

ASSESSMENT OF RESTORATION BENEFITS

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Determining Everglades Ecosystem Restoration Benefits for Projects

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Presentation Outline

- 1. Ecosystem Restoration Monitoring**
 - Project-level
 - Systemwide
- 2. RECOVER Monitoring**
- 3. Systemwide Assessments**
- 4. Adaptive Management Plans**
- 5. Implementation Process**
- 6. Biscayne Bay Coastal Wetlands AM Example**



CERP Monitoring

Two Levels of Monitoring

1. Project-level Monitoring

- Project-specific
- Smaller scale
- Short-term to inform project performance and confirm project benefits



2. Systemwide Monitoring

- Holistic description of the status of the Everglades
- Summary of ecosystem changes as they relate to CERP goals and objectives
- Identification of major unanticipated findings

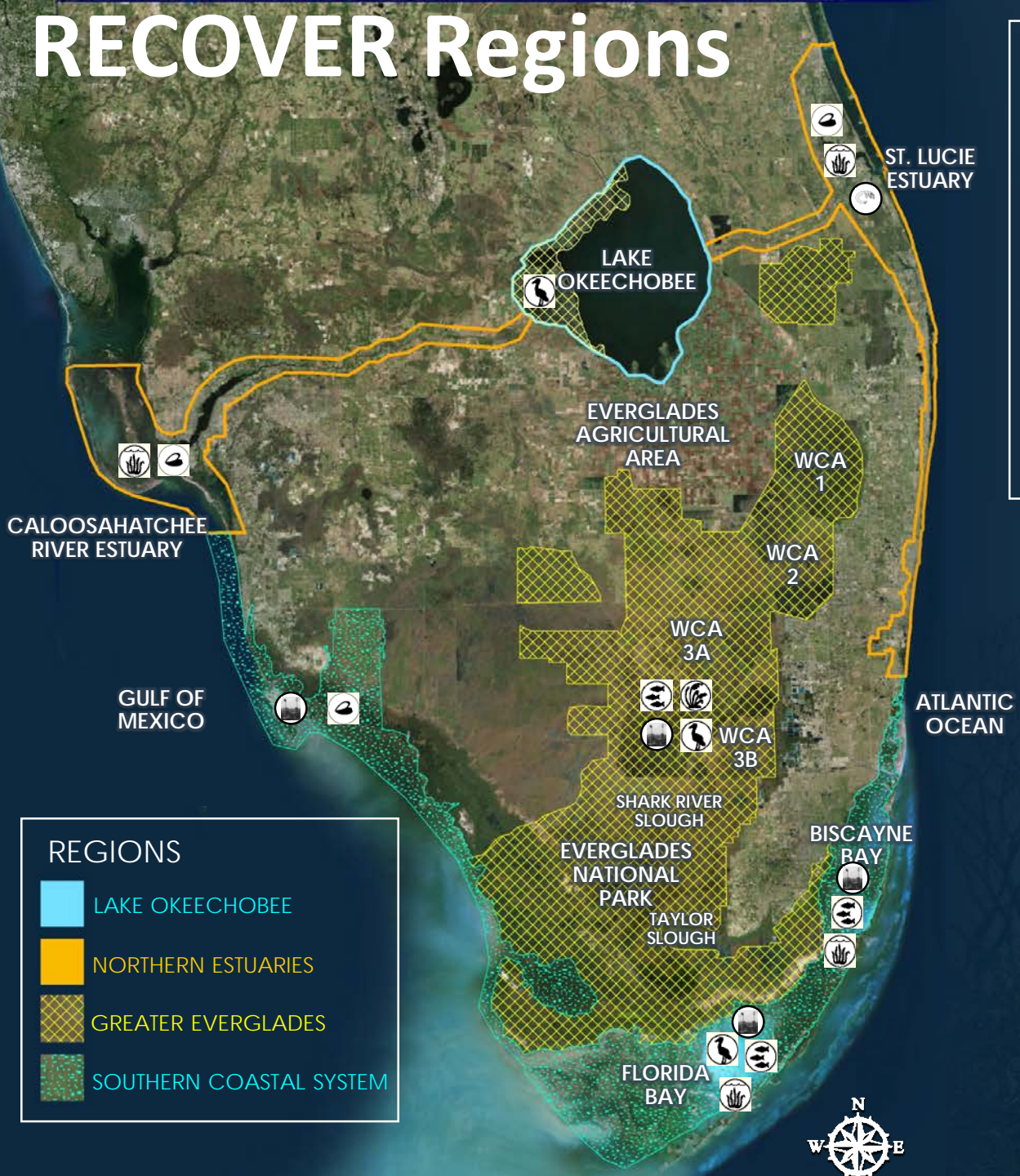









RECOVER MAP

- Systemwide Monitoring
 - Establish pre-CERP conditions
 - Track progress as CERP is implemented
- Assessment Program
 - Evaluate CERP performance and system responses
 - Determine how well CERP is meeting its goals and objectives
 - Initiate Adaptive Management measures
- Organized by geographic area
- Monitoring components are linked to performance measures



RECOVER Regions



-  Oysters
-  Submerged Aquatic Vegetation
-  Benthic Infauna
-  Wading Birds
-  Vegetation/Landscape
-  Fish/Aquatic Fauna
-  Hydrology/Salinity/Depth

- ### REGIONS
-  LAKE OKEECHOBEE
 -  NORTHERN ESTUARIES
 -  GREATER EVERGLADES
 -  SOUTHERN COASTAL SYSTEM

System Status Report

