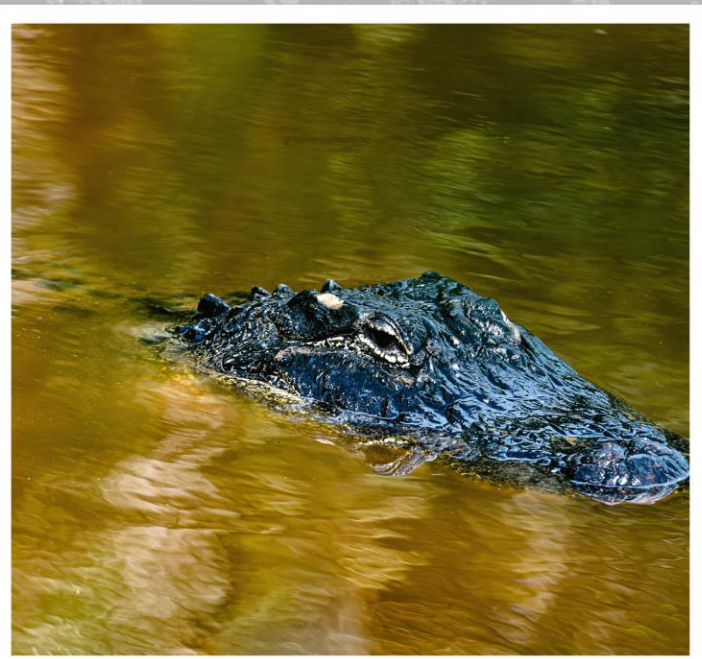
LAKE OKEECHOBEE SYSTEM OPERATING MANUAL (LOSOM)

PRELIMINARY PREFERRED ALTERNATIVE

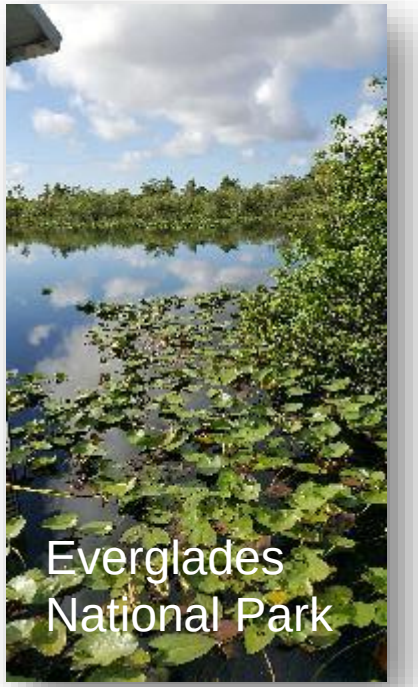
U.S. Army Corps of Engineers
Jacksonville District

