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SECTION 216
CENTRAL AND SOUTHERN FLORIDA (C&SF) FLOOD RESILIENCY STUDY

PUBLIC WORKSHOPS

October 26 and 27, 2022

www.sfwmd.gov/C&SF

Workshop Agenda

- Opening Remarks
- C&SF Flood Resiliency
  - Background
  - Study Overview
- Questions and Answers Session
- Breakout Sessions
  - Problems & Opportunities
- Closing Remarks and Next Steps

Opening Remarks

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Carolina Maran, Ph.D., P.E.

District Resiliency Officer

South Florida Water Management District

Opening Remarks

Eva B. Vélez, P.E.

Strategic Program Manager, Ecosystem Branch

U.S. Army Corps of Engineers

Jacksonville District

Opening Remarks

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Jake Leech, PhD

Resilience & Sustainability Analyst

Palm Beach County, Office of Resilience

Opening Remarks

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Gregory Mount, PhD

Assistant Chief Resilience Office

Broward County

Opening Remarks

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James F. Murley, JD

Chief Resilience Officer

Miami-Dade County

Project Overview

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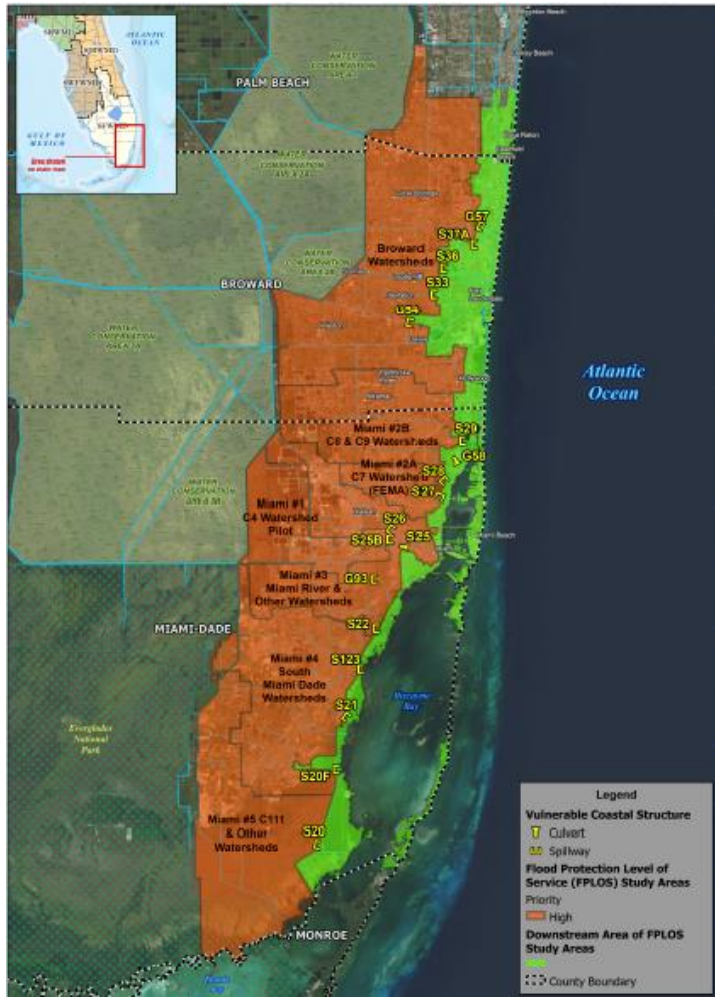

Authority

- Section 216 of the Flood Control Act of 1970 (33 U.S.C. 549a).
- Review existing projects that have significantly changed physical or economic conditions.

Study Area

- Focus on the **highly vulnerable infrastructure** that can reduce the most immediate flood risks
- Lower East Coast – Southern Palm Beach, Broward and Miami-Dade counties.

Scope

- Evaluate existing flood risk management infrastructure and recommend Flood Risk Management (FRM) measures and adaptation strategies to build flood resiliency now and into the future in the communities served by the C&SF system
- Includes benefits to the other C&SF project purposes in addition to the FRM benefits.