- Synthesize and assess technical data of the Everglades and South Florida Ecosystem
 - Systemwide hypotheses
 - Interim Goals
 - CERP goals and objectives
- Identify unanticipated results and potential remedies for consideration
- Adaptive Management Feedback
 - Update science (MAP, CEMs, Performance Measures, Tools)
 - Inform Project planning, design, operations, CERP schedule
 - Used in decision-making



CERP Adaptive Management Plans

Programmatic AM Plan

- Prioritize Key Questions and Uncertainties Related to CERP Implementation
- AM Strategies to Address Key Questions and Uncertainties
- Management Options Matrices that Link MAP Monitoring to Current and Future CERP Projects



CERP Adaptive Management and Monitoring Plans (AMMP) – Project-level

The AMMP is a combination of two required pieces of CERP Project Implementation Reports (PIRs):

- **An *Ecological Monitoring Plan*** specifies the data collection, analysis, and reporting that will inform project performance
- **An *Adaptive Management Plan*** guides the use of collected data to:
 - Address uncertainties related to project performance
 - Maximize project benefits while reducing project costs
 - Help inform implementation sequencing of project phases
 - Understand how monitoring will determine if adjustments are needed in project implementation to improve performance



Assessment of Restoration Benefits

- RECOVER coordinates with project team to incorporate project monitoring data into the SSR
- Projects report in the South Florida Environmental Report
- RECOVER and project teams review data to address AM uncertainties and implement AM strategies if needed
 - How is this done?



