



South Dade Investigation Status Update

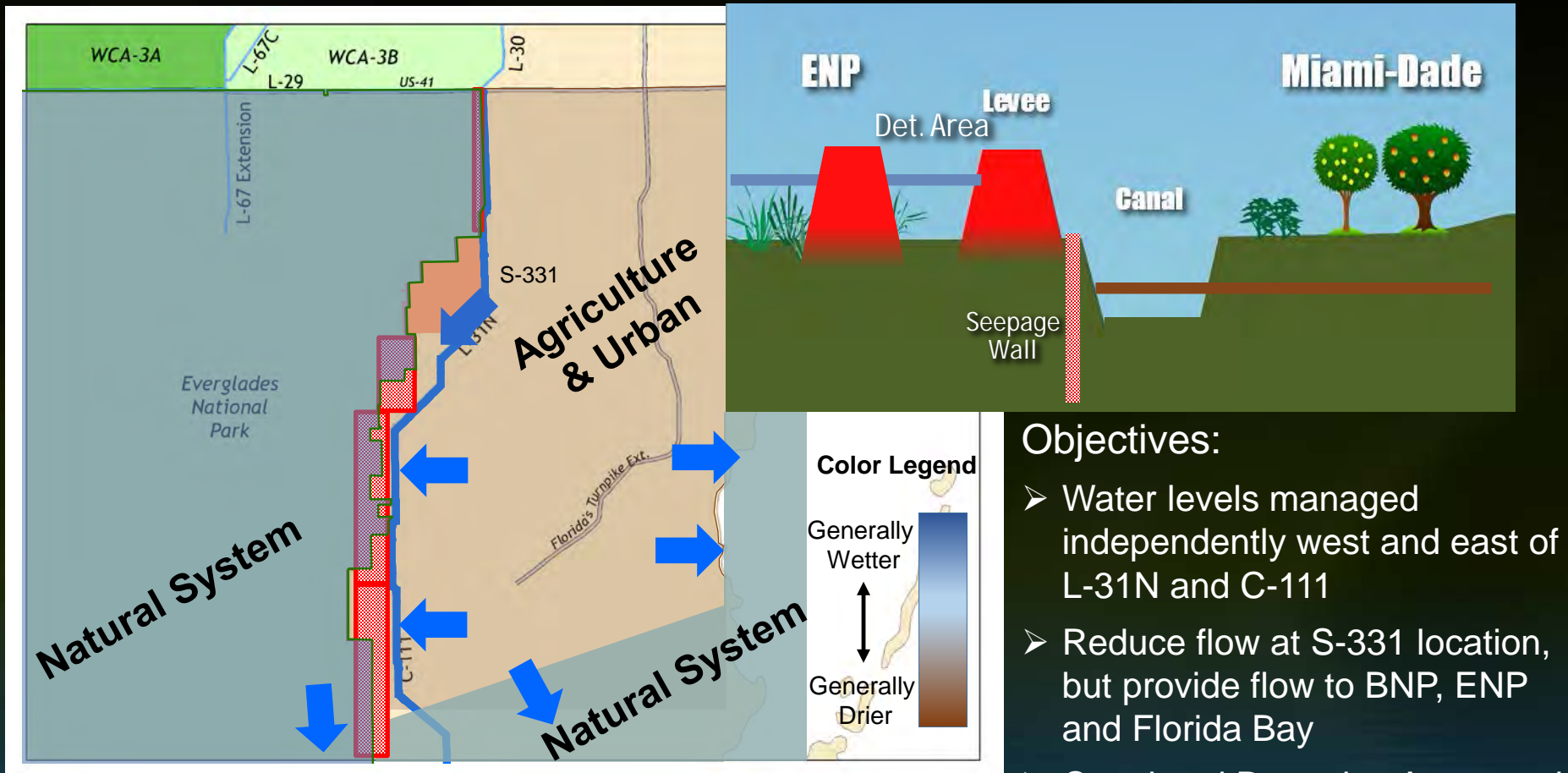
Walter Wilcox, P.E., Modeling Section Administrator
South Florida Water Management District
February 11, 2016

South Dade Investigation: Goals

- Identify options to reduce flood risks in urban and agricultural areas
- Provide much-needed water to natural areas



Defining the Challenge



Note: Graphics are conceptual and intended to show general performance, not all of the system details or variations in spatial performance.

