

# Adaptive Management to Improve Achievement of Restoration Benefits

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***National Conference on Ecosystem Restoration***  
***Determining Everglades Ecosystem Restoration Benefits for Projects***

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# Presentation Outline

- 1. Introduction**
- 2. Adaptive Management and Science Reporting Framework**
- 3. Factors that Inform Decision-Making**
- 4. Tools to Link Science to Decision-Making**
- 5. Program Scale Examples**
- 6. Project Scale Examples**
- 7. Conclusion**



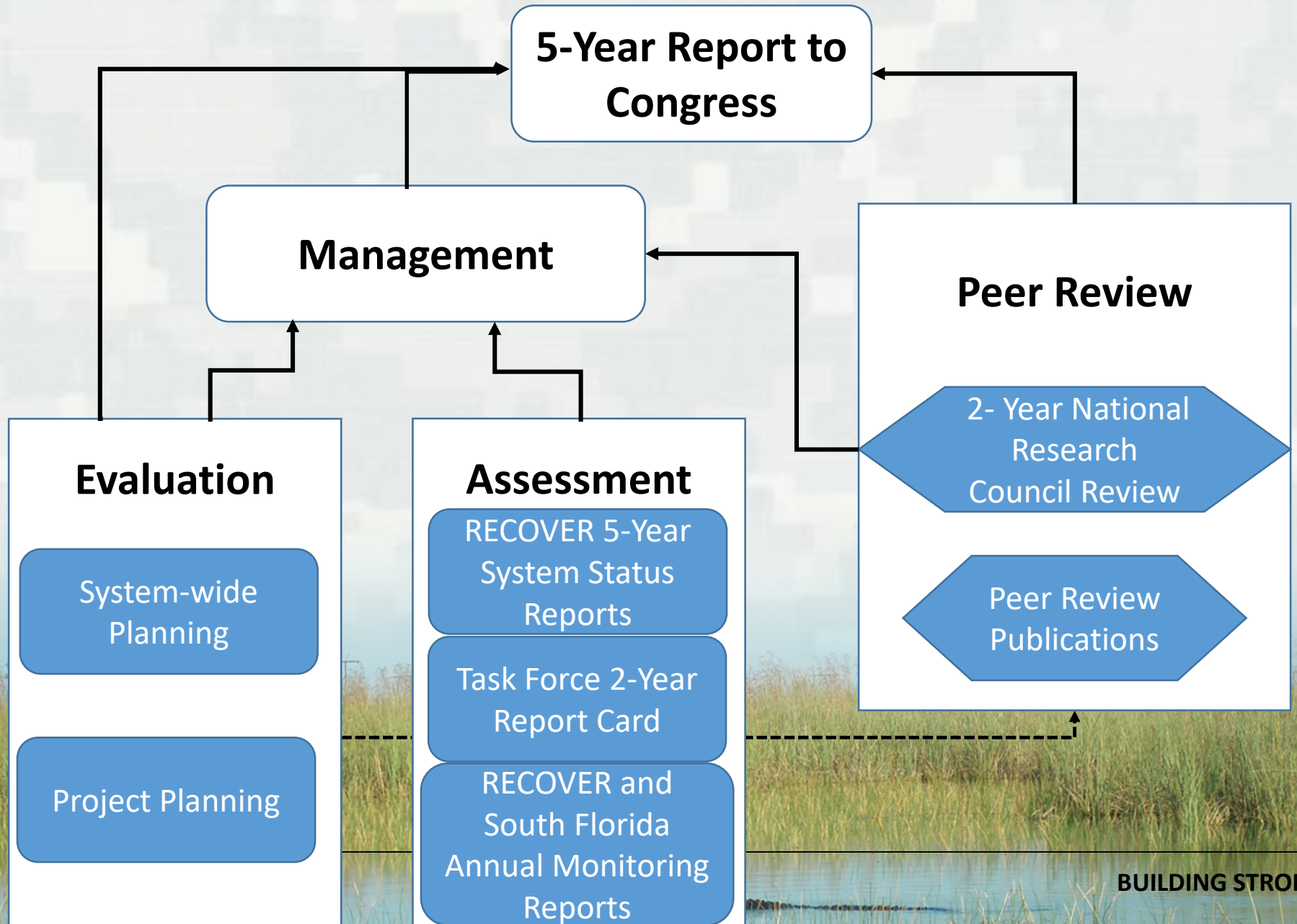


# Adaptive Management Framework

- **Adaptive Management Defined:**
  - “A structured management approach for addressing uncertainties by testing hypotheses, **linking science to decision making, and adjusting implementation**, as necessary, to improve the probability of restoration success.”
- **Authority**
  - **WRDA 2000 –**
    - CERP Implementation through Adaptive Management Principles
    - Adaptive Assessment and Monitoring
  - **2003 Programmatic Regulations –**
    - New information from monitoring and modeling be used to refine CERP plan
  - **2010 Adaptive Management Integration Guide (How to Apply CERP Adaptive Management)**



# Science Reporting Framework





# Factors that Influence Decision-Making

- What are the Performance Issues?
  - Science Reporting of Restoration Performance
- What are the Options?
  - Technical Feasibility
  - Authority
  - Funding
  - Policy