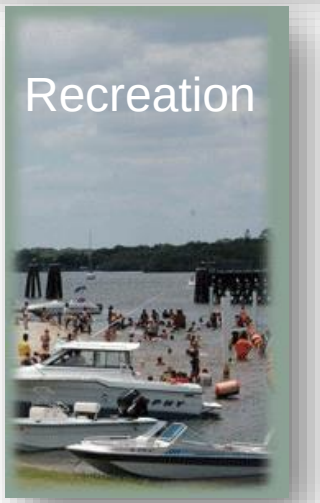
US Army Corps of Engineers®

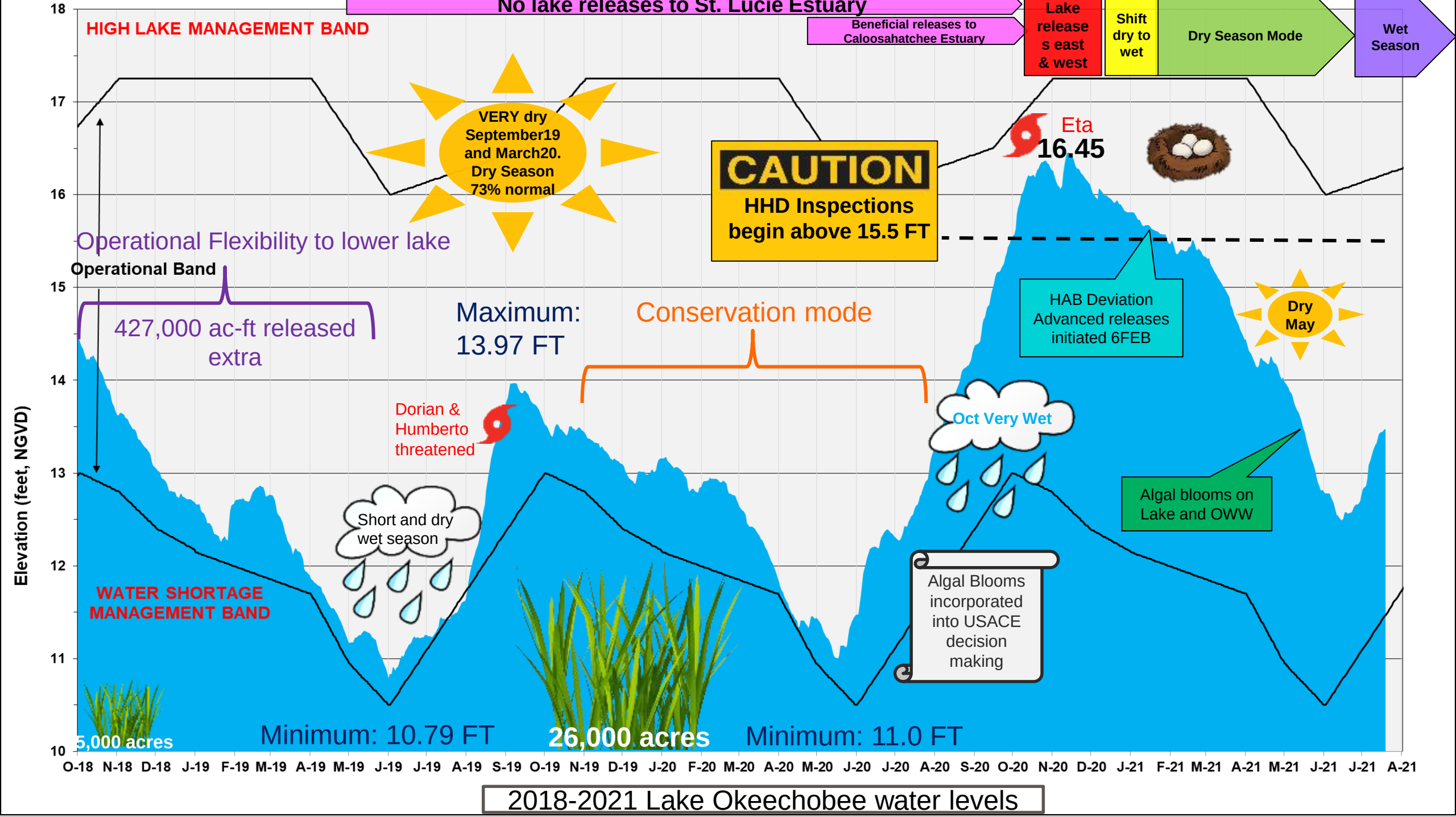


C&SF PROJECT PURPOSES

- Flood control
- Navigation
- Water supply for :
  - Agriculture
  - Municipalities
  - Industry
  - Everglades National Park
  - Regional groundwater control
  - Salinity control
- Enhancement of fish and wildlife
- Recreation



