

Integrating Flood Risk Management and South Florida Everglades Ecosystem Restoration

Gretchen Ehlinger, Ph.D.
Amy Thompson
U.S. Army Corps of Engineers,
Jacksonville District



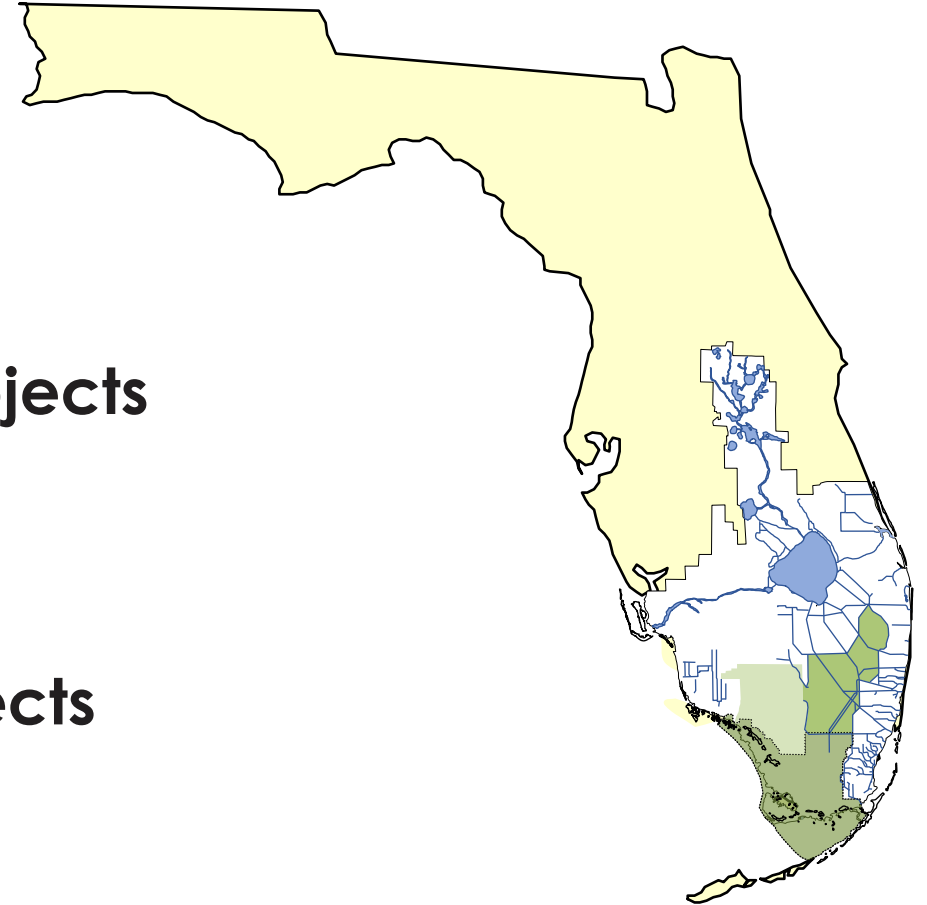
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PRESENTATION OUTLINE



- **USACE Missions**
- **USACE Resiliency Effort**
- **Project Integration**
 - **Coastal Storm Risk Management Projects**
 - **Navigation Projects**
 - **Flood Risk Management Projects**
 - **Aquatic Ecosystem Restoration Projects**





USACE MISSION AREAS



NAVIGATION



FLOOD RISK MANAGEMENT (FRM)



COASTAL STORM RISK MANAGEMENT (CSRM)



ECOSYSTEM RESTORATION



REGULATORY



OPERATIONS | RECREATION



CONTINGENCY OPERATIONS/
EMERGENCY MANAGEMENT



MILITARY/INTERAGENCY
AND INTERNATIONAL
SERVICES (MIIS)



REAL ESTATE

PROJECT INTEGRATION TO BUILD RESILIENCE

Coordinating Multiple Lines of Defense

BUILDING COMMUNITY RESILIENCE
A COMPREHENSIVE AND COLLABORATIVE
APPROACH

Examples of Resilience and
Sustainability Practices:

- Climate Preparedness and Sea Level Change Analyses
- Regional Sediment Management
- Adaptive Management
- Nature-based Solutions
- Environmental Resources Coordination



USACE SOUTHEAST FLORIDA MISSION AREAS



1. Coastal Storm Risk Management (CSRM)

- Dade County CSRM Project
- Miami-Dade Back Bay CSRM - Feasibility Study
- Key Biscayne CSRM - Feasibility Study