Objectives:

- Water levels managed independently west and east of L-31N and C-111
- Reduce flow at S-331 location, but provide flow to BNP, ENP and Florida Bay
- Canal and Detention Areas and Seepage Walls buffer connectivity between west and east

Significant Progress to Date

✓Sept. 5, 2015 Workshop

- Kickoff and brainstorm
- Initial information sharing

✓Oct. 15, 2015 and Dec. 14, 2015 Workshops

- Goal Identification
- Review initial model results and historical data
- Identify trends in system performance and observations

✓Feb. 2, 2016 Workshop

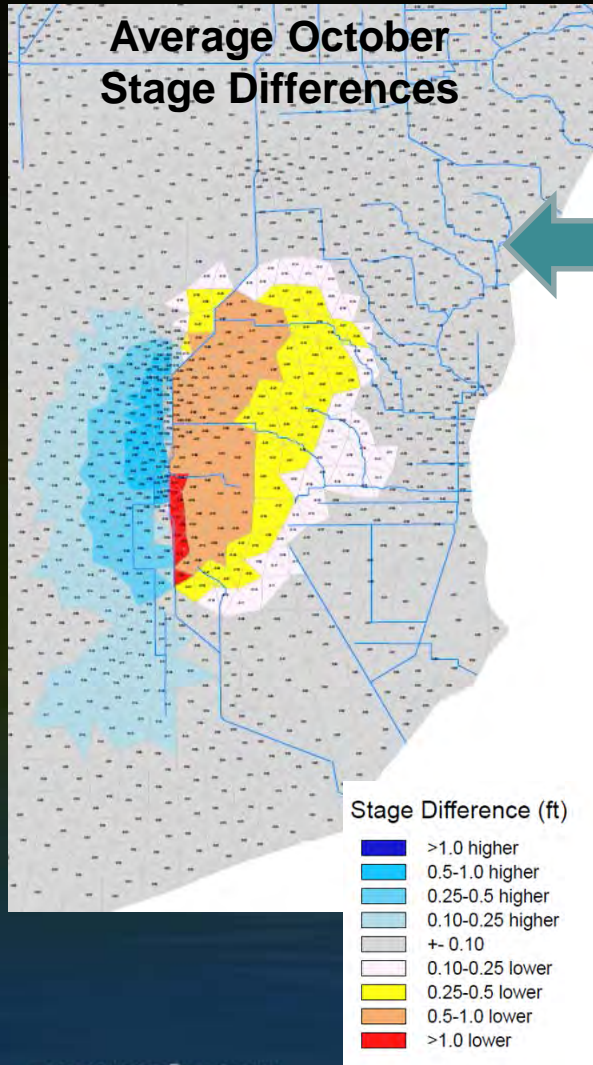
- Refine options available to change system performance

✓In-depth discussions with interested parties as requested



Examples of Initially Analyzed Options

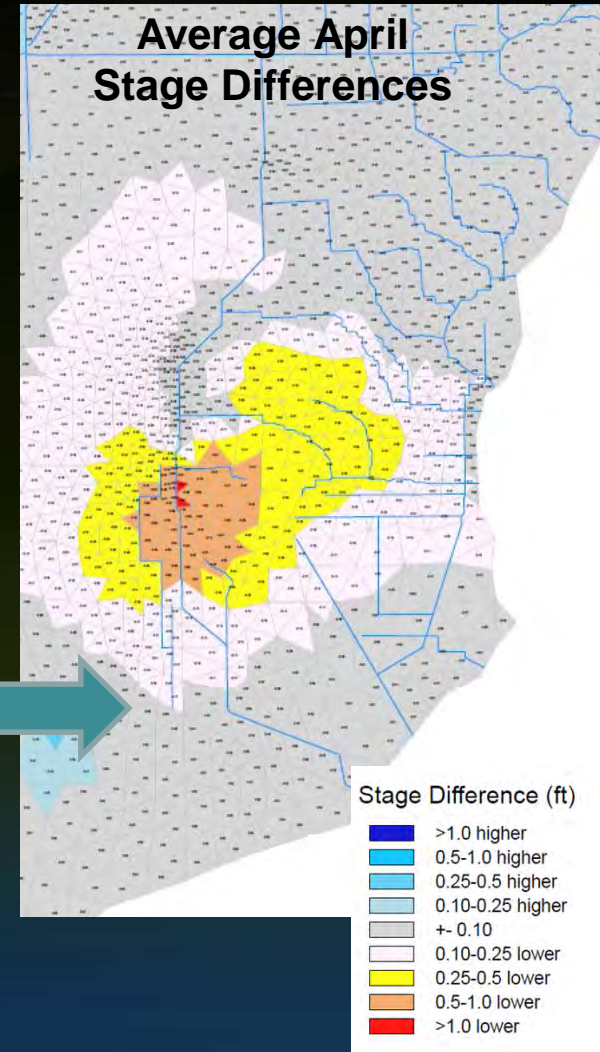
Average October Stage Differences



Generally lower water levels east of L-31N/C-111 while promoting flow toward Taylor Slough and Florida Bay

Late dry season water levels are lower not just east of L-31N/C-111, but also in the Everglades, Biscayne Bay Coastal Wetlands and the Southern Glades

Average April Stage Differences



South Dade Investigations: Turning The Corner

We can achieve the goal!