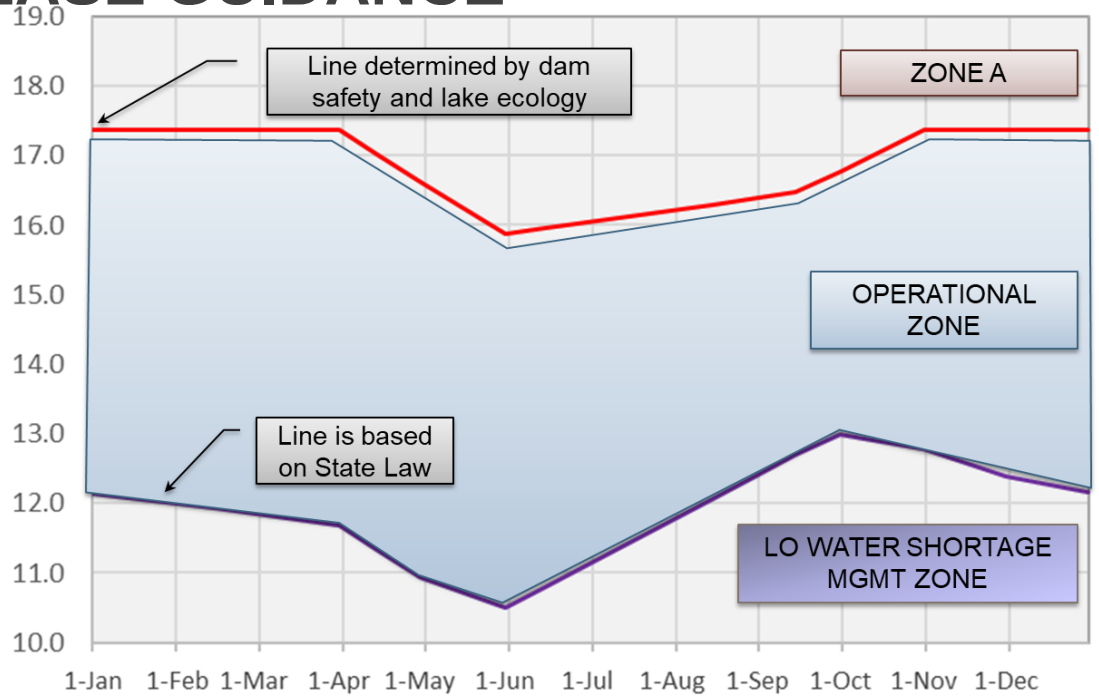




2018-2021 Lake Okeechobee water levels

WHAT DID WE LEARN FROM THE PAST? WHAT DO WE NEED GOING FORWARD? EACH ALTERNATIVE IN LOSOM EXPLORED DIFFERENT ZONES AND RELEASE GUIDANCE

WEST RELEASE GUIDANCE:
Described in each schedule by zone



EAST RELEASE GUIDANCE:
Described in each schedule by zone

SOUTH RELEASE GUIDANCE:
All alternatives strive to release south to the maximum extent practicable subject to the following factors. The complexity of these factors result in widely-varying release rates – meaning, there isn't just one single number but a series.

- Regulation schedule designates an opportunity to send water south
- Everglades WCAs ability to receive water (levee safety limits)
- Treatment capability of the STAS (modeled as a potential flow based on DMSTA analysis)
- EAA runoff and opportunities to flow Lake O water to the STAs (flow-through capacity)
- Structure and canal conveyance capabilities

The C&SF project will provide water for water replenishment, when possible, of the Everglades water conservation areas for fish and wildlife and recreational purposes

LWL Release Guidance: S-271
Up to 300 cfs when S-80 is also releasing to tide.

OVERVIEW

PLAN FORMULATION PROCESS

WE ARE HERE

1. DEVELOPMENT OF CONCEPTUAL PLANS
2. EVALUATING CONCEPTUAL PLANS
3. ITERATION 1 ANALYSIS
4. BALANCED ARRAY OF LAKE SCHEDULES (ITERATION 2)
5. RECOMMENDED SCHEDULE (ITERATION 3)

ACTIVITIES

1. DEVELOPMENT OF CONCEPTUAL PLANS

- Develop conceptual lake schedules to maximize the performance of individual objectives
- Simulate ~120k variations of conceptual schedules using a subset of sensitive and representative criteria to guide the analysis
- Apply dam safety, WQBEL test, and Pareto-sorting (27K schedules remain)

RSM-BN

2. EVALUATING CONCEPTUAL PLANS

- Identify ranges of performances and relationships between performance measures
- Evaluation to understand how each plan operates to achieve benefits
- Recommend representative plans that prioritize performance for each sub objective for Iteration 1

RSM-BN

3. ITERATION 1 ANALYSIS

- Iteration 1 schedules prioritize performance of a single objective
- Larger suite of performance metrics used for more detailed analysis of benefits, and effects
- Information gathering step to inform iteration 2

January 26 – May 7

RSM-BN & RSM-GL

4. BALANCED ARRAY OF LAKE SCHEDULES (ITERATION 2)

- Lake schedules in this iteration will be balanced for project objectives
- Recombine/modify components of Iteration 1 alternatives and re-evaluate 27K schedules to create balanced alternatives
- Evaluate balanced alternatives to ID preferred lake schedule alternative