2. Navigation (NAV)

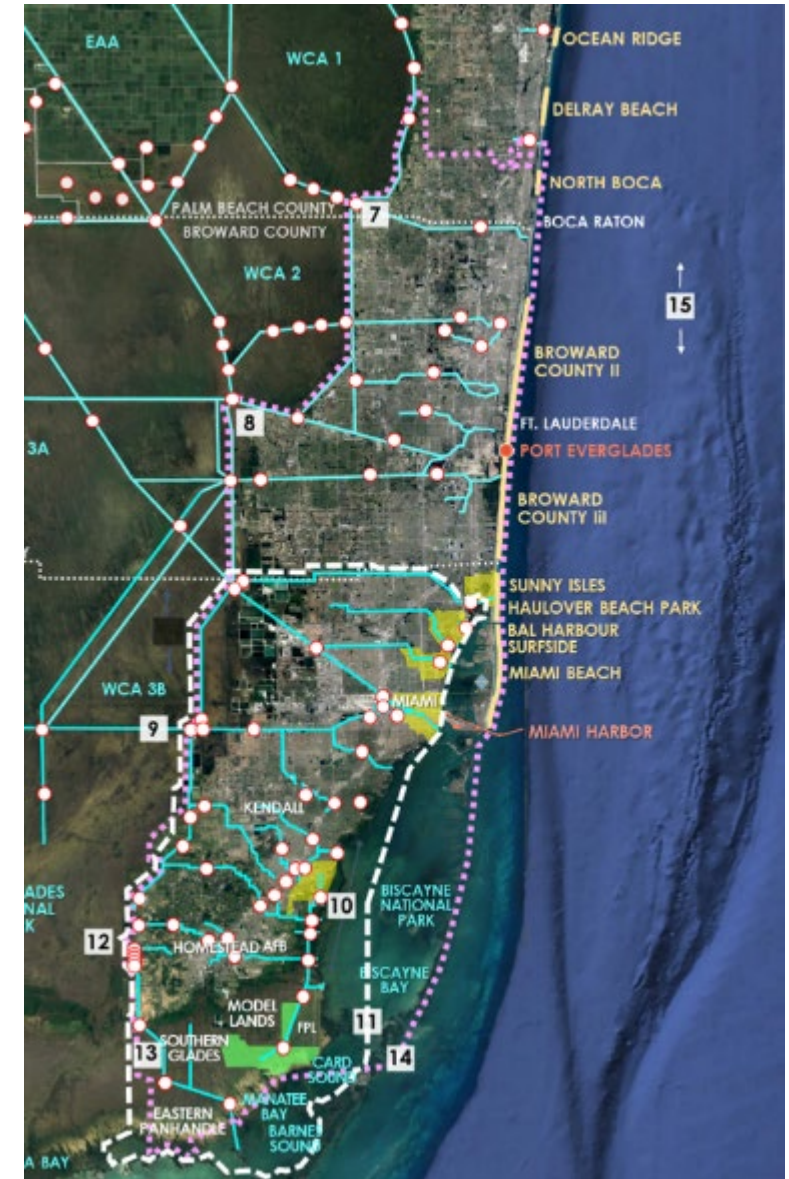
- Port Everglades Deepening Project
- Miami Harbor Improvements – Feasibility Study

3. Aquatic Ecosystem Restoration (AER)

- Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER) - Feasibility Study
- Biscayne Bay Coastal Wetlands (BBCW) – Design/Construction
- Broward County Water Preserve Area (BCWPA) – Design

4. Flood Risk Management (FRM)

- Central and Southern Florida (C&SF) Resiliency FRM – Feasibility Study





USACE SOUTHEAST FLORIDA PROJECT INTEGRATION



What is Integration?

How do we define project integration in southeast Florida?

- **Coordinate the planning of multiple USACE Civil Works projects across multiple mission areas to ensure functionality of all projects.**



What is successful integration?

- **Projects across multiple mission areas can be implemented and work in coordination to achieve each project's objectives and improve the resiliency of southeast Florida.**



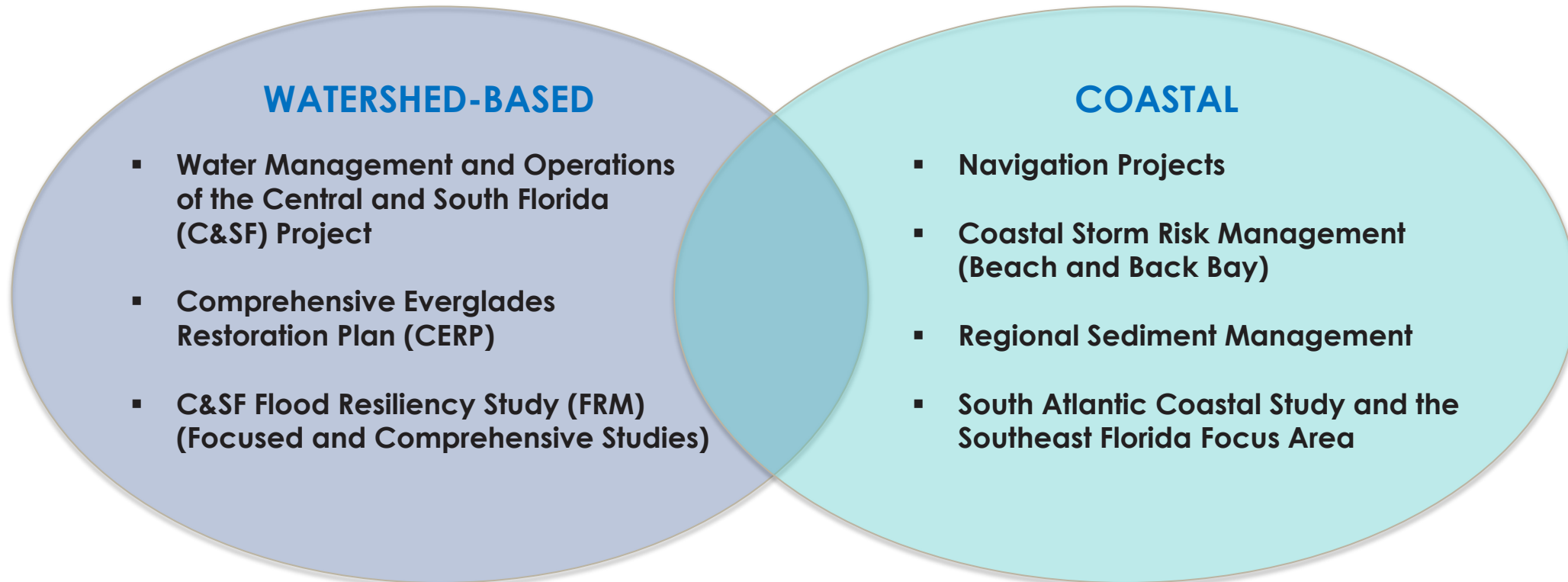
USACE SOUTHEAST FLORIDA PROJECT INTEGRATION

