CENTRAL EVERGLADES PLANNING PROJECT

System Scale Perspectives

Storage and Estuary Events

PRESENTED BY

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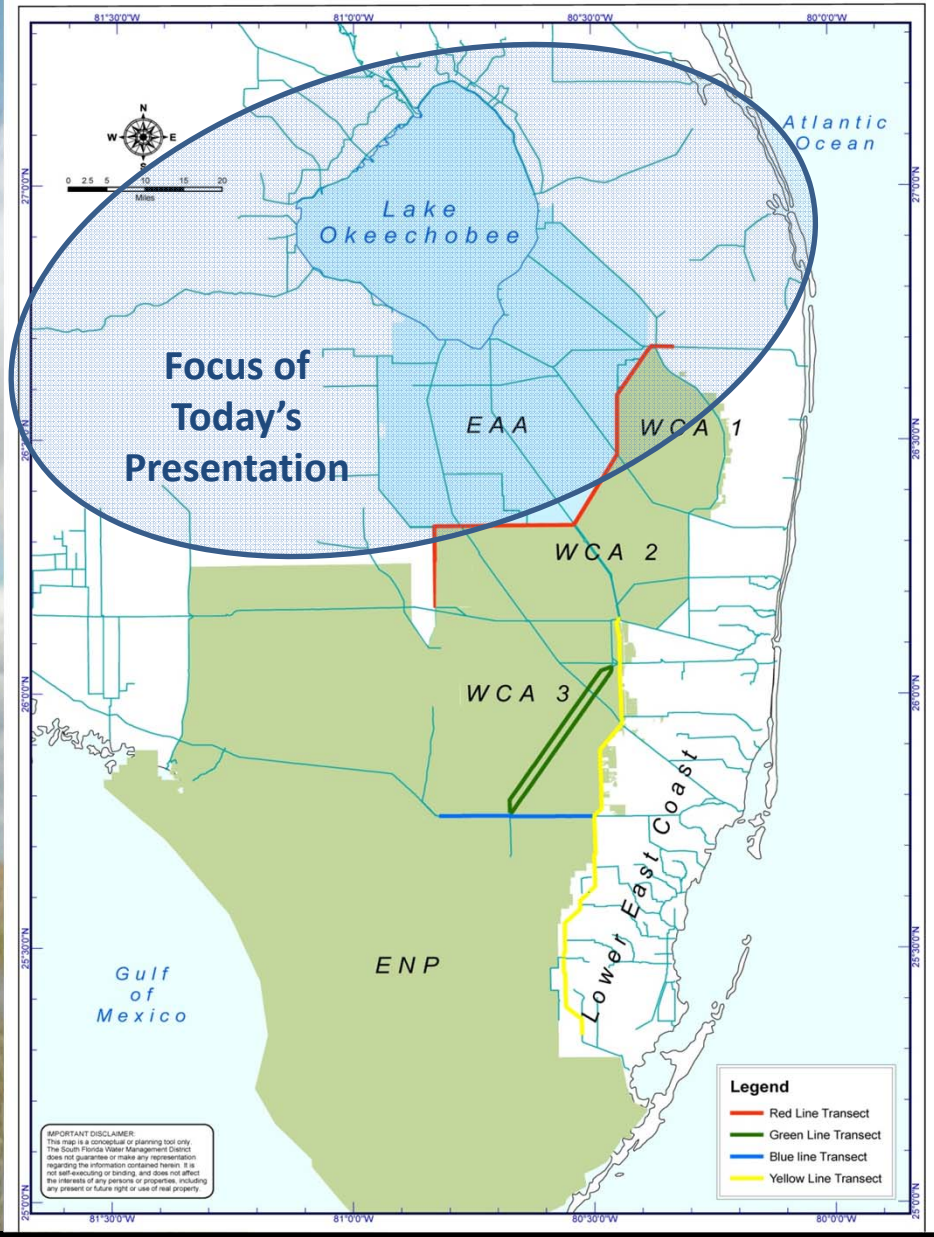
Presentation Background

- The Central Everglades Planning Project (CEPP) provides a first increment of the overall restoration envisioned under the Comprehensive Everglades Restoration Project (CERP).
- The highly variable nature of south Florida hydrology is a planning challenge for any restoration initiative since the magnitude of runoff during wet periods is large and therefore requires extremely large volumes of storage or proactive operations to manage effectively.