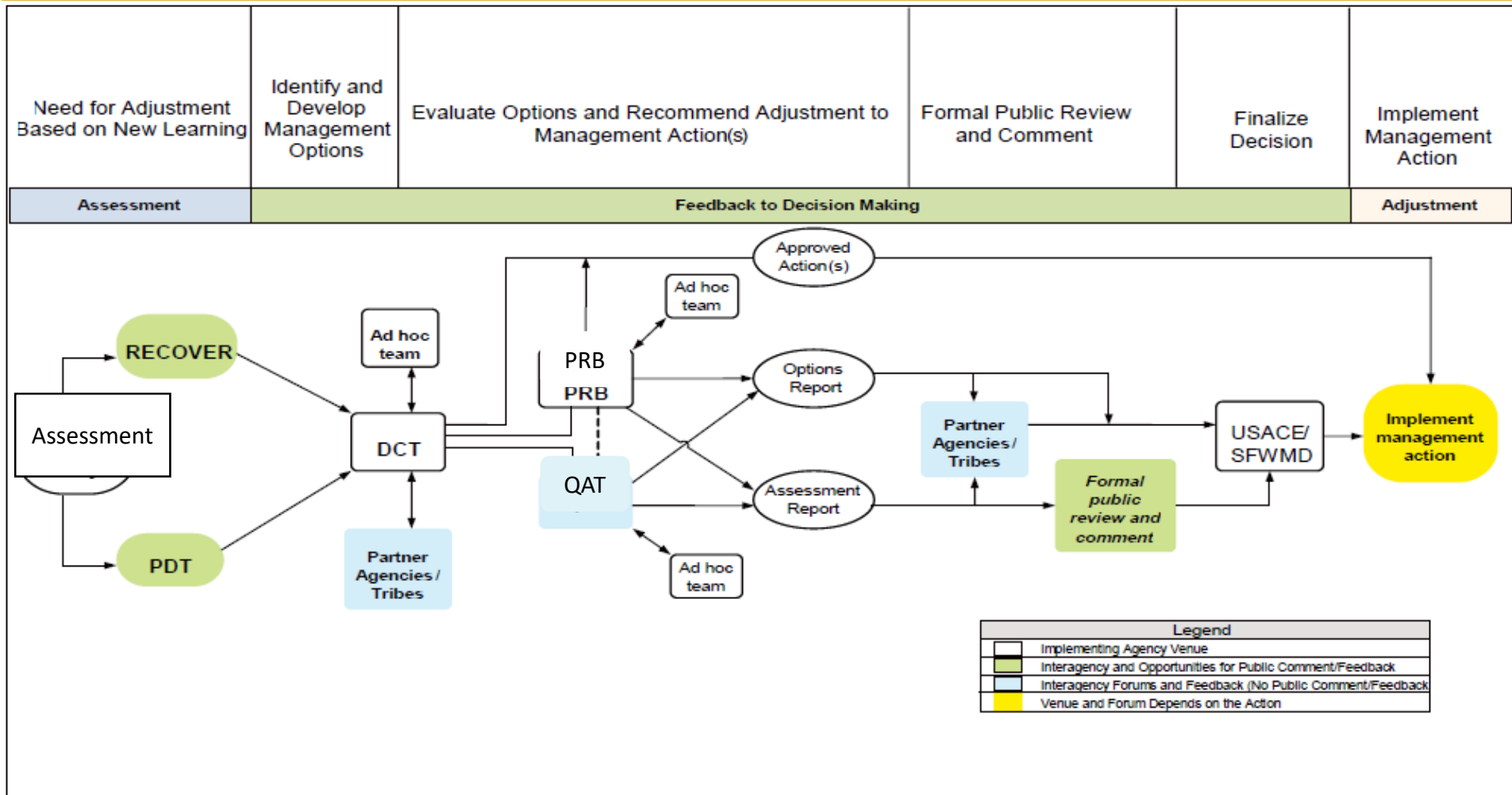
# Linking Science to Decision-Making

## Example: Central Everglades Management Options Matrix

Parameter	Timing (years)	Decision-Criteria	Management Action Option
Hydrology – flow direction and volume, velocity, hydroperiod	3	Flow direction change to North South Flow velocity target of 2.5 cm/second downstream of L-67 structures for 4 weeks or more	<ul style="list-style-type: none"> <li>• Vegetation management options to improve flow</li> <li>• Implement rest of L-67A conveyance</li> <li>• Implement Blue Shanty Levee</li> <li>• Vegetation management</li> </ul>
Soil Oxidation and Accretion	3 to 10	Statistically significant soil moisture content; organic soil matter increase	
Ridge and Slough and Tree Islands	5 to 20	Marked differences in elevation between ridge and slough habitat	
Water Quality	3 to 10	No increase total phosphorus increase in periphyton Increased sediment floc in sloughs	Adjust operations to minimize nutrient load from canals

# Decision-Making Framework

Figure 3-9: Decision-Making Process for Adaptive Management Activities 7, 8, and 9