USACE Role in Building Community Resilience



HOW DOES IT ALL COME TOGETHER TO BUILD COMMUNITY RESILIENCE?

The conditions and operations of the C&SF system, the benefits of CERP, and climate change science form the context of the integration of USACE projects





USACE RESILIENCY THROUGH PROJECT INTEGRATION

Coordinating Multiple Lines of Defense

Comprehensive Everglades Restoration Plan (CERP)

Back Bay CSRM Studies

CS&F (216) Flood Resiliency Study (FRM)

Beach CSRM Reauthorizations

Port/Harbor Navigation Studies



PARKS & CONSERVATION LANDS



AGRICULTURE



WESTERN & SOUTHERN SUBURBS



SLOUGHS



THE RIDGE



MAINLAND BAYFRONT



ISLAND BAYFRONT



ISLAND OCEANFRONT



WATER





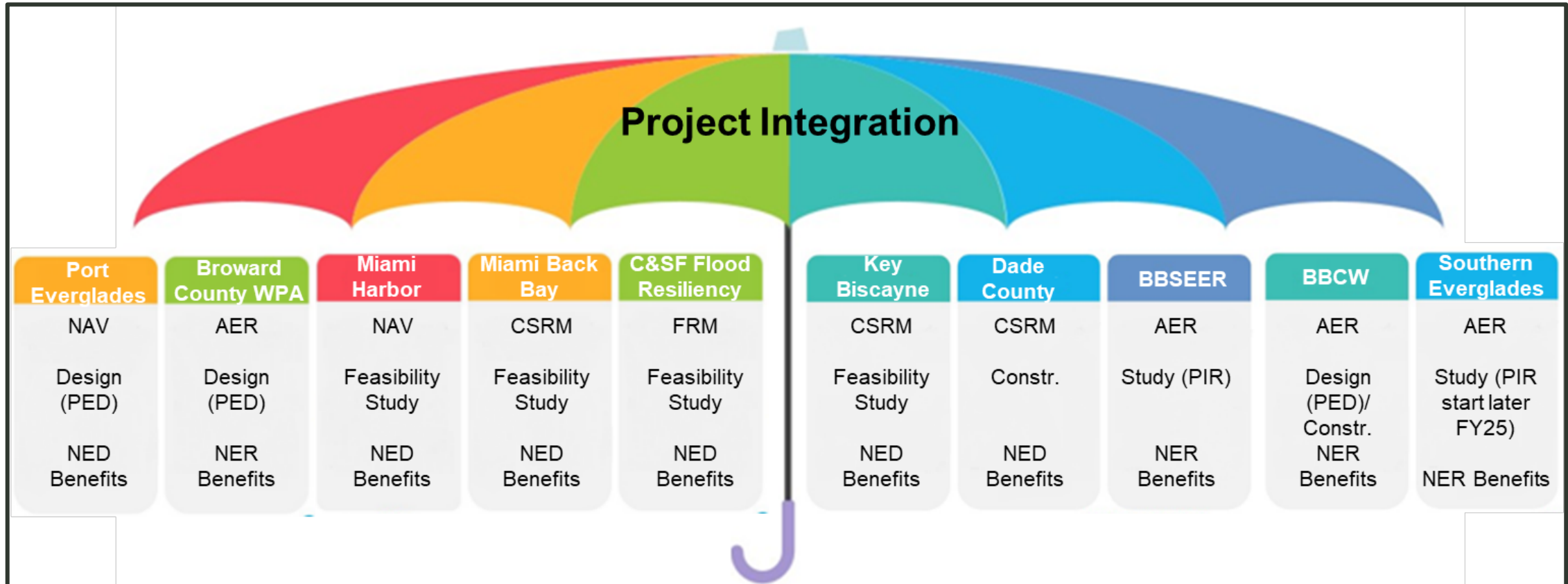
USACE SOUTHEAST FLORIDA PROJECT INTEGRATION



All Projects Under One Umbrella

Integration Themes:

- Communication
 - Internal both between teams and with leadership
 - External with sponsors and stakeholders
- Technical
 - During formulation including model assumptions and known features
 - After formulation including comprehensive benefits





USACE SOUTHEAST FLORIDA PROJECT INTEGRATION

Integration Focus for Studies in Planning Phase Projects Under One Umbrella

Science
Integration/
Adaptive
Management

Sea Level
Change

Future
Without
Project
Conditions

Sharing
Data Across
USACE
Business
Lines

Biscayne Bay & Southeastern Everglades Ecosystem Restoration
Miami-Dade Back Bay
Central & South Florida 216 Resiliency Study
Miami Harbor Improvements
Key Biscayne CSRM