Formulation With a Spatial Perspective



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

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

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

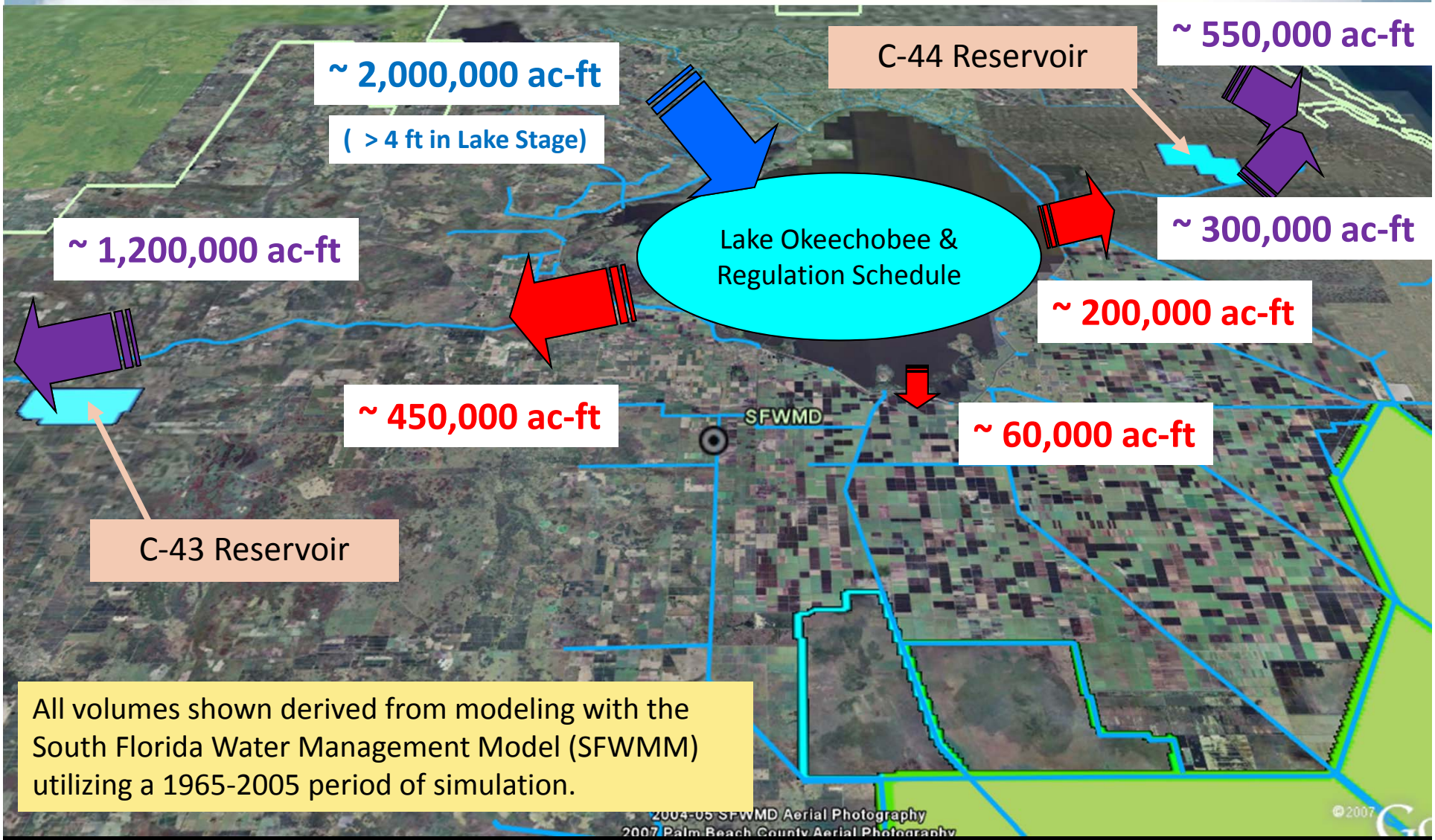
YELLOWLINE –WCA 3A/3B and ENP to the lower east coast
(east coast protective levee system, the L-30 and L-31N)

Presentation Summary Up Front

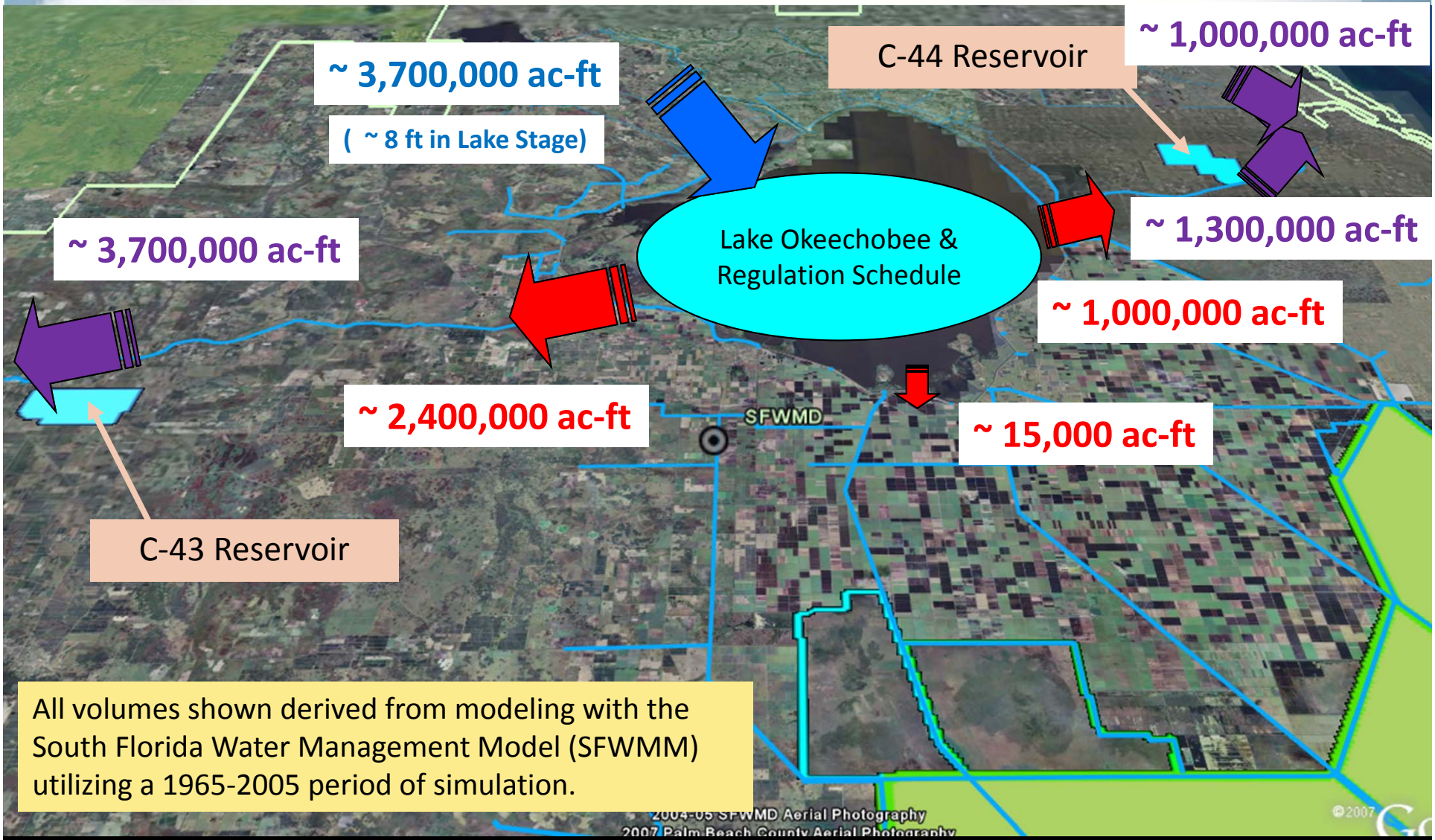
- CEPP is considering a relatively small sizing of storage in the Everglades Agricultural Area (EAA), south of Lake Okeechobee (e.g. less than 150,000 ac-ft); no northern storage or ASR is considered.
- Certain low and moderate Lake inflow and estuary discharge events can be improved in CEPP by diverting flow to the South (Everglades) that previously would have gone to the estuaries.
- Large Lake inflow and estuary discharges events far exceed available storage and as a result, may not be significantly affected by CEPP alternatives.