May 10 – August 4

RSM-BN & RSM-GL

5. RECOMMENDED SCHEDULE (ITERATION 3)

- Optimize preferred lake schedule alternative
- Modify to increase schedule robustness and flexibility for incremental implementation
- Identification of operational criteria and guidance

August 5 – October 14

RSM-BN & RSM-GL

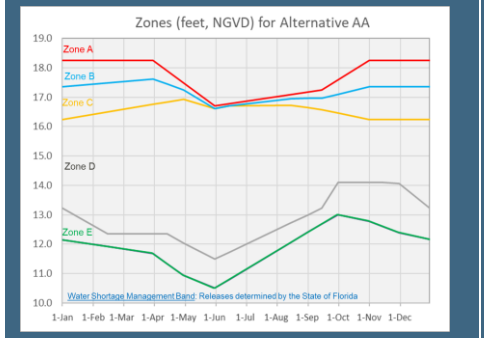
FEWER SCHEDULES / MORE DETAILED ANALYSIS

MODELS USED IN ANALYSES:
RSM-BN = Regional Simulation Model – BASINS
RSM-GL = Regional Simulation Model – Glades LECSA

FINAL ARRAY OF ALTERNATIVES

HONOR DIFFERENT PERSPECTIVES ON BALANCING THE CONGRESSIONALLY AUTHORIZED PROJECT PURPOSES AND THE STATED GOAL AND OBJECTIVES OF LOSOM

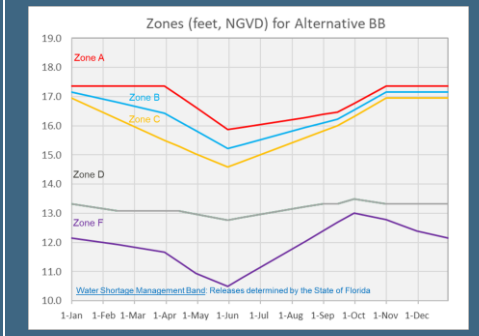
Alternative AA



Pros: Best performance for both flows south and reduction of lake releases to SLE

Cons: Water supply (2nd worst) and lake ecology performance (3rd worst)

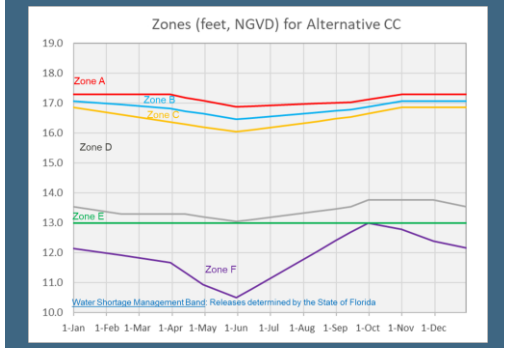
Alternative BB



Pros: Significantly best performance for water supply, Navigation, and CRE Algal Bloom Risk performances

Cons: Worst SLE and S. Florida ecology performance

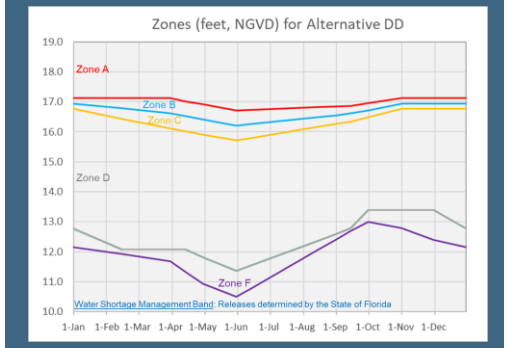
Alternative CC



Pros: Top 3 performance for 10 out of 11 sub-objectives

Cons: Moderate increases in performance when compared to other alts, increases stress flows to CRE

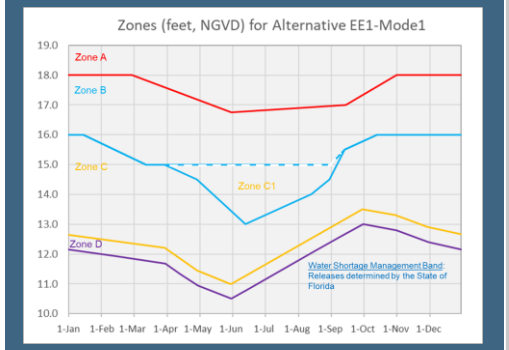
Alternative DD



Pros: Best for lake ecology, 2nd best water supply performance

Cons: Worst for CRE ecology and CRE algal bloom risk, 2nd worst for SLE performance