Environmental
Justice

Joint
Project
Modeling
Efforts

Consultation
with other
Federal
Agencies

Comprehensive
Benefits



USACE SOUTHEAST FLORIDA PROJECT INTEGRATION

Measures to Build Community Resilience

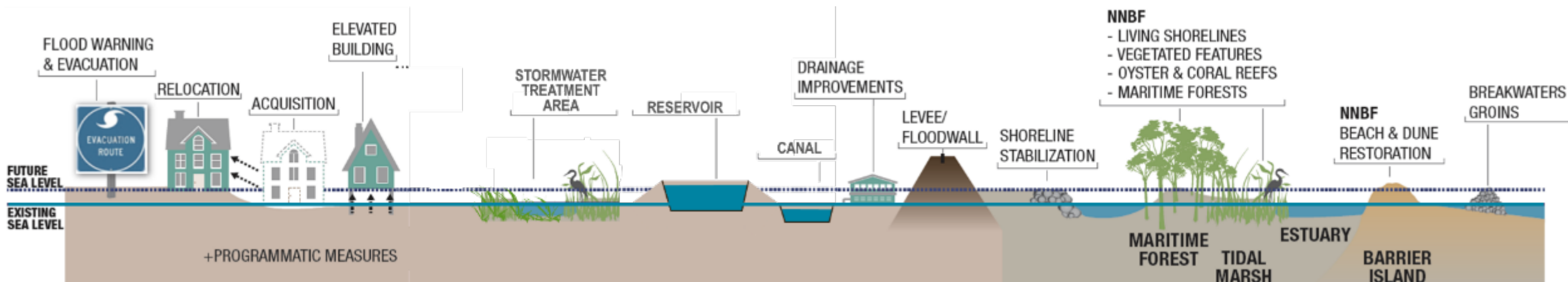


BUILDING COMMUNITY RESILIENCE: MEASURES IN ACTION

- ❑ NATURAL
- ❑ STRUCTURAL
- ❑ NATURE-BASED
- ❑ NON-STRUCTURAL

CLIMATE CHANGE ADAPTATION OPPORTUNITIES

Each mission area contributes a collection of measures to combine into projects to help adapt to climate change and render a community more resilient



Graphic modified from https://ewn.el.erdc.dren.mil/nbf/other/5_ERDC-NNBF_Brochure.pdf



CSRM PROJECTS - DADE COUNTY, MIAMI-DADE BACK BAY AND KEY BISCAIYNE

Purpose: Reduce the amount of damage to homes, businesses and infrastructure caused by storm surge and coastal erosion from storm events.

Structural Measures

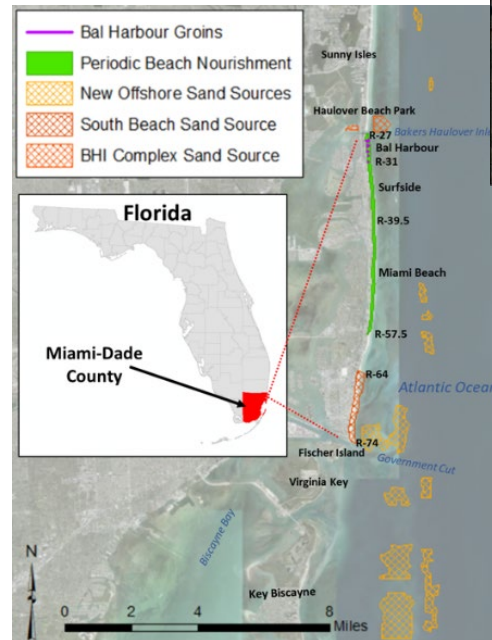
- Breakwaters
- Groins
- Levees
- Seawalls