LAKE OKEECHOBEE INFLOWS & OUTFLOWS

Flood Control Flows in an Average Year (without CEPP)

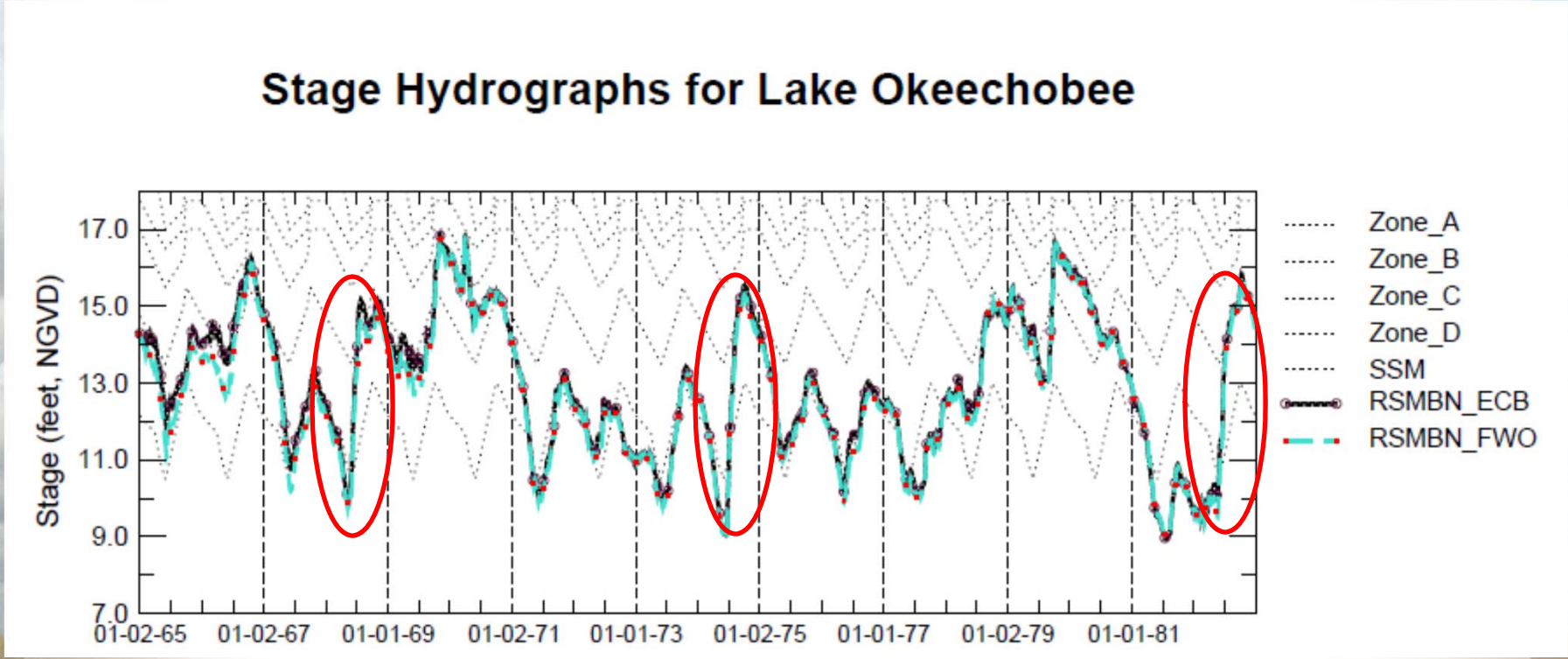


Flood Control Flows in a Wet Year - 1995 (without CEPP)



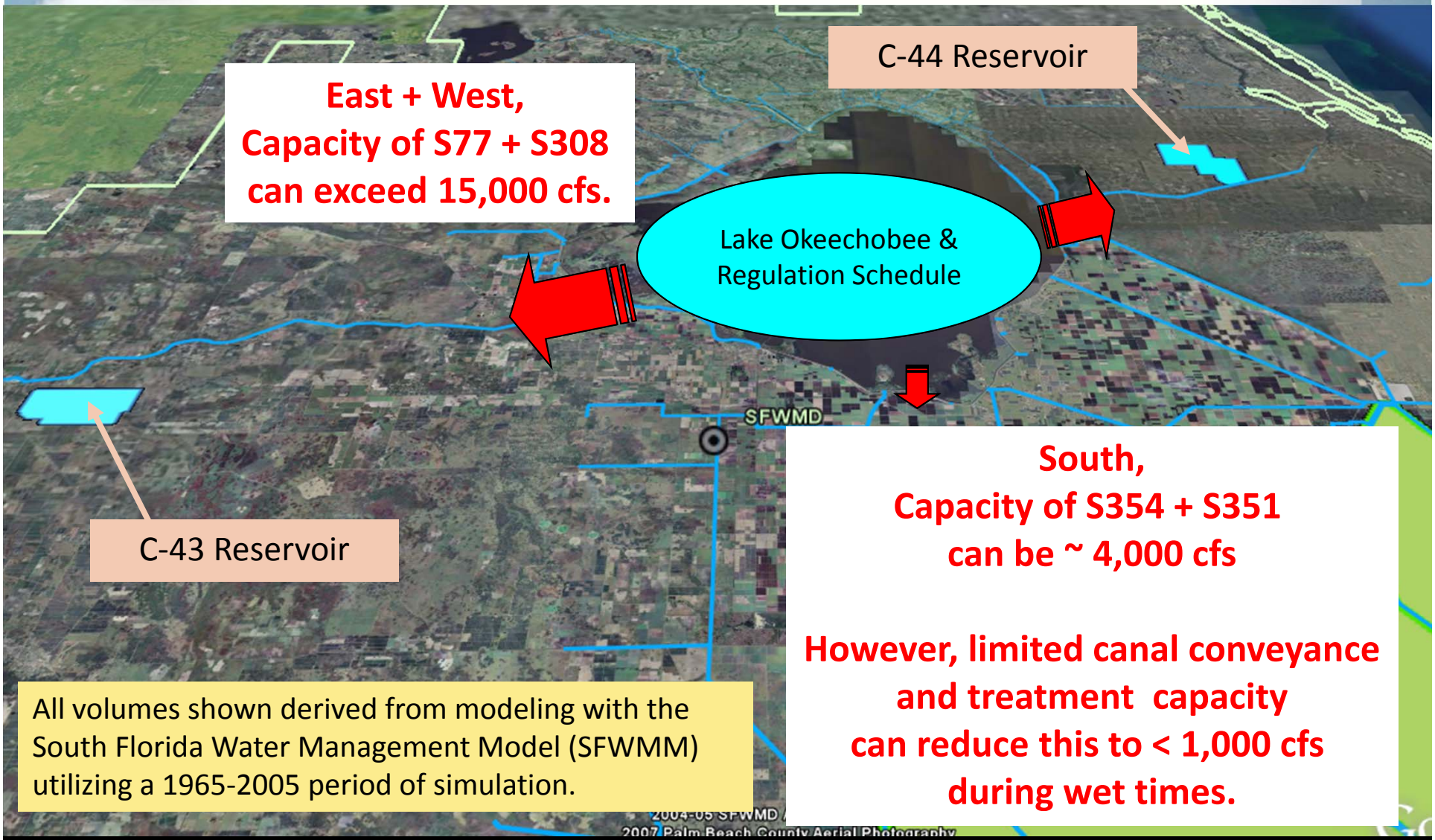
All volumes shown derived from modeling with the South Florida Water Management Model (SFWMM) utilizing a 1965-2005 period of simulation.