Alternative EE1/EE2



Pros: Best overall CRE performance, 2nd best reducing CRE algal bloom risk

Cons: Water supply performance (EE2 is worst), most increases in >17 ft lake stages

PREFERRED ALTERNATIVE CC

Alternative CC is the Preferred Alternative

Alternative CC Original Vision of Balance Presented at 7 May 2021 PDT:
Honor the perspective on balance that includes:

- Enhancing Caloosahatchee ecology by providing low and optimal flows and reducing extreme high flows >6500 cfs, enhancing ecology of St. Lucie Estuary by reducing Lake Okeechobee releases, enhancing Everglades ecology by providing more freshwater south, and improving water supply performance as compared to the No Action condition.

PDT and public input will be considered on how to optimize Alternative CC in Iteration 3

ALTERNATIVE CC

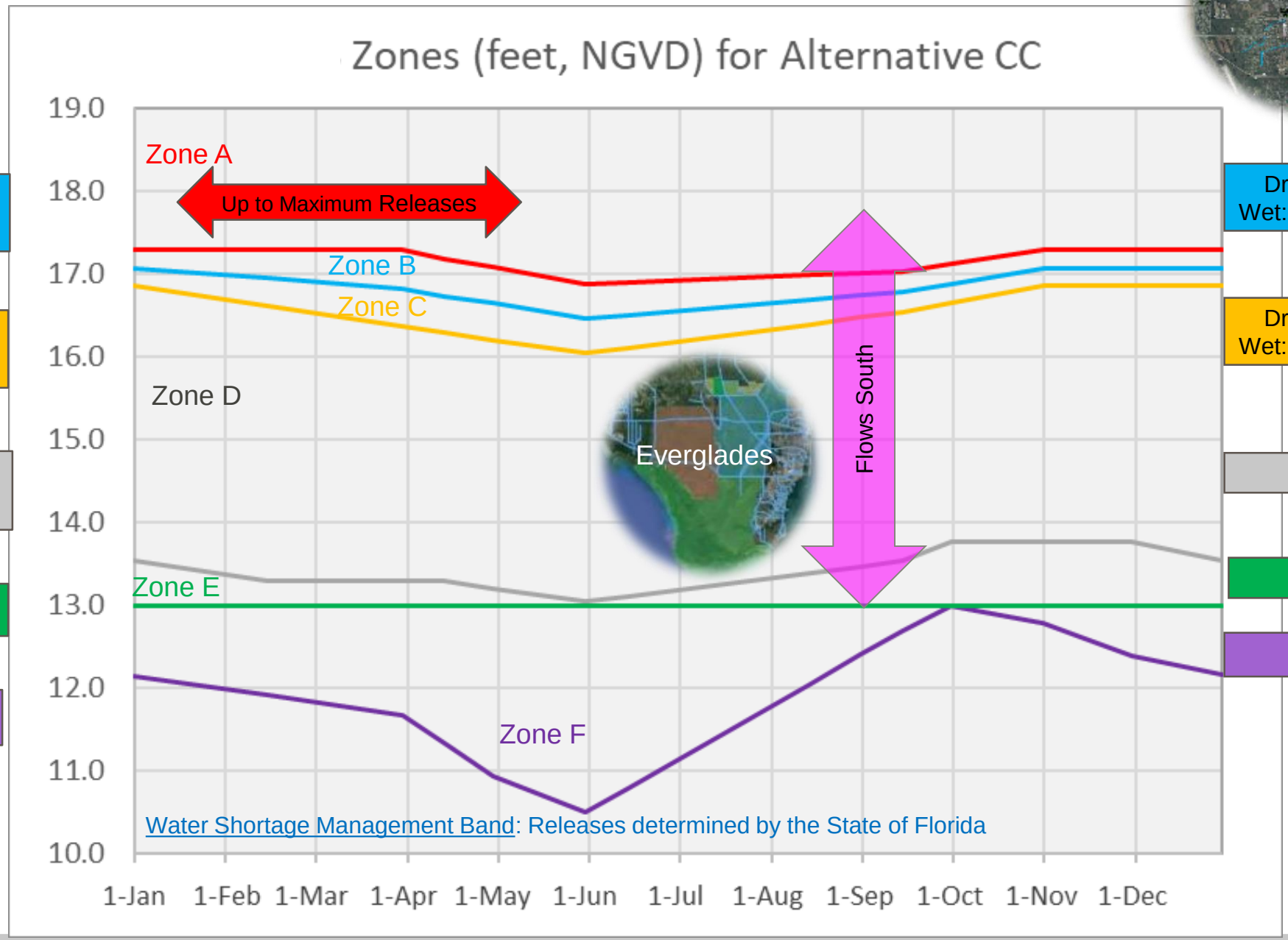
Dry: 2,200 cfs S-79
Wet: 7,200 cfs S-77

Dry: 750 – 2,200 cfs S-79
Wet: 2,500 - 7,200 cfs S-77

Dry: 750 - 2,200 cfs S-79
Wet: 2,500 cfs S-77