Natural and Nature Based Measures

- Beach nourishment
- Dune restoration



Miami-Dade Back Bay CSRM



Dade County CSRM



Key Biscayne CSRM



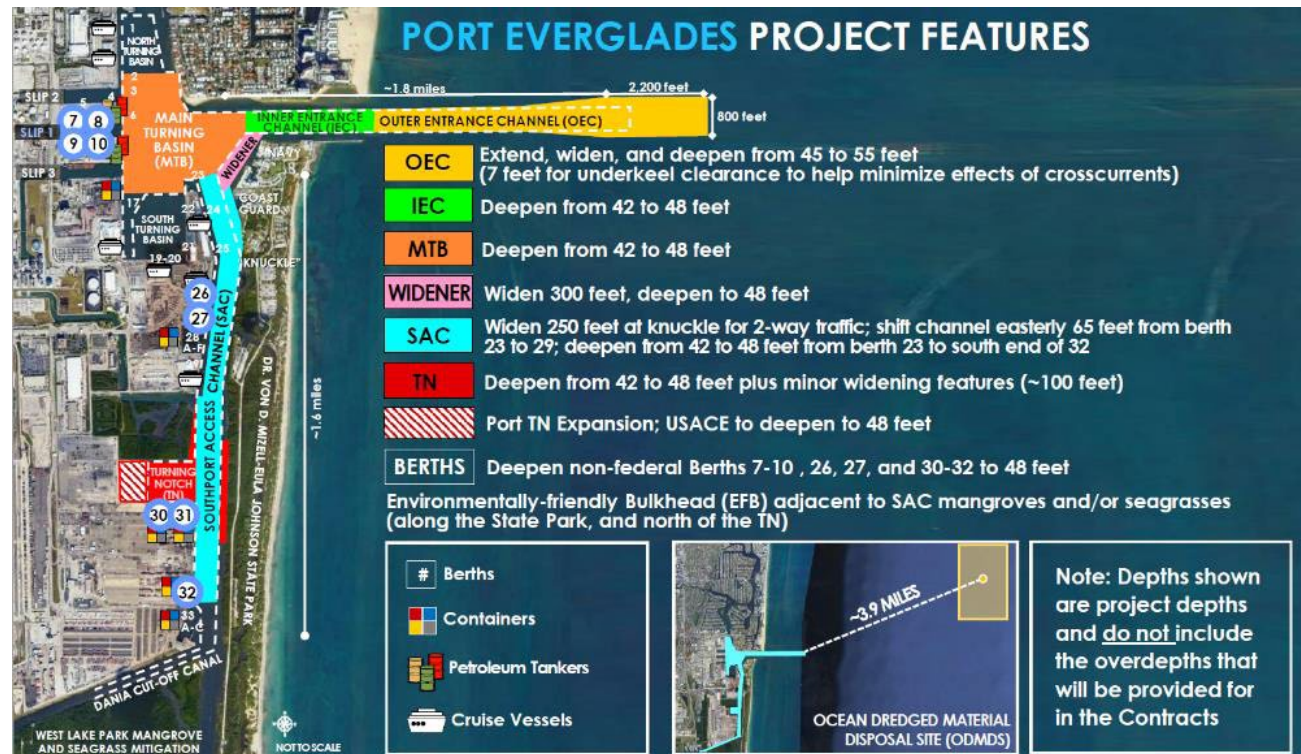
NAVIGATION PROJECTS - PORT EVERGLADES DEEPENING AND MIAMI HARBOR IMPROVEMENTS



Purpose: Increase navigational safety and efficiency and achieve transportation cost savings through increased economic efficiencies.

Measures

- Deepening
- Widening
- Beneficial use of dredge material



Port Everglades Deepening Project Footprint



Miami Harbor Improvements Study Footprint

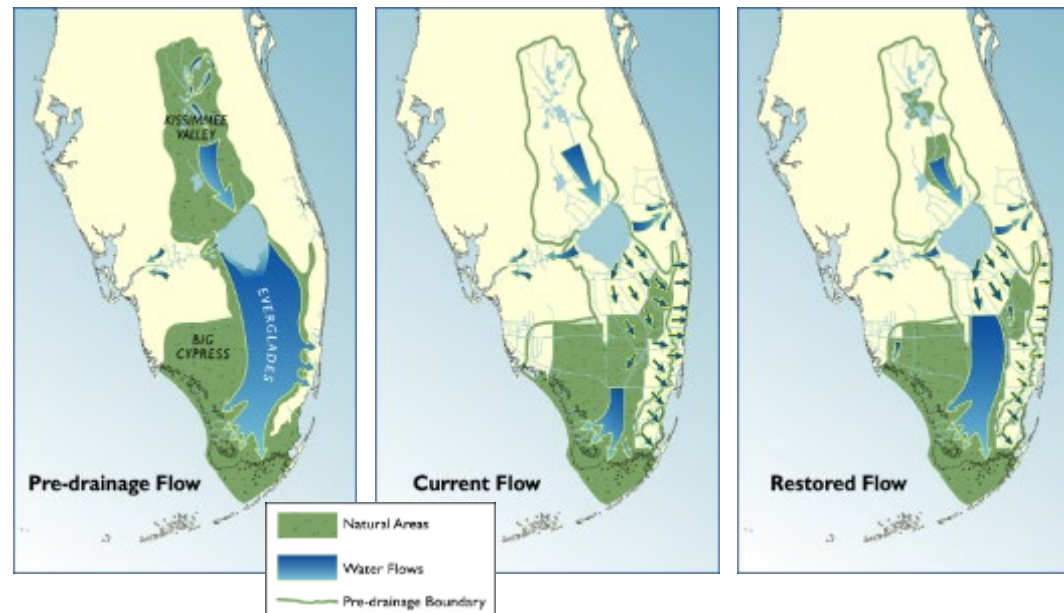


SOUTH FLORIDA ECOSYSTEM RESTORATION (SFER) PROGRAM

ECOSYSTEM RESTORATION

- Multi-purpose C&SF
 - ▶ Flood Control
 - ▶ Water Supply
 - ▶ Prevention of Saltwater Intrusion
 - ▶ Navigation
 - ▶ Protection of Fish and Wildlife

- Comprehensive Everglades Restoration Plan (CERP)