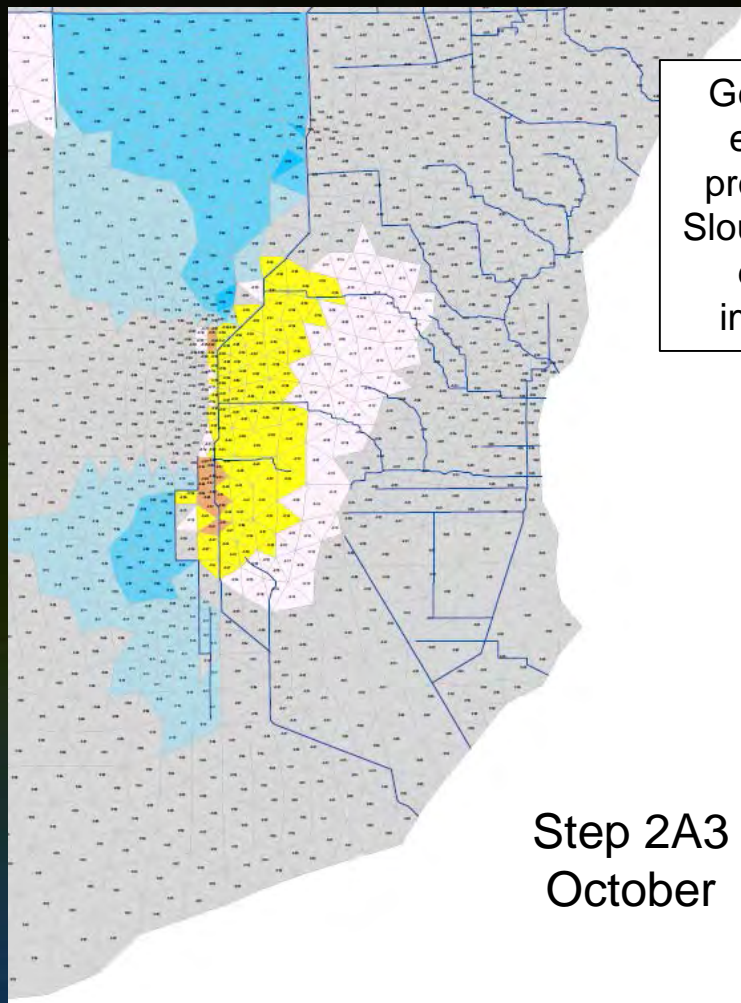
- Many robust combinations of options are feasible that lower water levels in agricultural areas of South Dade and increase water to natural systems (Everglades National Park, Florida Bay, Southern Glades, etc.).
- More comprehensive and balanced operational strategies will allow for performance improvements both independent of and as infrastructure improvements (such as more pump capacity or seepage walls) are realized.

An Example Scenario: Step 2A3



- Built upon “Increment 2”-like conditions: Contracts 8 & 8A, L-29 max stage at 8.5 ft
- Lower operations at S-332s, S-199s and S-200s for Aug-Dec and transition to current ops Jan 1-Feb 15
- Additional 75 cfs each for S-199 and S-200
- Revised operations to allow more frequent, lower capacity opening of S-176 and S-177
- Infrastructure improvement to promote flows toward Taylor Slough
- Add a 200 cfs pump downstream of S-178

Stage Difference Compared to Increment 1 (Current Operations)

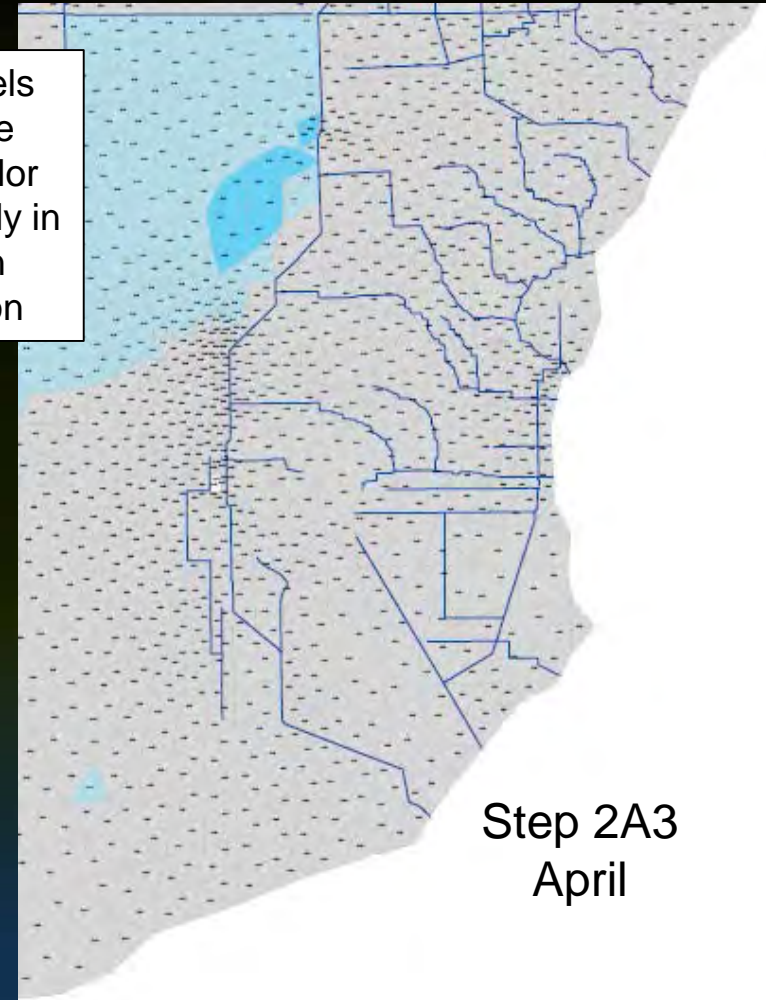
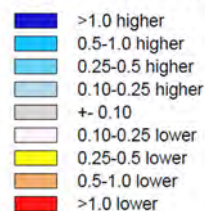