Lake Okeechobee Inflow Events



Highlighted events observed rapid Lake Okeechobee stage ascension of approximately 6 ft.
Each event represents over 2.5 million ac-ft of water.

Notes on Outflow Capacity



Capacity for Lake Releases South

- Various constraints associated with discharging to the South include:
  - Limited Lake O. structure discharge capacity
  - Limited EAA canal capacity
  - Relatively small CEPP storage compared to Lake inflow & estuary discharges
  - Water quality considerations for Everglades inflow
- As a result, equivalent discharges South must be spread over longer timeframes when compared to discharges East and West – i.e. more frequent, lower level releases South.

WHAT CAN CEPP STORAGE ACCOMPLISH?

1st and 2nd Generation CERP Projects

- Before discussing CEPP, it is important to note that several CERP projects are well on their way to implementation, if not already under construction.
- Projects with high certainty included in the CEPP future baseline condition include:
  - Indian River Lagoon - South
  - C43 Phase 1 Reservoir
- These projects primarily focus on estuary basin runoff management and providing for lower flow enhancements to the Caloosahatchee Estuary.
- CEPP seeks to reduce the frequency or magnitude of high discharge Lake-triggered estuary events.

Estimates of Storage Around Lake Okeechobee Required for Restoration

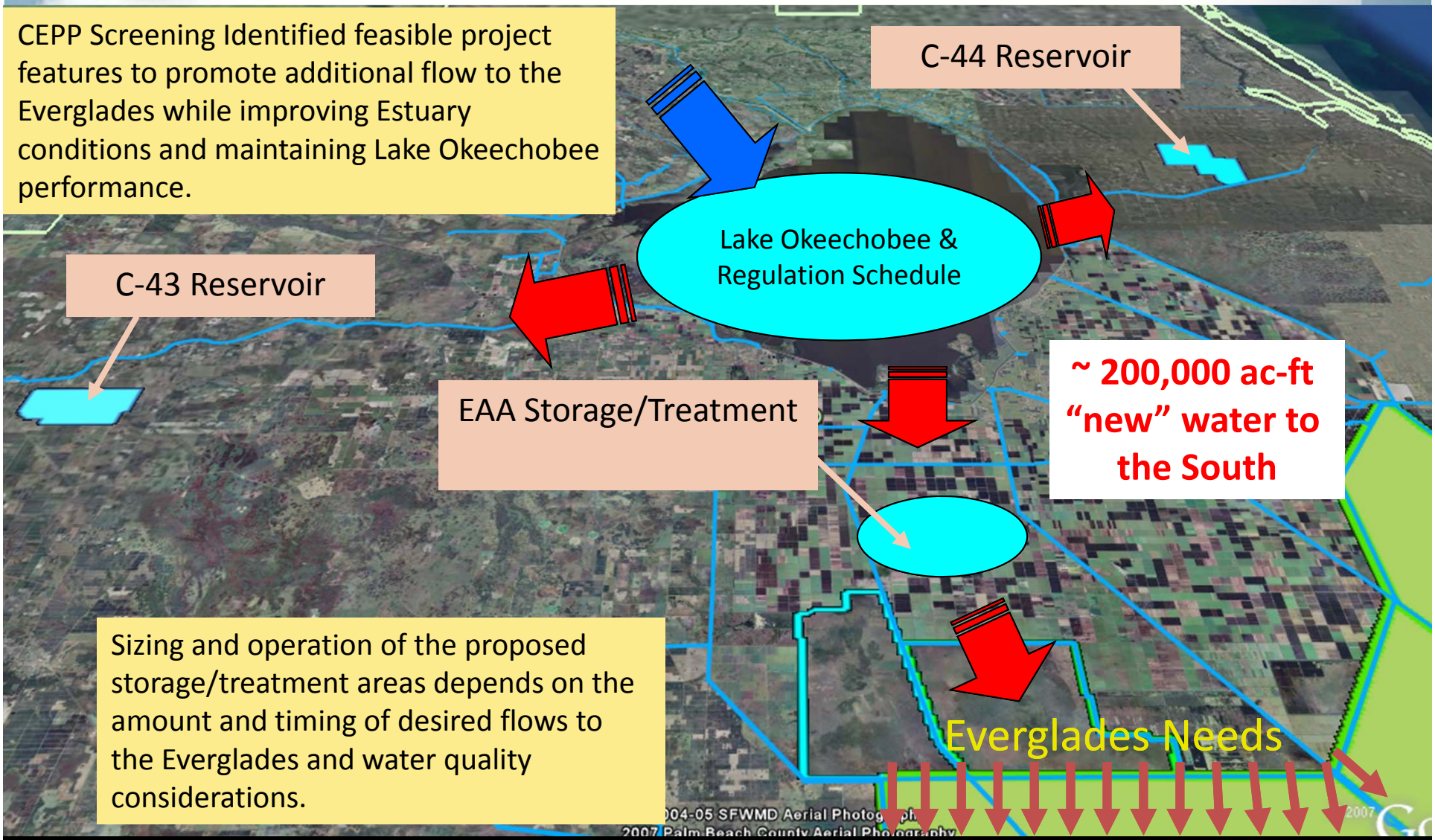
- CERP (D13R in 1998) envisioned 360,000 ac-ft of storage south of Lake, approximately 250,000 ac-ft of storage north of Lake and Lake Okeechobee ASR (ASR maximum storage = 1.5 million ac-ft)
- Northern Everglades Planning (SFWMD, 2008) identified a storage goal of 900,000 to 1.3 million ac-ft of storage north of Lake (various storage types).
- River of Grass Phase 1 Planning (SFWMD, 2009) identified a storage goal of 700,000 to 1.1 million ac-ft of storage south of Lake plus approximately 450,000 ac-ft north of Lake.