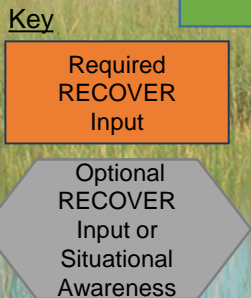
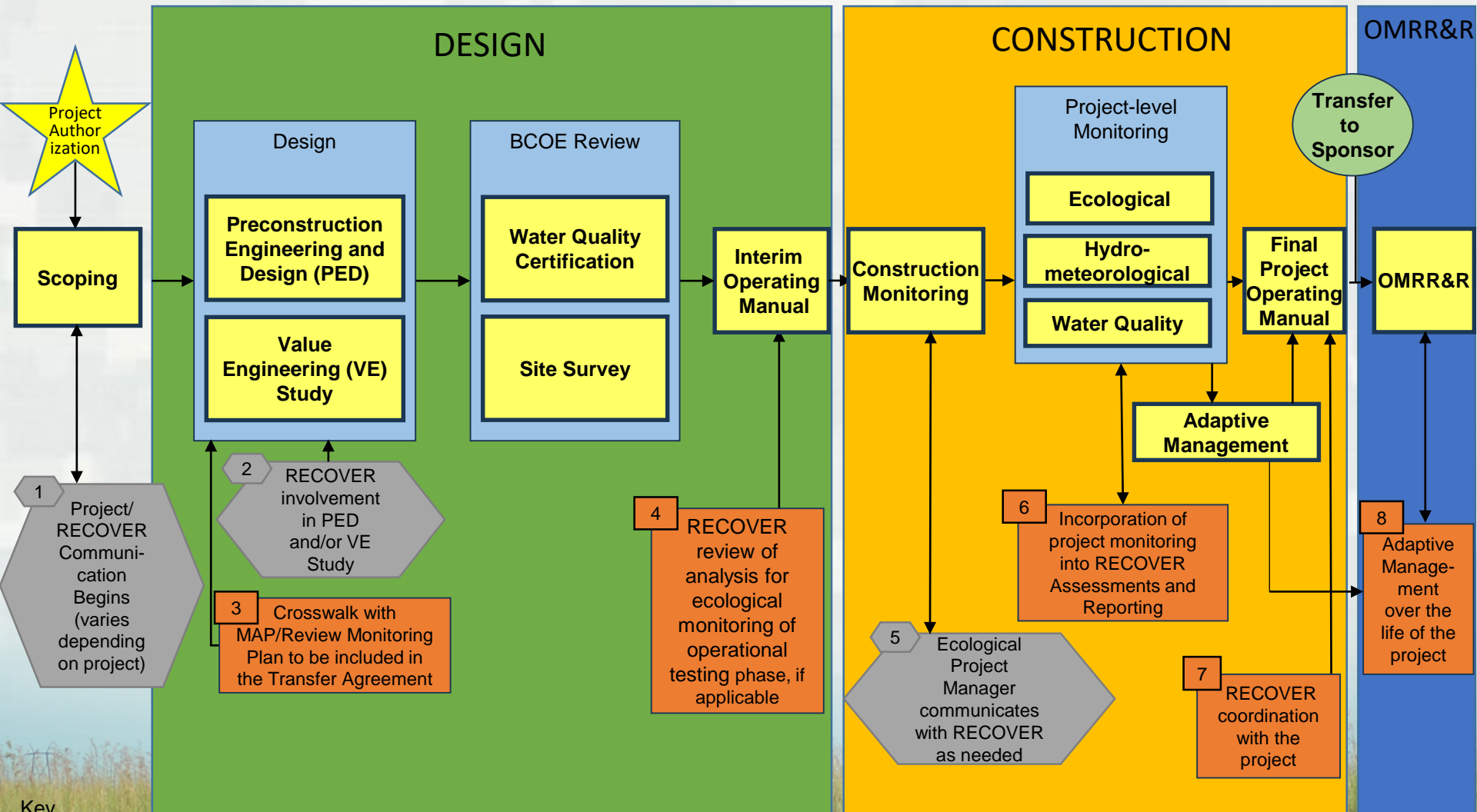
RECOVER Assistance to Projects

CERP Guidance Memorandum 66

- Established a process for incorporating new science, information and systemwide monitoring data into the design, construction and operations of CERP projects
- Provide an adaptive management feedback loop
- Help project teams implement adaptive management strategies
- Ensure that project-level data is included in the RECOVER System Status Reports and that the pertinent systemwide data is provided to the project teams to be included in their reporting efforts
- Ensure there is a process for project level adaptive management to feed into program level adaptive management