Step 2A3
October

Generally lower water levels
east of L-31N/C-111 while
promoting flow toward Taylor
Slough and Florida Bay early in
dry season; no dry-down
impacts later in dry season

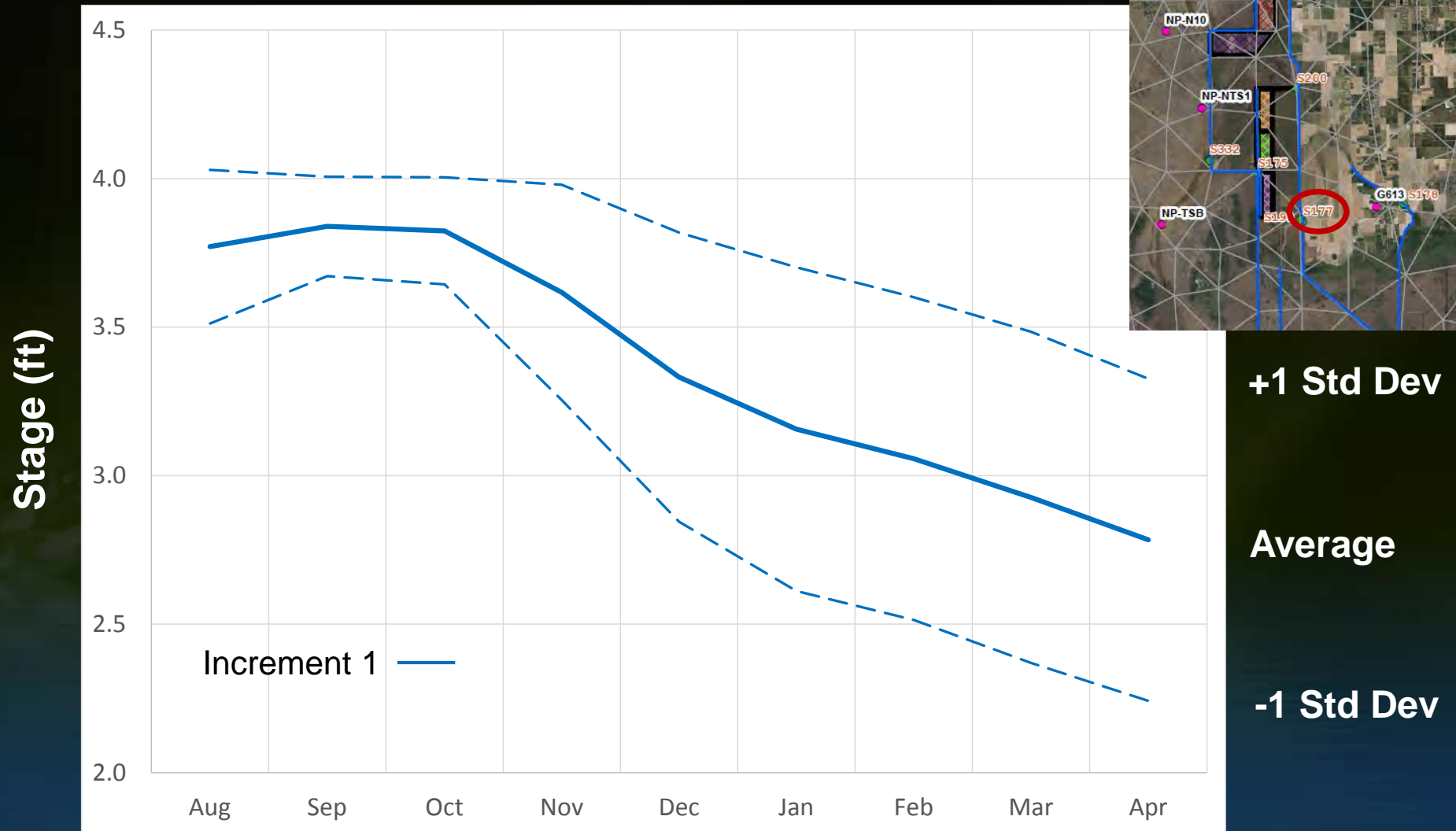
41 Year Average Water Levels

Stage Difference (ft)