CEPP Storage in the EAA

- CEPP is considering recommendation of a 28,000 acre Flow Equalization Basin (FEB) in the Everglades Agricultural Area that provides approximately 84,000 ac-ft of effective storage and partial water quality treatment within the footprint.
- A larger storage, 6 foot deep, 24,000 acres reservoir is also being modeled that provides approximately 144,000 ac-ft of effective storage and is accompanied by a 4,000 acre Stormwater Treatment Area (STA).
- NOTE: These storage volumes are around 10% of the totals identified on the previous slide.

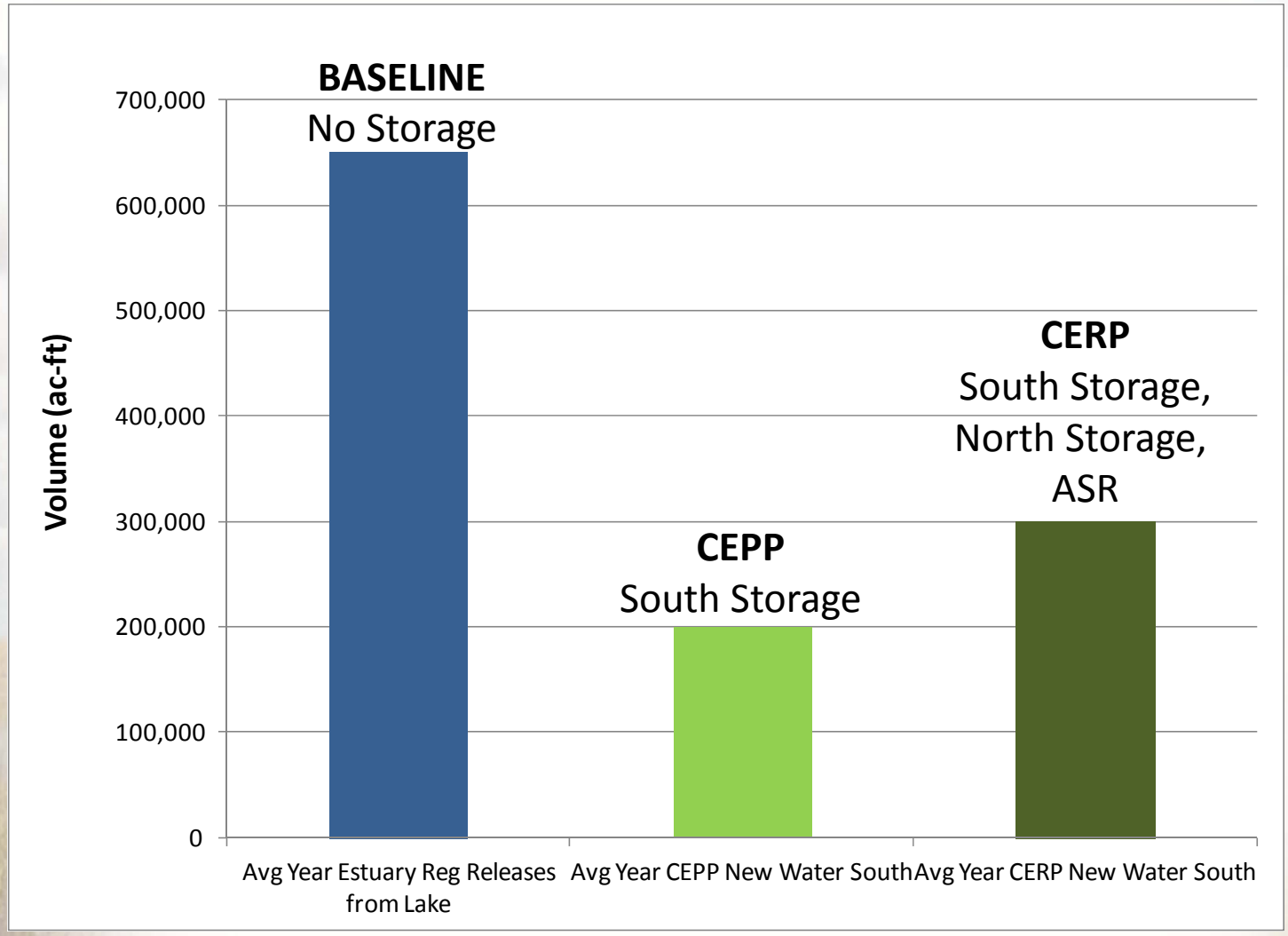
Addition of CEPP Storage

CEPP Screening Identified feasible project features to promote additional flow to the Everglades while improving Estuary conditions and maintaining Lake Okeechobee performance.