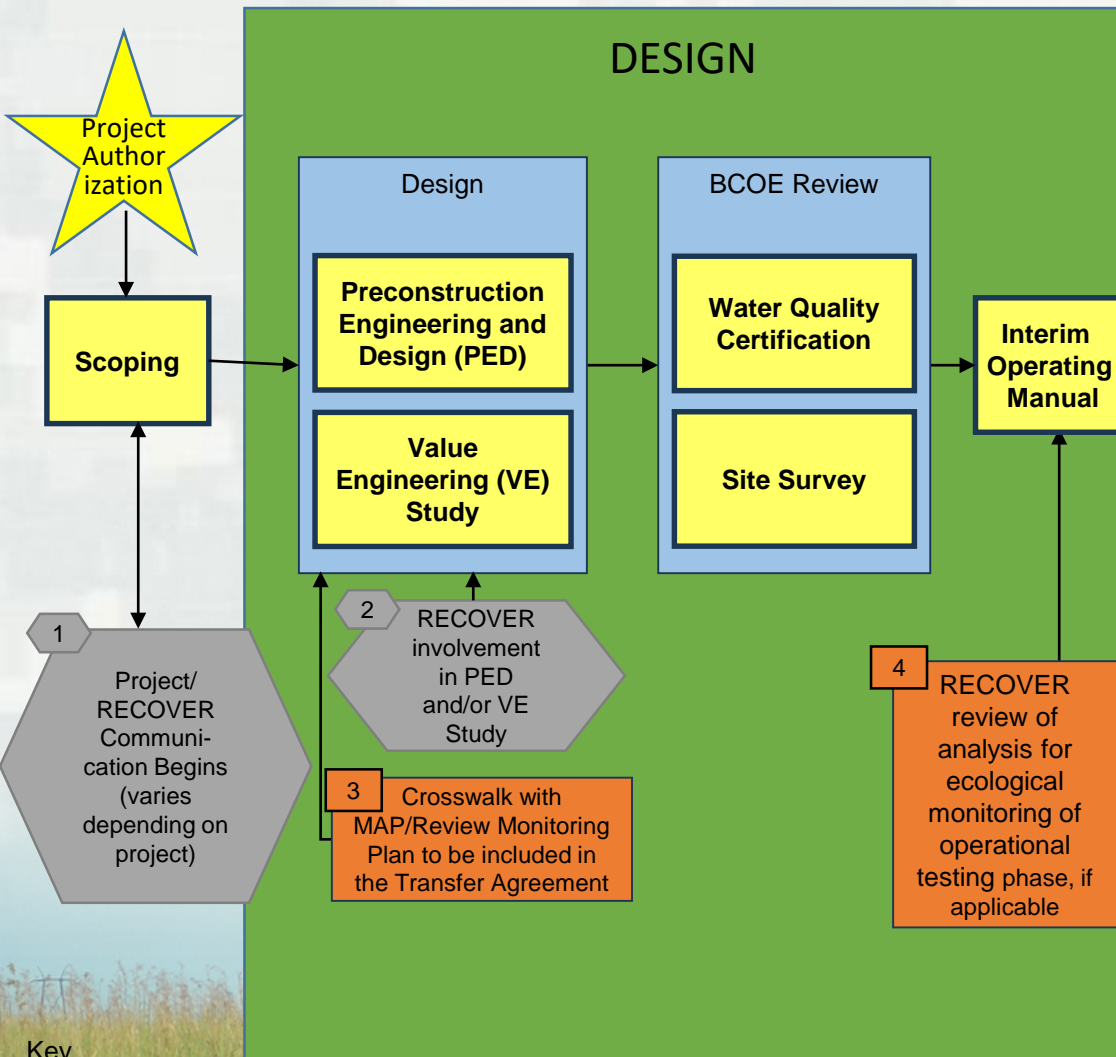


RECOVER's Role in CERP Project Implementation



Acronyms
 RECOVER – REStoration, COordination and VERification
 MAP – Monitoring and Assessment Plan
 BCOE - Biddability, Constructability, Operability, and Environmental Review
 OMRR&R – Operation and Maintenance, Repair, Replacement and Rehabilitation

RECOVER's Role in CERP Project Implementation



★ Congressional Authorization is the trigger point RECOVER to begin coordination with the project team

1 RECOVER POC begins communication with project managers

2 RECOVER involvement in Preconstruction, Engineering and Design (PED) and/or the Value Engineering (VE) Study

- RECOVER will provide information on location of construction features and lessons learned from prior project implementation or MAP monitoring that may be applicable to design

3 Crosswalk of the Project-level monitoring plans with the MAP to ensure to ensure project monitoring needs are still covered and adaptive management plan can be implemented