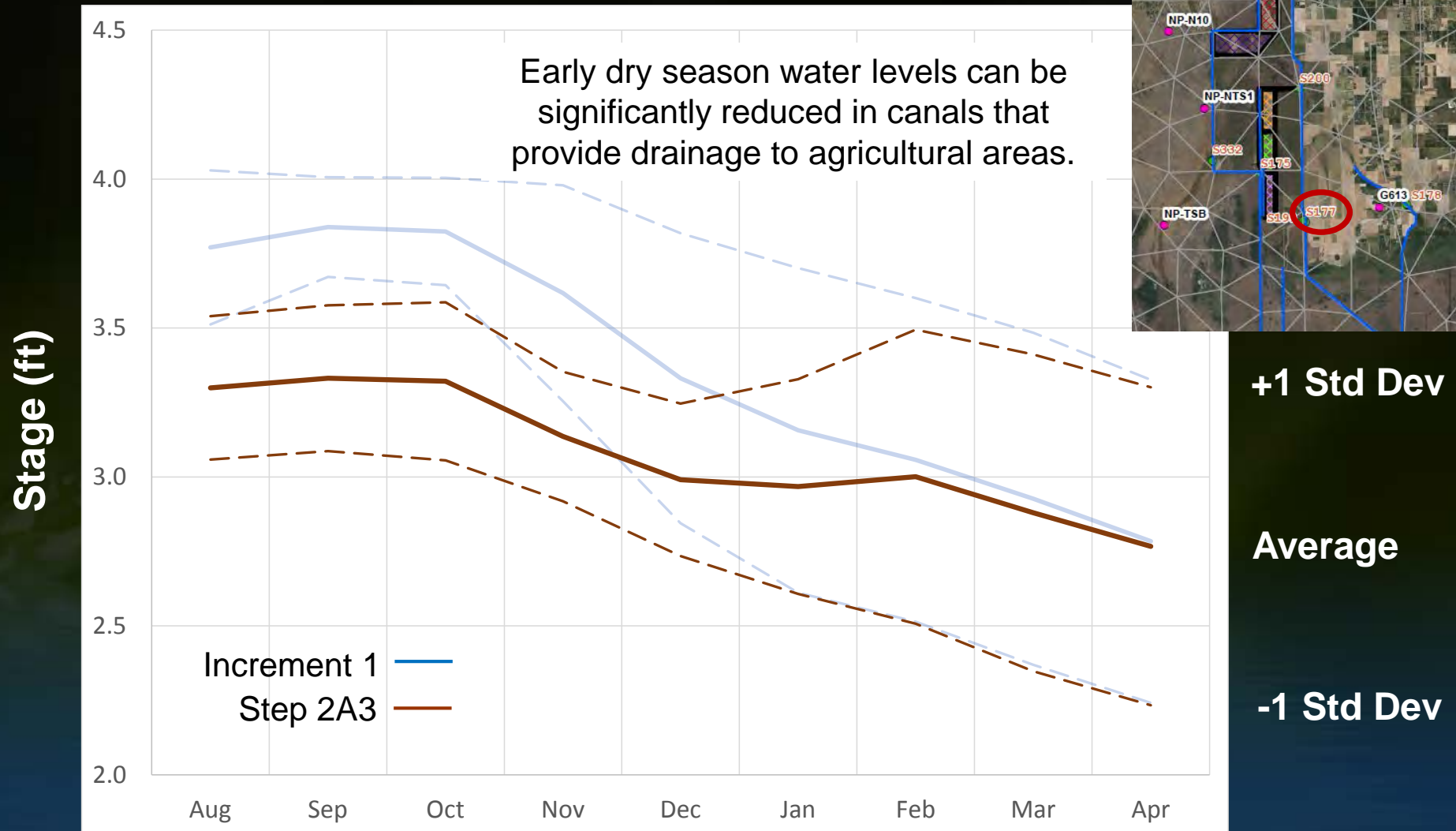


Step 2A3
April

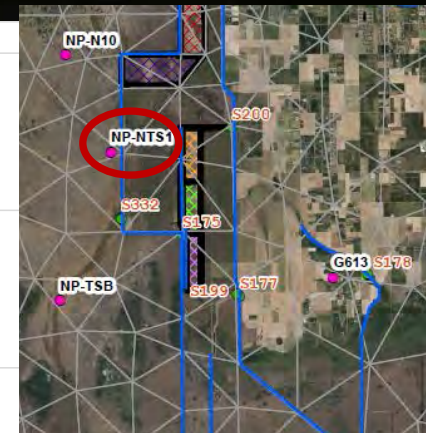
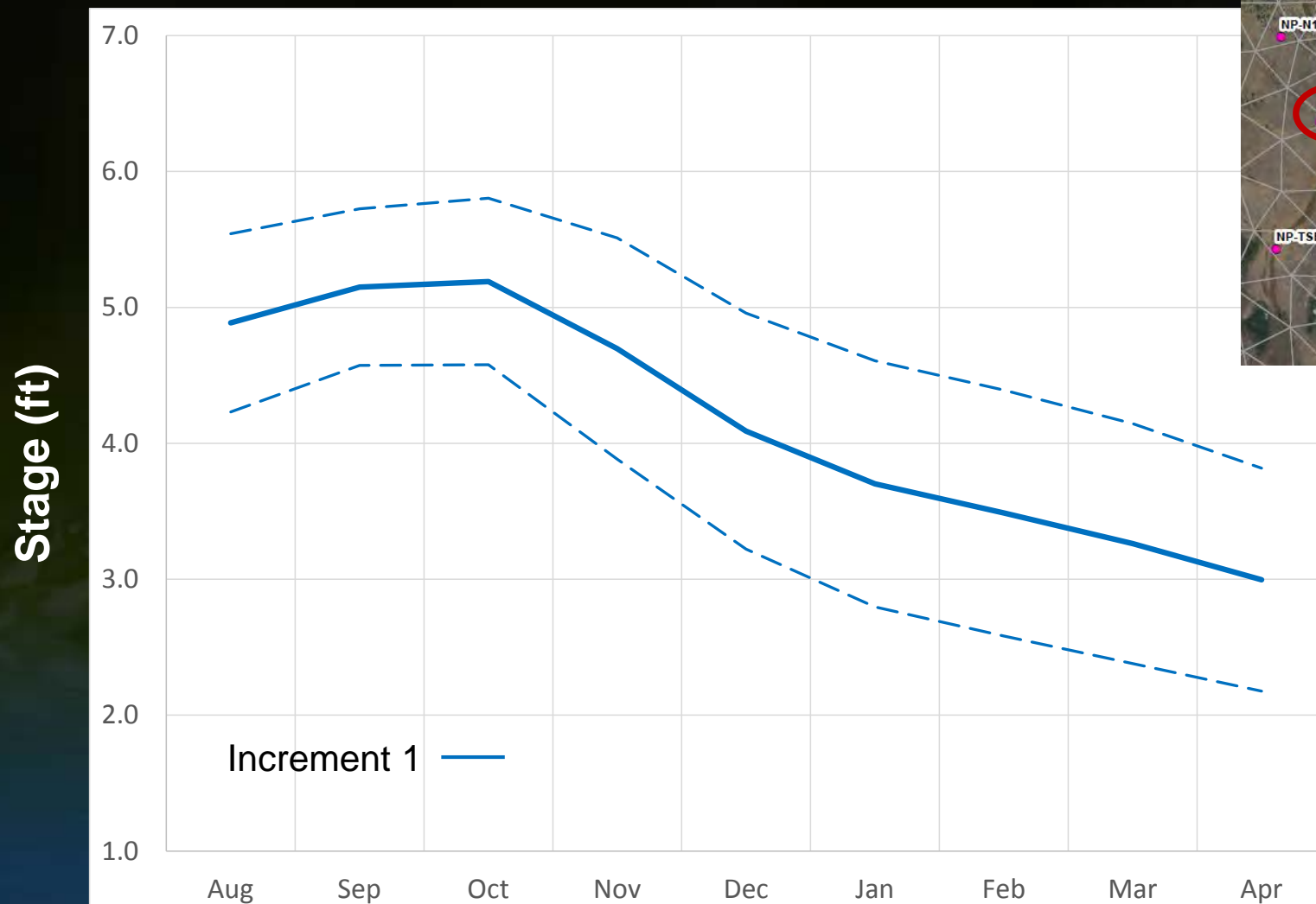
Seasonal Pattern in S177 Headwater



Seasonal Pattern in S177 Headwater



Seasonal Pattern at NTS1 (in Everglades National Park)