750 cfs S-79

0 cfs at S-79



Dry: 0 cfs S-80
Wet: 3,600 cfs S-80

Dry: 0 cfs S-80
Wet: 3,600 cfs S-80

0 cfs S-80

0 cfs S-80

0 cfs S-80

ITERATION 2 PERFORMANCE COMPARISON

Objective 1: Manage risk to public health and safety, life and property

1A: Dam safety – all Alts pass check

1B: Algal bloom risk in Lake Okeechobee -

1C: Algal bloom risk in Caloosahatchee Estuary – BB, EE1, NA25

1D: Algal bloom risk in St. Lucie Estuary – AA, **CC**, EE1

Objective 2: Continue to meet authorized purposes for navigation, recreation, and flood control

2A: Navigation – BB, **CC**, AA

2B: Recreation – **CC**, AA, DD

2C: Flood control – all Alts maintain

Objective 3: Improve water supply performance

3A: Lake Okeechobee Service Area – BB, DD, **CC**

3B: Seminole Tribe of Florida – BB, DD, **CC**

3C: Lower East Coast Service Area – **CC**, EE1, DD

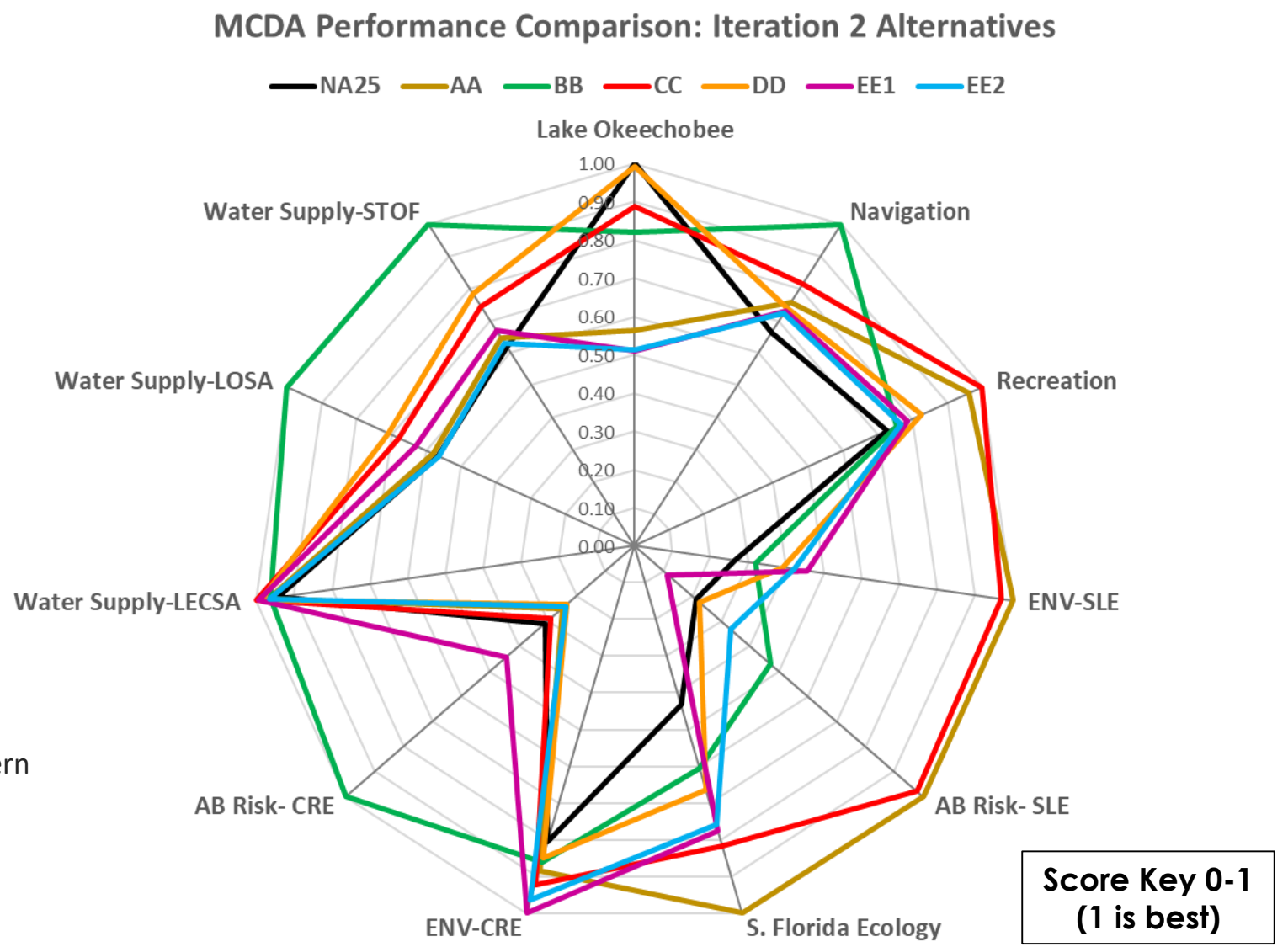
Objective 4: Enhance ecology in Lake Okeechobee, northern estuaries and across the south Florida ecosystem.