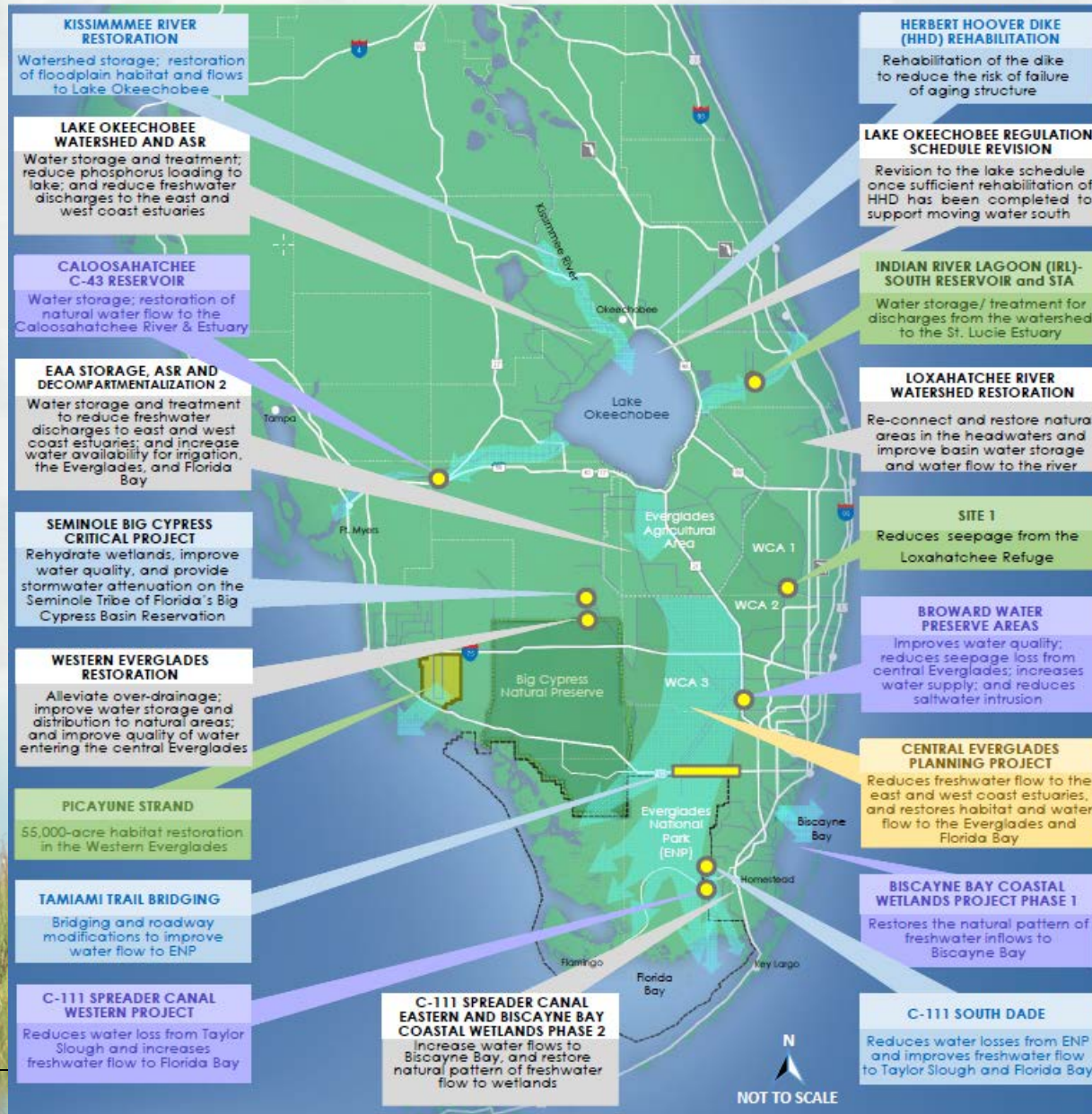


Note: DCT = Design Coordination Team, QRB = Quality Review Board, and Joint PRB = Joint Project Review Board





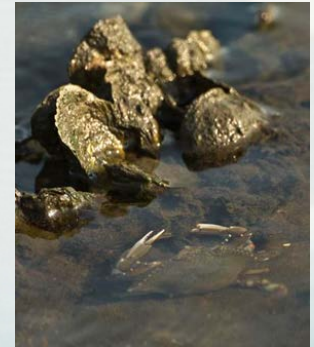
# Program Overview





# Program-Scale Changes

- Schedule: Adjust Schedule of Next Projects in Planning, Design and Operations
- Operations: Operations plan at system-wide operating scale and project scales are updated
- Adjustments to CERP Plan
  - ▶ Small Design Changes
  - ▶ Large Scale CERP Modification - New Projects



# CERP Project-Scale Changes

- Design: Improve design of authorized project features (improve flexibility or capability to achieve performance)
- Operations: Project operations in project operating manual adjusted to alter amount or timing of water delivery
- Contingency Options: Additional project features or changes are implemented (e.g., vegetation management)
- Physical Models, Field Tests, Pilot Projects





# Conclusions

- Conduct Program and Project-scale monitoring and assessment of restoration performance.
- Create a process that directly links restoration performance science and project selection and operations.
- Report on restoration performance in as many forums as possible.
- Implement Adaptive Management and Program and Project-scale changes to realize full restoration benefits.



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