Presenter: Tim Gysan

Central & Southern Florida Project

70+yrs Water Management System

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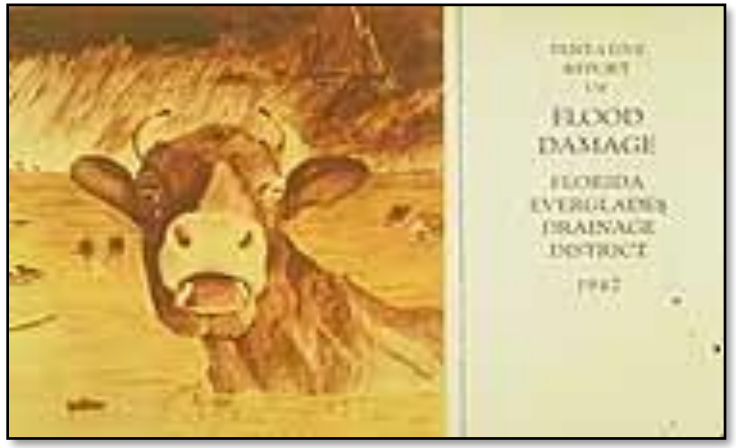

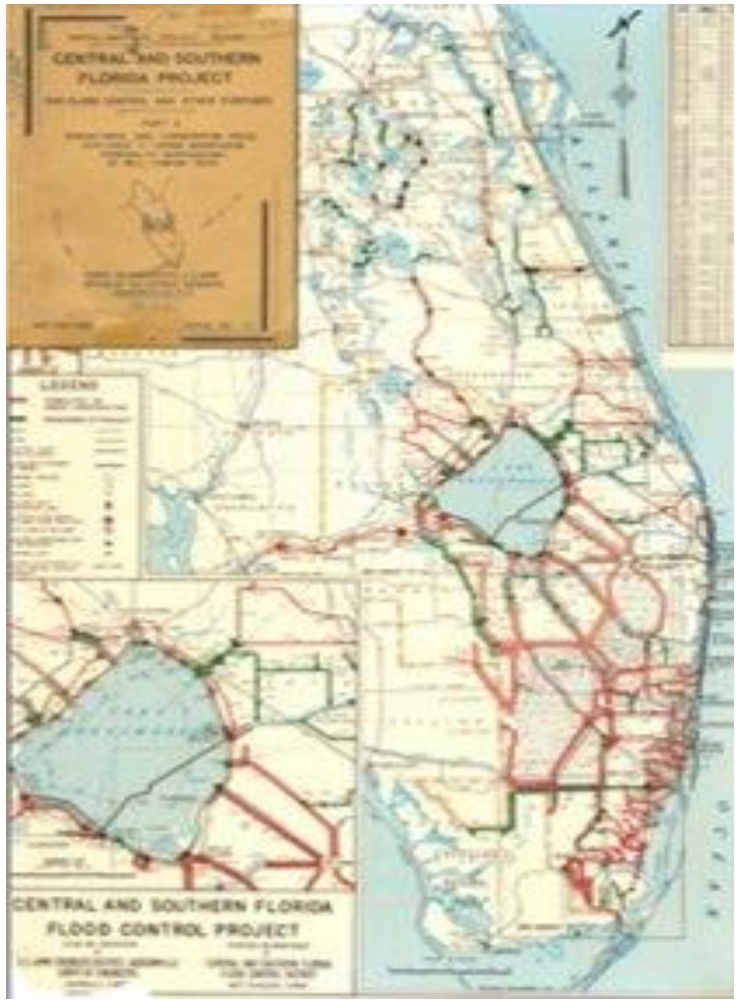

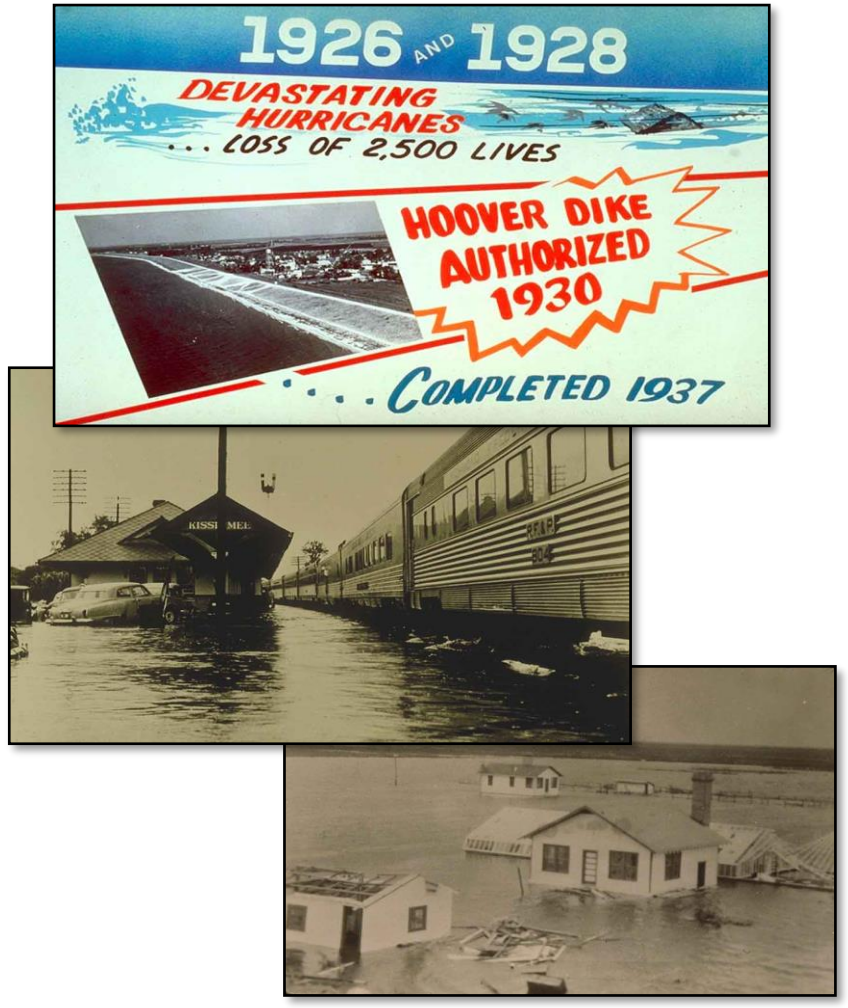

Presenter: Carolina Maran

