700 pump station
- Small volumes of supplemental water were successful in improving wetland hydrology and shallow groundwater salinity levels
- Limits on dry season water availability, but operations can be repeated as conditions warrant
- Unbudgeted operation expenses incurred

Seasonal Drawdown Operations



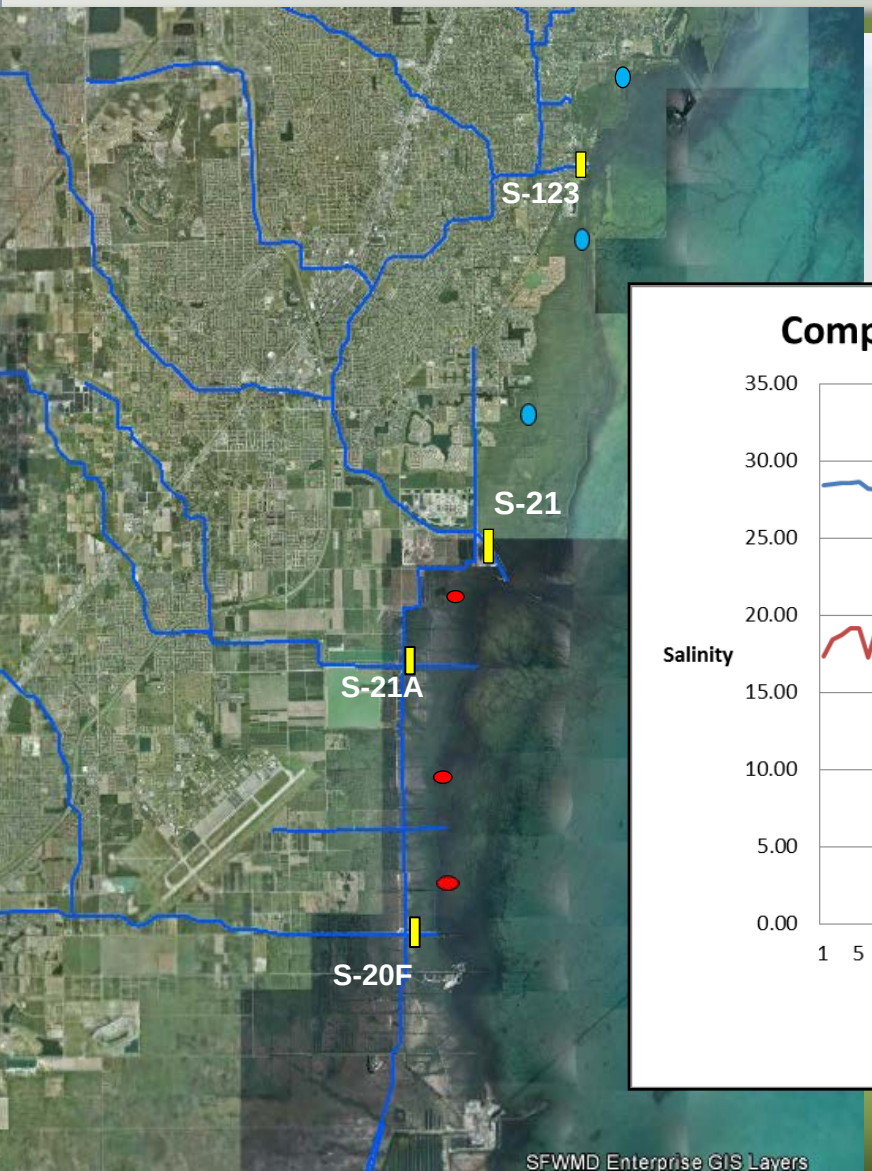
Seasonal Drawdown Operations

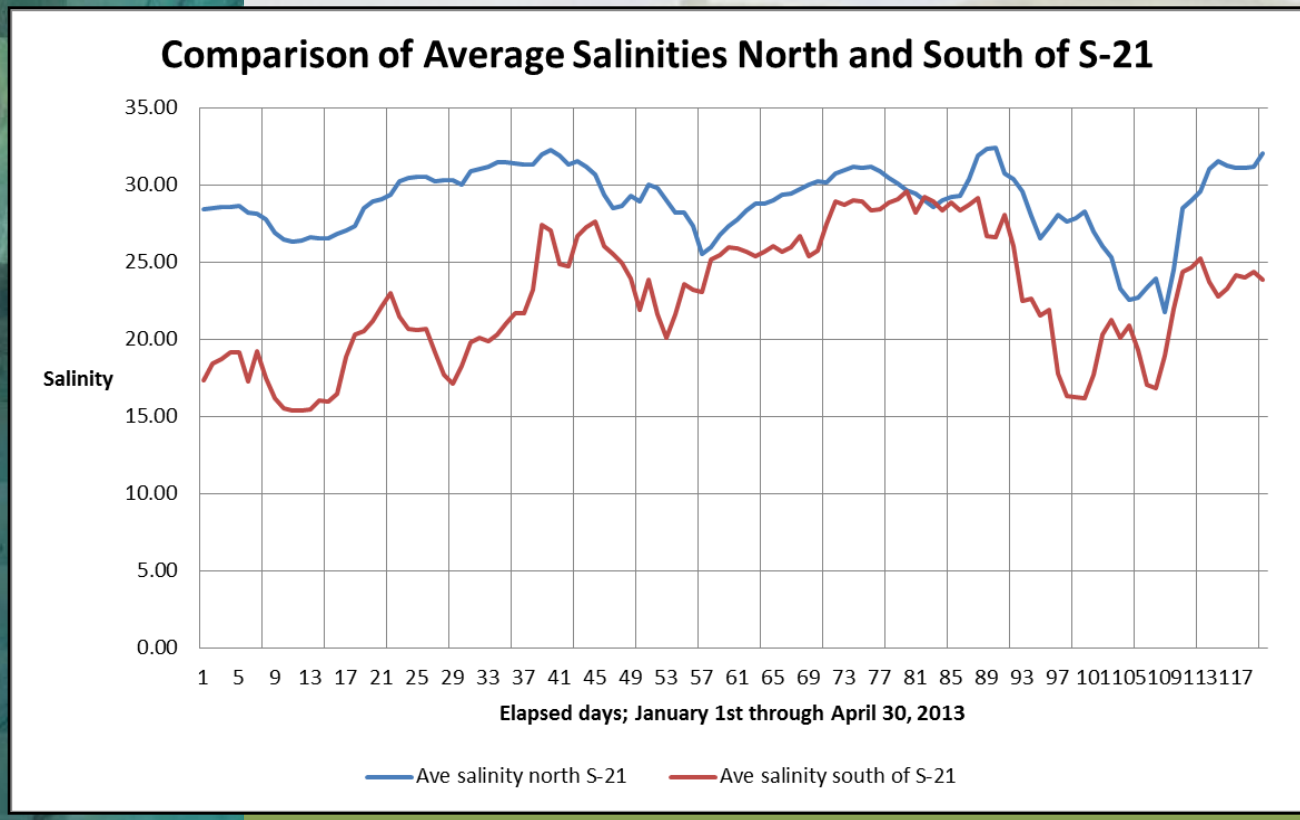
- **Historic Operations**
  - Low Range Operation (October 15th to December 30th)
  - Intermediate Range Operation (December 30th to April 30th)
  - Operational settings based on area conditions
- **Intermediate or high settings during dry times reduces fresh surface water flows to Bay**

2013 Flexible Operations

- **Regular stakeholder conference calls**
- **Extended low operational settings for both structures through first week of February**
  - Combined average flows to Bay: 260 cfs
- **S21A operations shifted to custom intermediate levels on February 5th**
  - S20F average flows to the Bay: 160 cfs

Comparative Salinity North and South of Structure S-21





Conclusions of the Flexible Operations

- Leaving S20-F at low setting from Feb 5th to April 30th provided 31,000 acre-ft of freshwater to the Bay
- Average salinity south of S-21 was lower than salinities north of S-21 when freshwater discharges were occurring
- Nearshore salinity is variable and not always closely correlated to freshwater discharges at S-21A and S-20F
- Potential for enhanced nearshore Bay salinity responses if freshwater is applied through coastal wetlands rather than structure discharges

Team Members

Operations

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Special thanks to:

Shannon Estenoz, Joan Lawrence; DOI
Dan Kimball; ENP, Mark Lewis; BNP (retired)
Erik Stabenau; NPS, Kevin Kotun; NPS
Miami-Dade RER, and Area Stakeholders