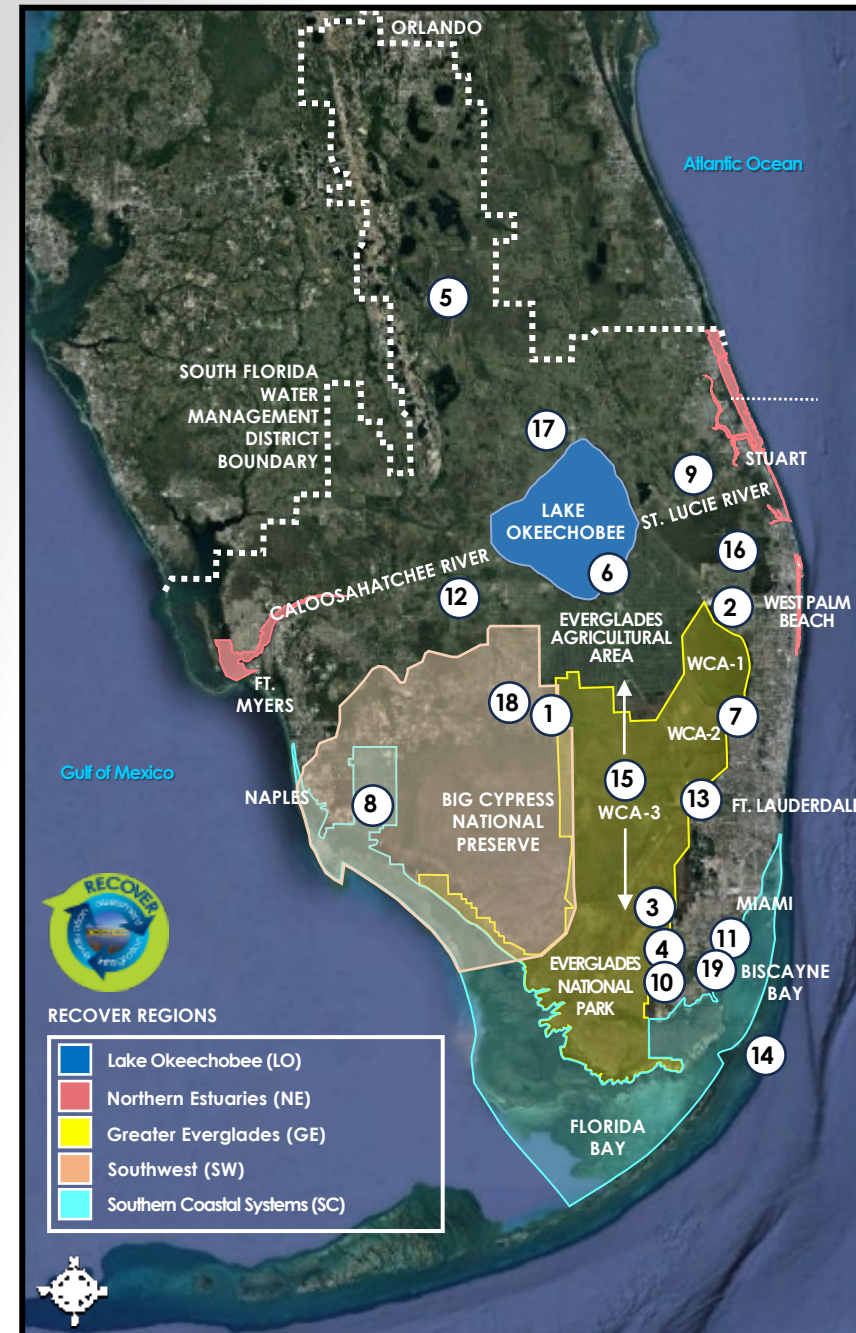


NON-CERP

- 1) Seminole Big Cypress
- 2) West Palm Beach Canal Stormwater Treatment Areas (STAs)
- 3) Modified Water Deliveries (MWD) to Everglades National Park (ENP)
- 4) C-111 South Dade
- 5) Kissimmee River Restoration (KRR)
- 6) Herbert Hoover Dike (HHD)

CERP

- 7) Site 1 Impoundment
- 8) Picayune Strand Restoration Project (PSRP)
- 9) Indian River Lagoon – South (IRL-S) C-44 Reservoir and STA
- 10) C-111 Spreader Canal Western Project
- 11) Biscayne Bay Coastal Wetlands (BBCW) – Phase 1
- 12) Caloosahatchee River C-43 Reservoir
- 13) Broward County Water Preserve Areas (BCWPA)
- 14) Melaleuca Eradication
- 15) Central Everglades Planning Project (CEPP)
- 16) Loxahatchee River Watershed Restoration Project (LOWRP)
- 17) Lake Okeechobee Watershed Restoration Project (LOWRP)
- 18) Western Everglades Restoration Project (WERP)
- 19) Biscayne Bay and Southeastern Everglades Restoration (BBSEER)



RECOVER REGIONS

- Lake Okeechobee (LO)
- Northern Estuaries (NE)
- Greater Everglades (GE)
- Southwest (SW)
- Southern Coastal Systems (SC)

SOUTH FLORIDA ECOSYSTEM RESTORATION (SFER) PROGRAM



ECOSYSTEM RESTORATION - BISCAYNE BAY AND SOUTHEASTERN EVERGLADES

ECOSYSTEM RESTORATION PROJECT (BBSEER)

Purpose: Restore salinity regimes, restore freshwater depths, hydroperiods, and flows for dry and wet seasons in terrestrial wetlands, restore connectivity and habitat gradients, and increase and restore ecological resilience in coastal habitats in southeastern Miami-Dade County.