4A: Lake Okeechobee – NA25, DD, **CC**

4B: Caloosahatchee Estuary – EE1, EE2, **CC**

4C: St. Lucie Estuary – AA, **CC**, EE1

4D: South Florida – AA, **CC**, EE1



Score Key 0-1 (1 is best)

INPUT WE NEED FROM THE PDT AND THE PUBLIC

Optimization

- What performance/area are you looking to improve AND what are acceptable trade-offs?
- How far are we willing to go?

Operational Guidance

- What water management tools and flexibility would you like to see incorporated into the Recommended Plan

LOSOM SCHEDULE OVERVIEW

ITERATION 3 THROUGH THE RECORD OF DECISION

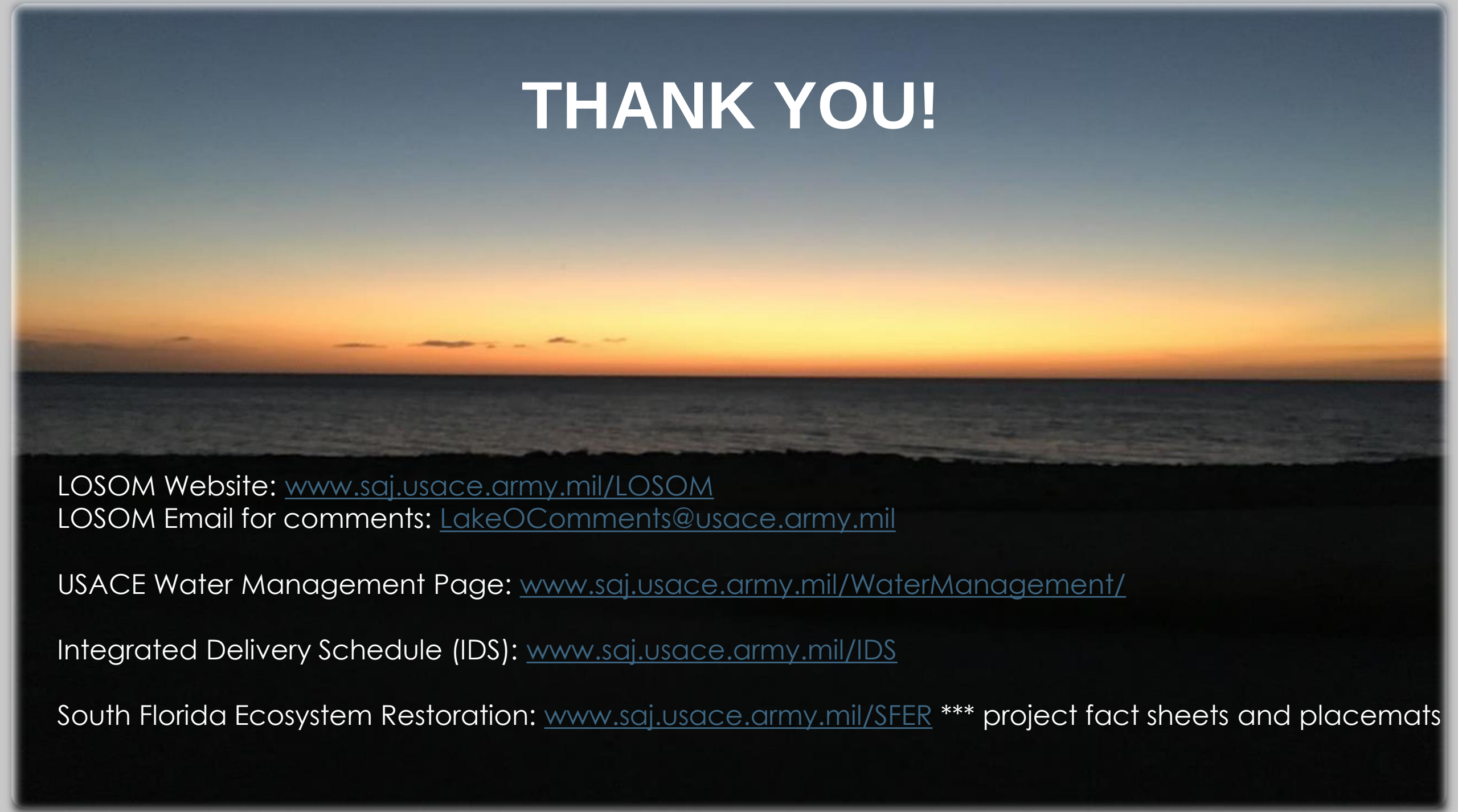
6	7	8	9	10
PREFERRED ALTERNATIVE OPTIMIZATION (ITERATION 3)	OPERATIONAL GUIDANCE DEVELOPMENT (ITERATION 3)	DRAFT EIS AND WCP DEVELOPMENT	DRAFT EIS AND WCP REVIEWS	FINAL EIS AND ROD

ACTIVITIES

• Optimize preferred lake schedule alternative with very specific acceptable tradeoffs identified • Modify as needed to increase schedule robustness and flexibility for incremental implementation (forward and backward checks) August 5 – October 14 RSMBN & RSMGL & DMSTA	• Identification of operational criteria and guidance for water managers • PDT involvement to help identify and develop the concepts to improve decision making and flexibility of the plan August 5 – October 14 RSMBN & RSMGL & DMSTA	• Draft NEPA