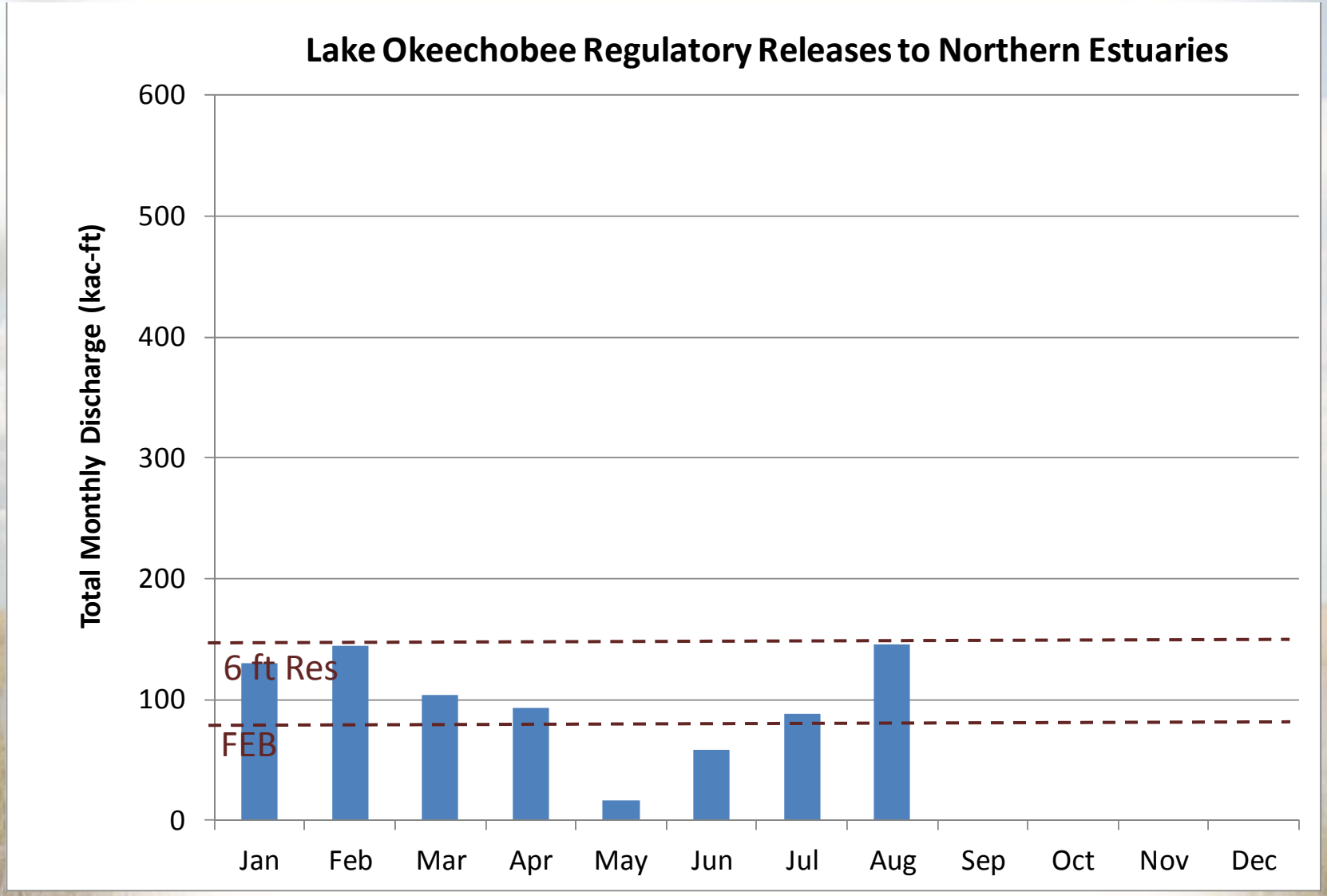


Sizing and operation of the proposed storage/treatment areas depends on the amount and timing of desired flows to the Everglades and water quality considerations.

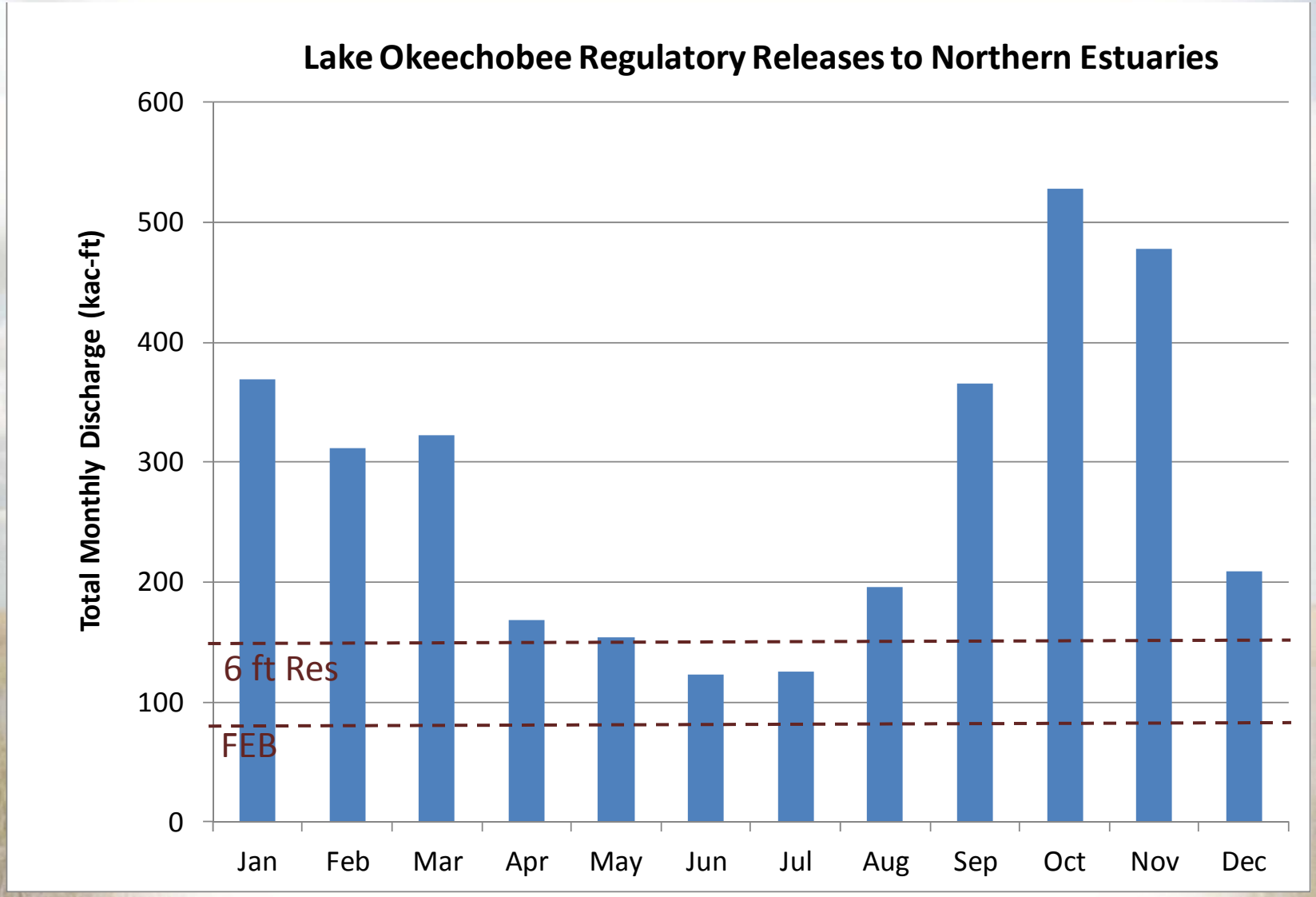
Redistribution of Estuary Regulatory Releases with Everglades Restoration