Measures

- Water storage
- Water management features (active and passive)
- Alterations to existing canals and levees



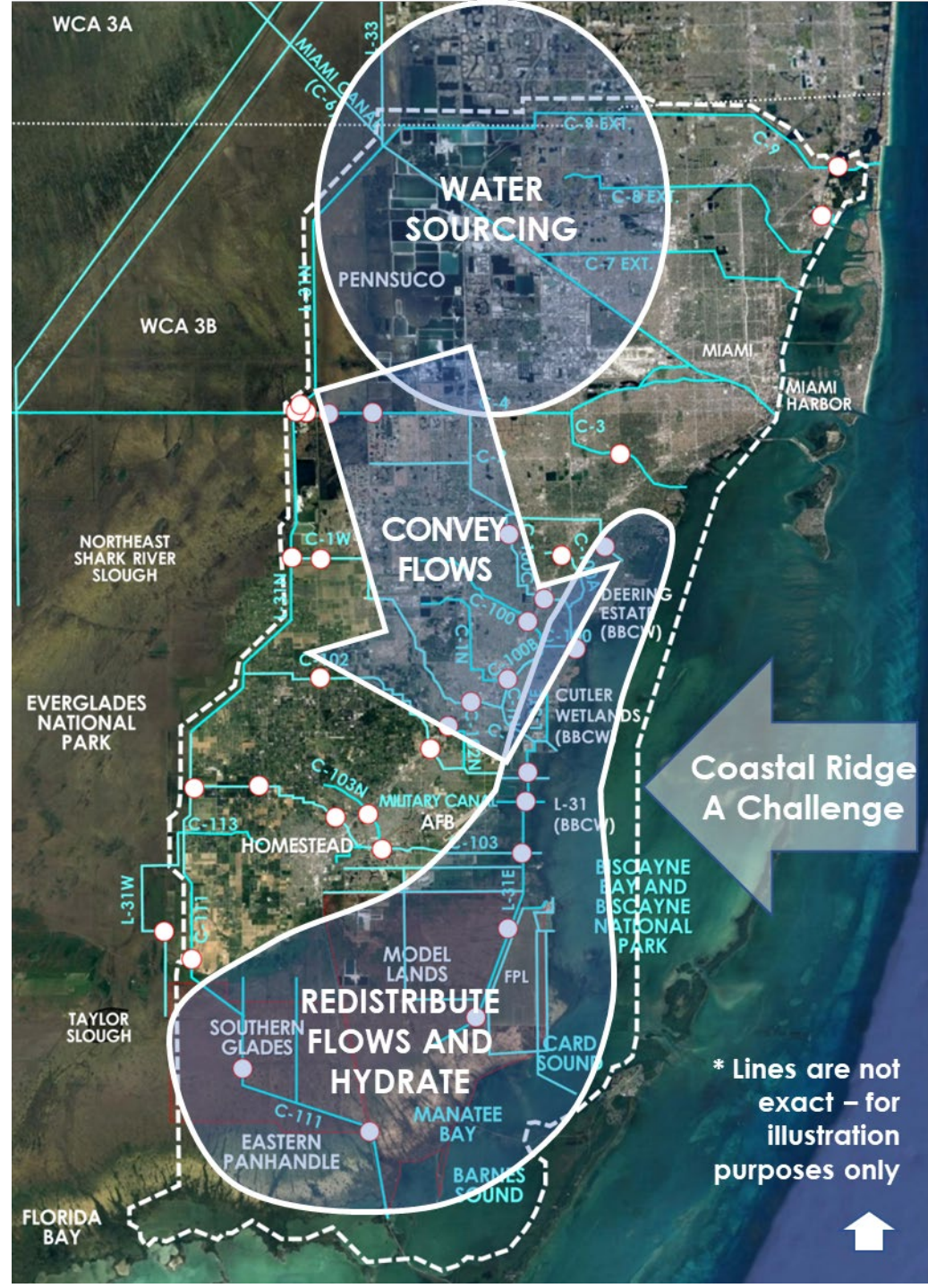
TERRESTRIAL
Freshwater Wetlands



INTERTIDAL
Coastal Wetlands



SUB-TIDAL
Waterward of Low Tide Line





FLOOD RISK MANAGEMENT - C&SF FLOOD RESILIENCY (SECTION 216) STUDY



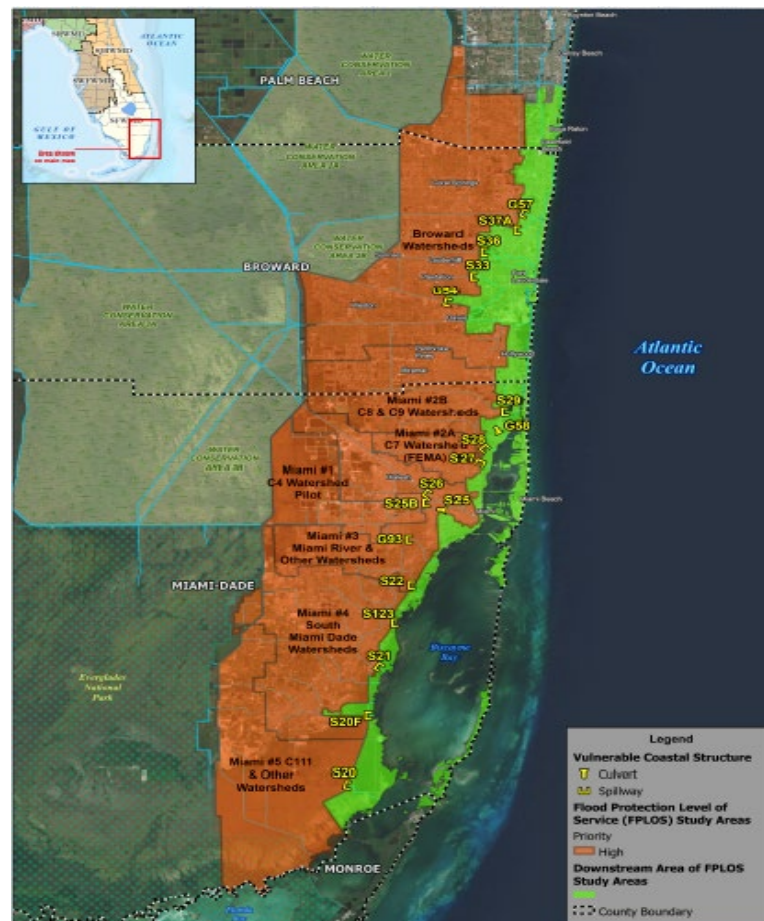
Purpose: Address C&SF system resiliency in the highest risk areas in Lower East Coast – Palm Beach, Broward and Miami-Dade counties.