documentation of the effects of the alternatives and how the preferred alternative was chosen • Draft water control plan documentation including regulation schedule and operational guidance • ESA consultation and Biological Assessment October 15 – February 11, 2022	• NEPA public, agency, and tribal review and comment on the Draft LOSOM EIS and Water Control Plan • Corps Agency Technical Review (ATR) and Independent External Peer Review (IEPR) • Draft FWS Biological Opinion February 12 – April 24, 2022	• Final EIS and SOM completed to address review comments • Final FWS Biological Opinion • NEPA public, agency, and tribal review of Final EIS and SOM • Corps South Atlantic Division review and approval of Record of Decision April 25 – November 26, 2022

SCHEDULE REFINEMENT AND DOCUMENTATION PROCESS

MODELS USED IN ANALYSES:
RSMBN = Regional Simulation Model – BASINS
RSMGL = Regional Simulation Model – Glades LECSA
DMSTA = Dynamic Model for Stormwater Treatment Areas



THANK YOU!

LOSOM Website: www.saj.usace.army.mil/LOSOM
LOSOM Email for comments: LakeOComments@usace.army.mil

USACE Water Management Page: www.saj.usace.army.mil/WaterManagement/

Integrated Delivery Schedule (IDS): www.saj.usace.army.mil/IDS

South Florida Ecosystem Restoration: www.saj.usace.army.mil/SFER *** project fact sheets and placemats