- Coordinate and finalize monitoring plans

Key

Required RECOVER Input

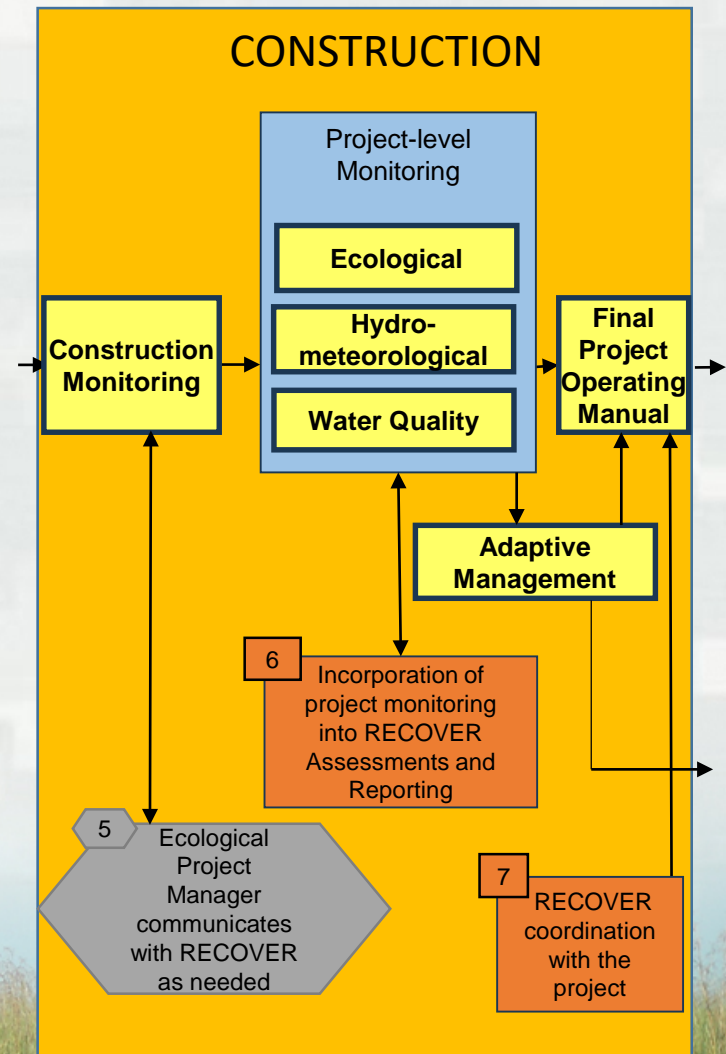
Optional RECOVER Input or Situational Awareness



RECOVER's Role in CERP Project Implementation

6 Project-level Monitoring – Incorporation of project monitoring into RECOVER assessments and reporting

- RECOVER input on Project Adaptive Management Plan Implementation
- Evaluate project performance to maximize restoration results through AM of operations and when/how to move forward with phases of project construction
- Close communication with the project biologist to be aware of anything unexpected or changes that could be addressed through AM
- RECOVER to coordinate with project when drafting the System Status Report (SSR) to incorporate project-level monitoring
- RECOVER to check in with the project two times a year to look at adaptive management actions