Structural Measures

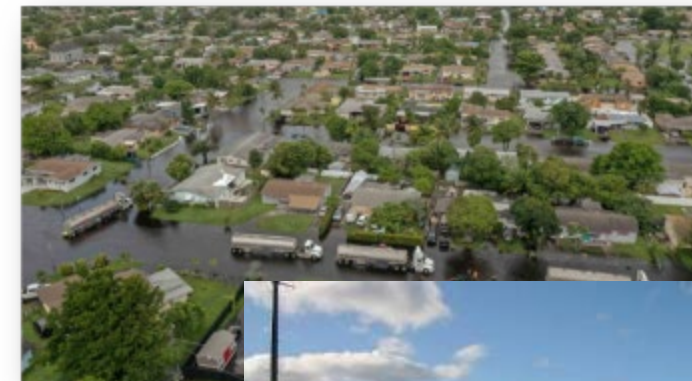
- Flood walls
- Seawalls
- Levees
- Channel modifications

Nonstructural Measures

- Elevate structures
- Acquisition
- Relocation



C&SF FRM Study Footprint



G-54 Structure (Sewell Lock) and flooding in Ft. Lauderdale 2020.



SOUTH FLORIDA ECOSYSTEM RESTORATION (SFER) PROJECT STUDIES, AND REGULATION SCHEDULES

NON-CERP (CURRENT)

- 1) Seminole Big Cypress
- 2) West Palm Beach Canal Stormwater Treatment Areas (STAs)
- 3) Modified Water Deliveries to Everglades National Park (ENP)
- 4) C-111 South Dade
- 5) Kissimmee River Restoration (KRR)
- 6) Herbert Hoover Dike (HHD)
- 7) Lake Okeechobee System Operating Manual (LOSOM)

CERP (CURRENT)

- 8) Site 1 Impoundment
- 9) Picayune Strand Restoration Project (PSRP)
- 10) Indian River Lagoon – South (IRL-S) C-44 Reservoir and STA
- 11) C-111 Spreader Canal Western Project
- 12) Biscayne Bay Coastal Wetlands (BBCW) – Phase I
- 13) Caloosahatchee River C-43 Reservoir
- 14) Broward County Water Preserve Areas (BCWPA)
- 15) Melaleuca Eradication (system-wide)
- 16) Central Everglades Planning Project (CEPP)
- 17) Loxahatchee River Watershed Restoration Project (LRWRP)
- 18) Lake Okeechobee Watershed Restoration Project (LOWRP)
- 19) Western Everglades Restoration Project (WERP)
- 20) Biscayne Bay and Southeastern Everglades Restoration (BBSEER)

LARGE STUDY OUTLINES (CURRENT AND FUTURE)

- Western Everglades Restoration Project (WERP)
- Lake Okeechobee Watershed Restoration Project (LOWRP)
- Biscayne Bay and Southeastern Everglades Restoration (BBSEER)
- Southwest Florida Comprehensive Watershed Study (SWFCWP)
- C&SF Flood Resiliency (Section 216) Study

COASTAL/NAVIGATION PROJECTS AND STUDIES IN CENTRAL AND SOUTH FLORIDA

- Authorized Coastal Storm Risk Management (CSRSM) Projects
- New CSRSM Studies (including Back Bay Studies)
- Authorized Navigation Projects (Deep Draft)



FUTURE COMPREHENSIVE C&SF STUDY

C&SF boundary within SFWMD and SJRWMD is the preliminary study area. Study purpose is to evaluate current water resource system needs in light of climate change, population growth and land use changes to recommend comprehensive solutions to increase long-term community resiliency. Primary focus includes flood risk management, drainage and water control, prevention of saltwater intrusion, water supply, groundwater recharge, preservation of fish and wildlife, preservation of Everglades National Park, navigation, and recreation.

FUTURE SOUTHERN EVERGLADES STUDY
Preliminary study area based on current IDS components includes areas in and adjacent to northern WCA-3A and parts of WCA-3B.



IMPORTANT NOTE ABOUT THIS PRODUCT:
THE PRODUCT DOES NOT INCLUDE ALL ONGOING PROJECTS AND STUDIES (DOES NOT ILLUSTRATE LOCATIONS OF SMALL AUTHORITY PROJECTS AND STUDIES, SHALLOW DRAFT HARBORS, OR RWV).



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