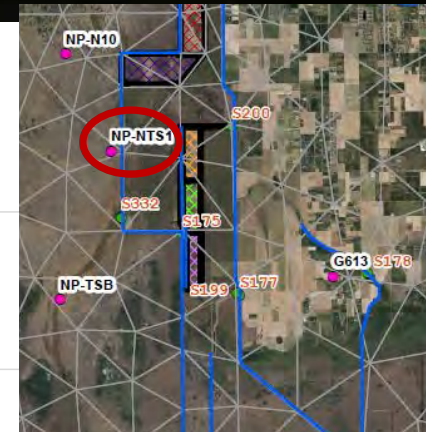
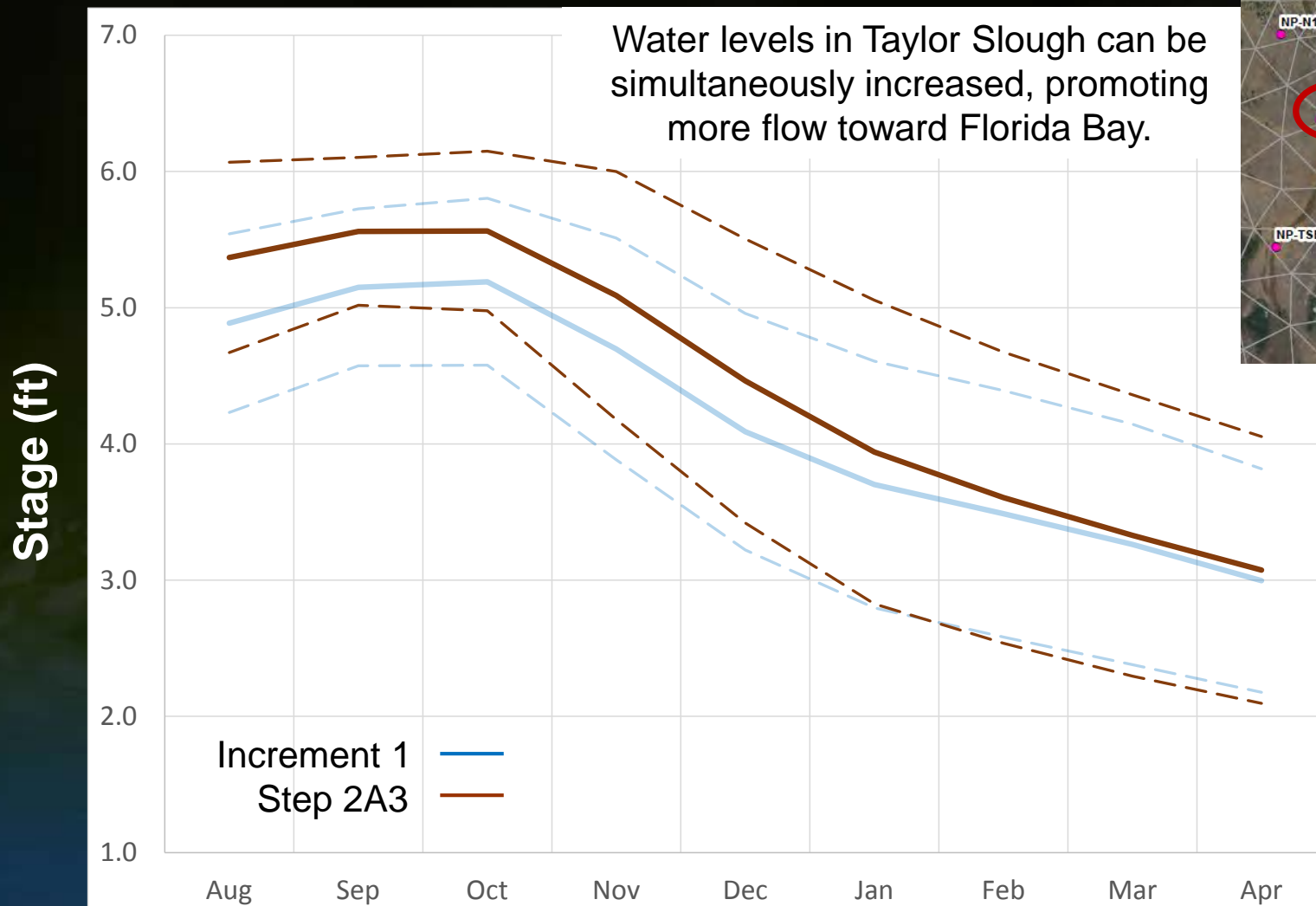


+1 Std Dev

Average

-1 Std Dev

Seasonal Pattern at NTS1 (in Everglades National Park)