Key

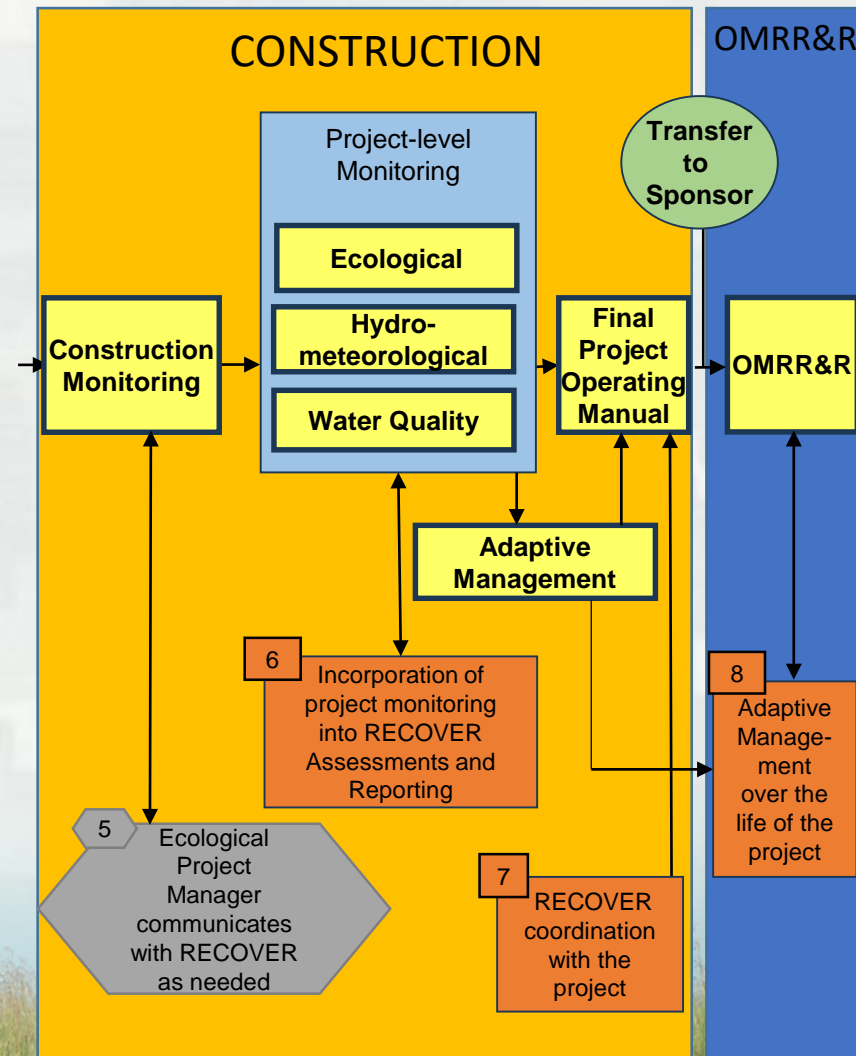
Required RECOVER Input

Optional RECOVER Input or Situational Awareness



RECOVER's Role in CERP Project Implementation

- 5 Construction Monitoring –Project Manager communicates with RECOVER to ensure construction ecological/ecosystem performance issues are addressed
- 6 Project-level Monitoring – Incorporation of project monitoring into RECOVER assessments and reporting
- 7 Final Project Operating Manual – RECOVER coordination with the project and input with results of monitoring and assessments
- 8 OMRR&R –Adaptive management of the system over the life of the project
 - Need to determine the process for this



Key

Required RECOVER Input

Optional RECOVER Input or Situational Awareness

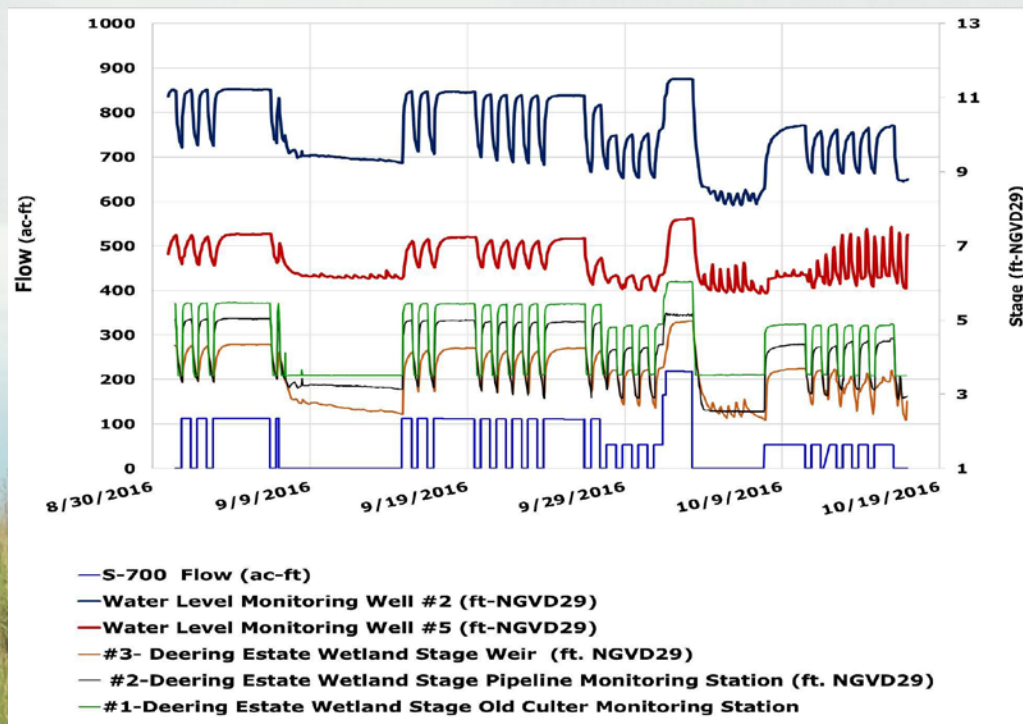


BUILDING STRONG.

Adaptive Management in Action

RECOVER provided AM recommendations to the Biscayne Bay Coastal Wetlands project team based on MAP data and project-level data

1. Change operations of the Deering Estate Pump Station from a pulsed timing to continuous operation at 25 cfs to keep the wetland hydrated and maintain a steady flow to the coast



Questions?