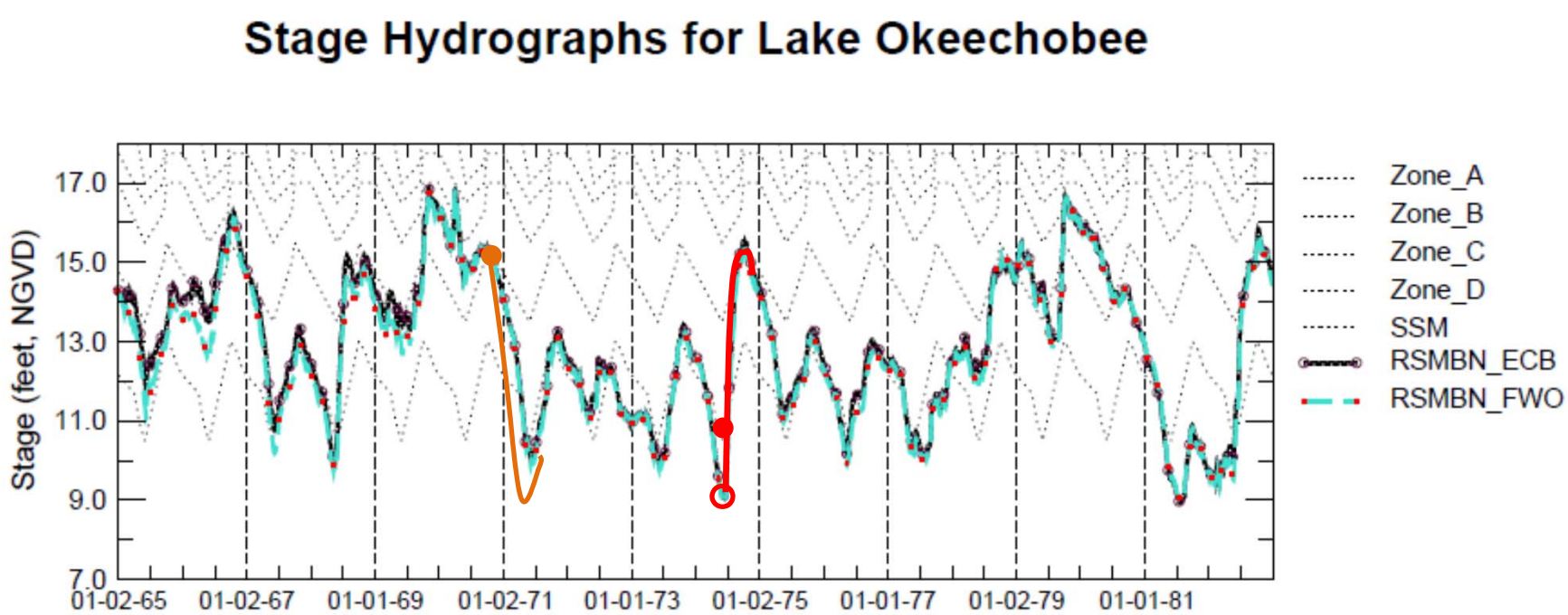
Potential Estuary Improvement in a Moderate / Drier Year - 1984