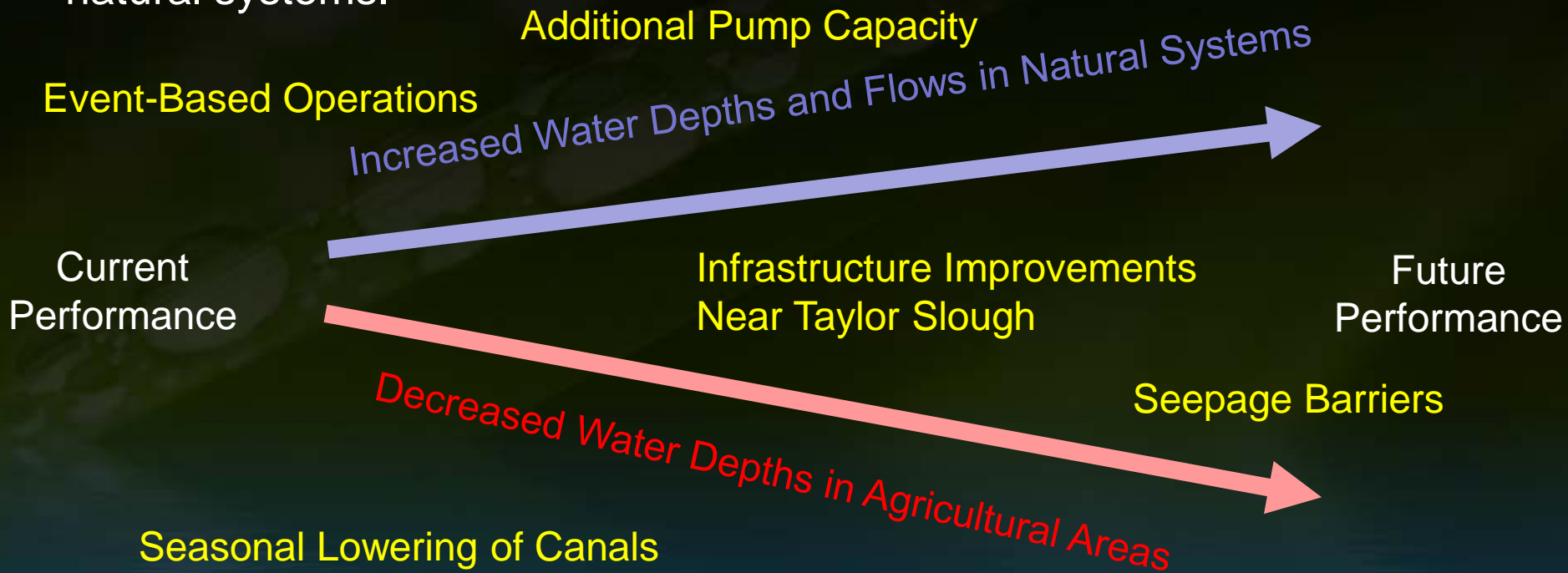
+1 Std Dev

Average

-1 Std Dev

Improvement is Anticipated Along a Continuum

Enhanced operations can leverage available infrastructure to move toward identified objectives and provide benefits to both managed and natural systems.



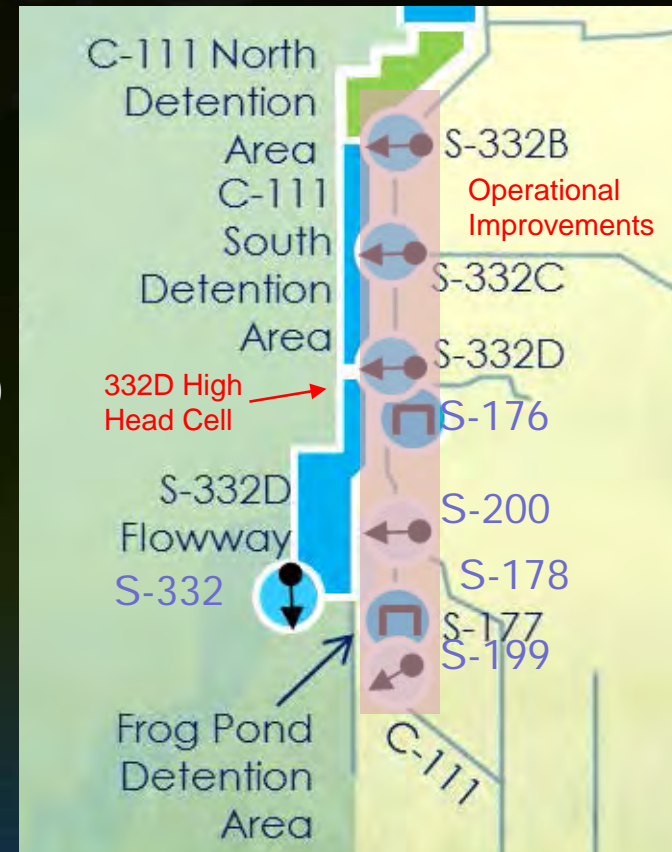
Maintain Progress on Existing Efforts (MWD, C-111, C-111SC, CERP)

Possible Path Forward

A number of feasible options could be pursued immediately:

- Refine operations at key structures (0-6 months)
 - Rainfall event-based criteria at S-177 & S-176
 - Operate at lower end of range for S-332s
 - Seasonal lowering of operations at S-199 & S-200
- Modify High Head Cell at S-332D Flow-way to improve efficiency of water delivery to Taylor Slough and reduce seepage back toward developed areas (6-9 months)

These options are low cost or would only require staff time; they could be implemented by next dry season.



Possible Path Forward (Continued)

With Governing Board direction, additional options could be pursued, either as part of ongoing planning efforts or expedited by the District:

- Seasonal lowering of operating criteria at S-332s (9-12 months)
- Modify infrastructure in vicinity of Taylor Slough headwaters: \$1-5 million (1-3 years)
- Increase S-199 and S-200 pump capacity: \$4 million (1.5-2 years)
- Seepage collection canal and pump station near S-178: \$11 million (2-3 years)
- Seepage barrier – up to 15 miles in length: \$55-65 million (2-4 years)

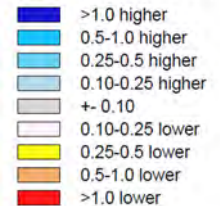
Due to required planning, permitting, design, and construction efforts, these options would take time to implement.



Example Outcomes of Possible Path Forward

Generally lower water levels east of L-31N/C-111 while promoting flow toward Taylor Slough and Florida Bay early in dry season; no dry-down impacts later in dry season

Stage Difference (ft)



**41 Year
Average
Water
Levels**

Can be implemented
by next dry season

With additional options
implemented (except
seepage wall)

With additional options
implemented + L-29 @ 8.5
(except seepage wall)

Achievements to Date

Thanks to the collective efforts of all participants, South Dade Investigations has accomplished many important outcomes:

- Technical assessment has demonstrated that it is possible to relieve flooding to agricultural lands while retaining water in or delivering water to Everglades National Park, Florida Bay and other natural systems.
- Water managers are already using knowledge gained during this effort to help manage the system response to unprecedented El Nino rainfall.
- A list of options to further improve conditions has been summarized.
- Future implementation efforts will benefit from the analysis performed in this forum and will likely be able to move more quickly toward desired outcomes.

Discussion