Potential Estuary Improvement in a Wet Year - 1995



Care is Needed in Managing Lake Okeechobee with CEPP

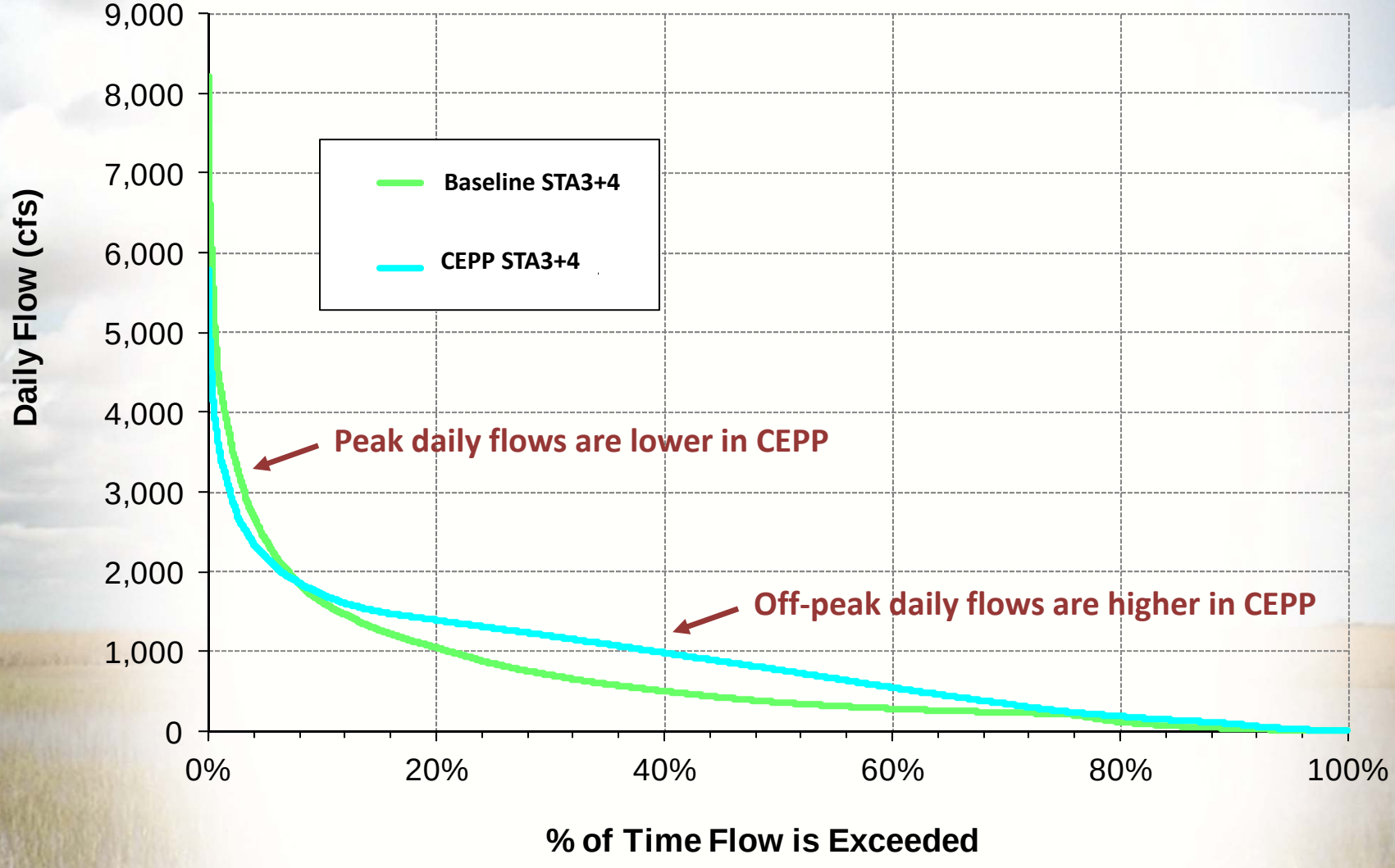


Sending water South with no other changes to Lake protocols could over-drain the Lake.

Improving drought conditions could inadvertently exacerbate high stage problems.

CEPP screening demonstrates that it is indeed possible to avoid these types of impacts to Lake performance.

CEPP Promotes Flow South during Normal and Drier times to Improve System Objectives



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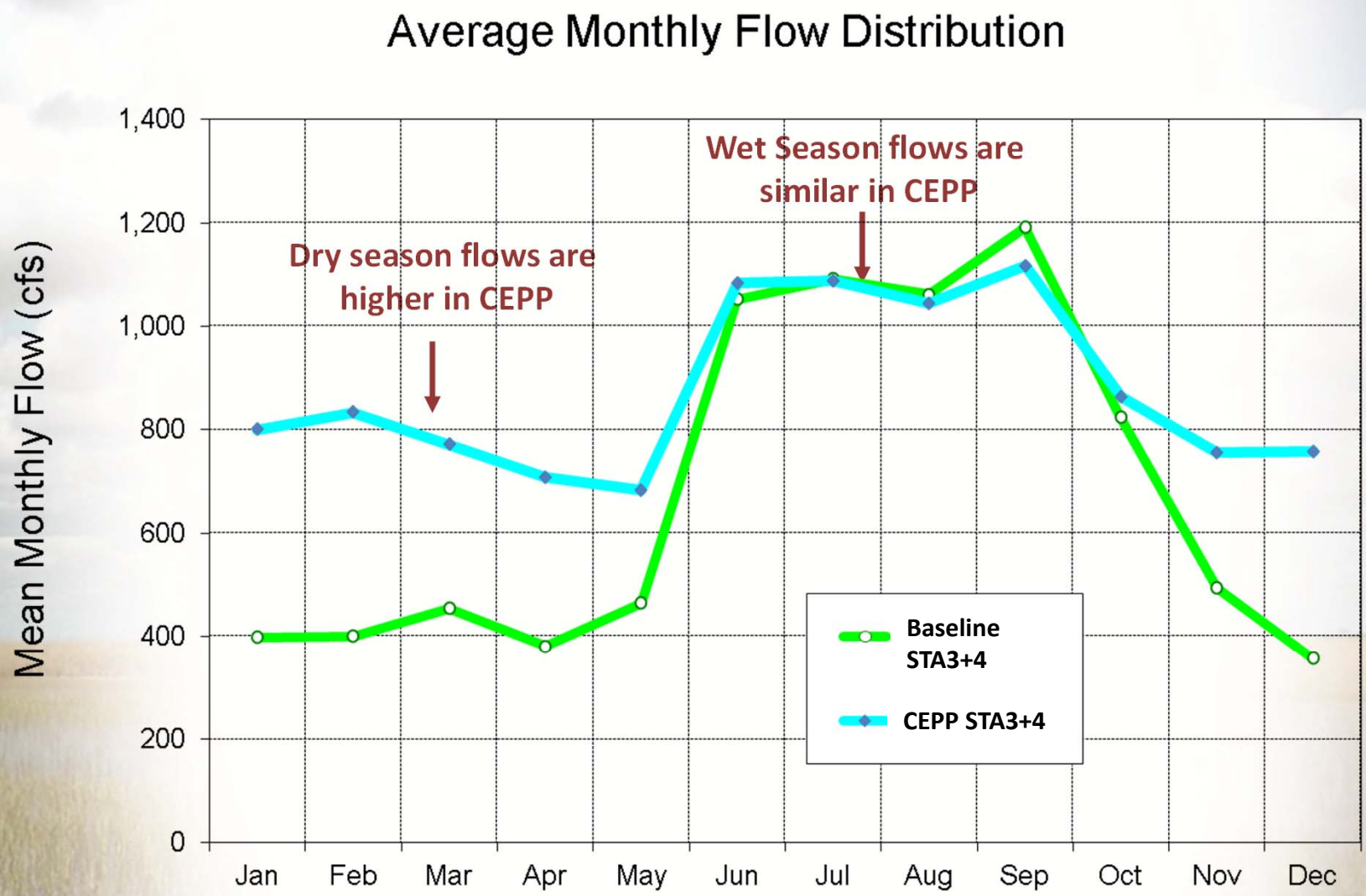

Summary

- As a first increment of restoration, CEPP will provide meaningful improvements in system performance.
- Only a fraction (~ 10%) of the total near Lake O. storage envisioned in CERP and other restoration efforts can be feasibly considered in CEPP…
- However, this small fraction of storage can provide substantial progress toward system objectives by:
  - Promoting significant new water to the Everglades
  - Helping improve Lake-triggered high discharge events during average and drier years.
- Public participation (like today) is critical to help identify & refine desired outcomes.

Caveats

- The preceding results are aggregated, rounded and intended to convey to the relative scale / magnitude of the various depicted releases.
- All volumes shown are summarized based on an approximate CEPP future without project condition as estimated with the South Florida Water Management Model (SFWMM).
- Outcomes and associated flow volumes and of the CEPP alternative assessment are still being developed and will be simulated using the Regional Simulation Model Basins (RSMBN).