Managing Water in South Florida

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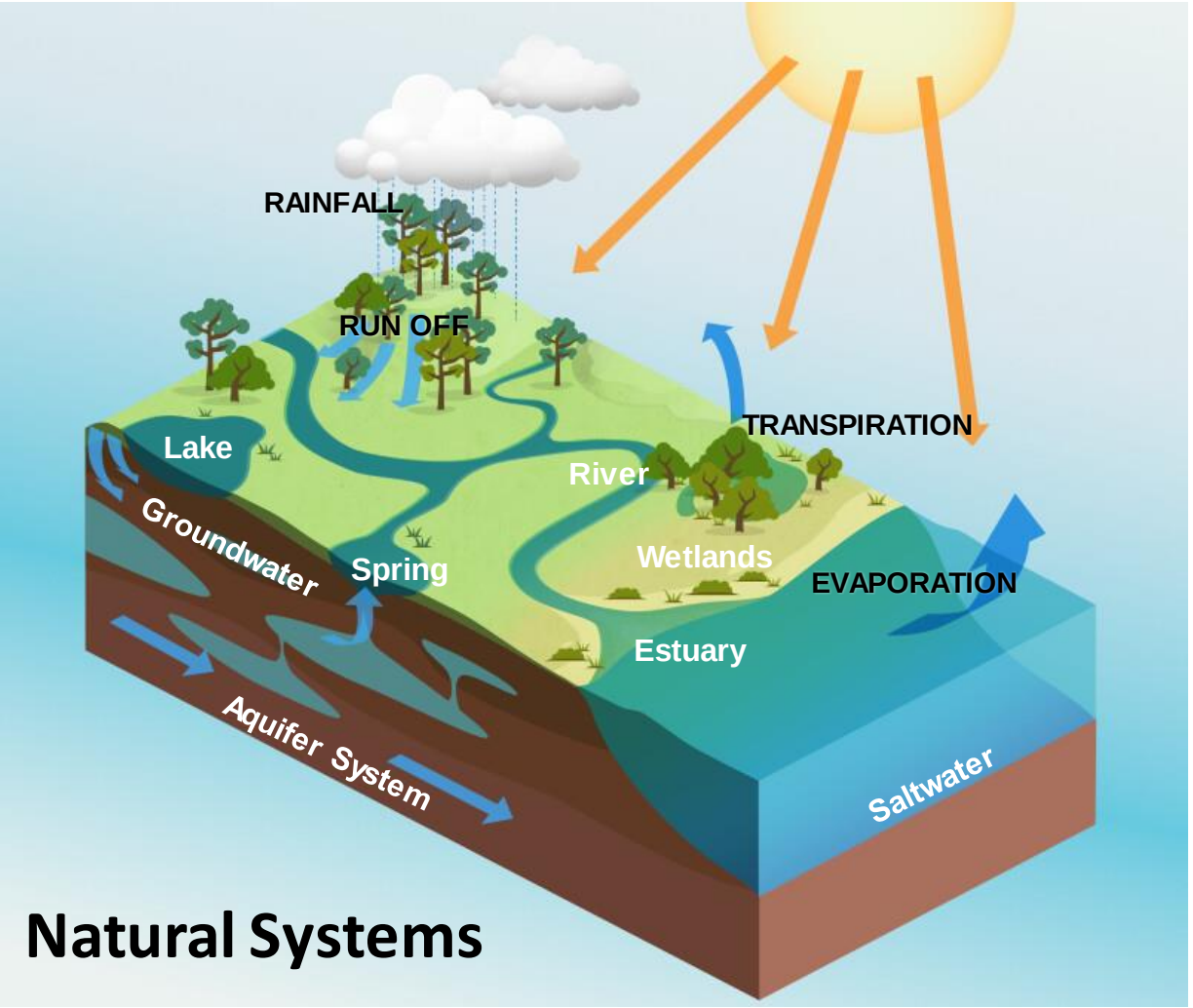
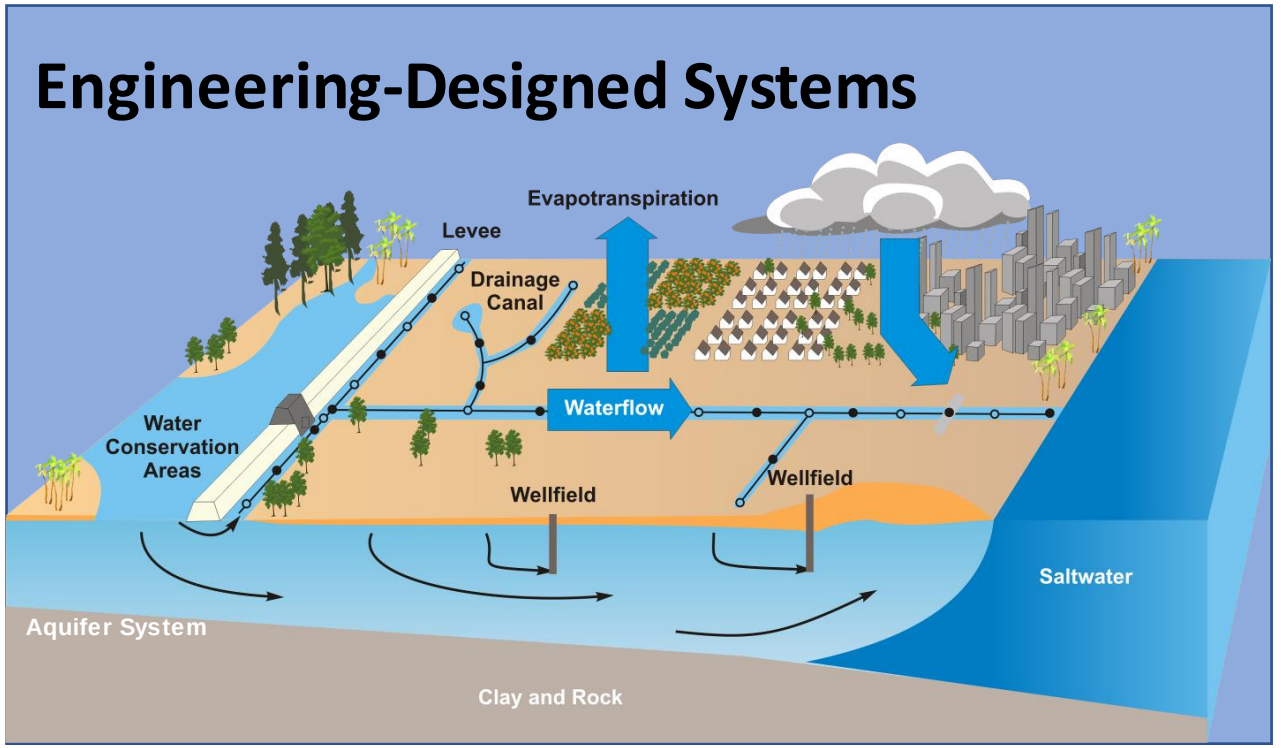




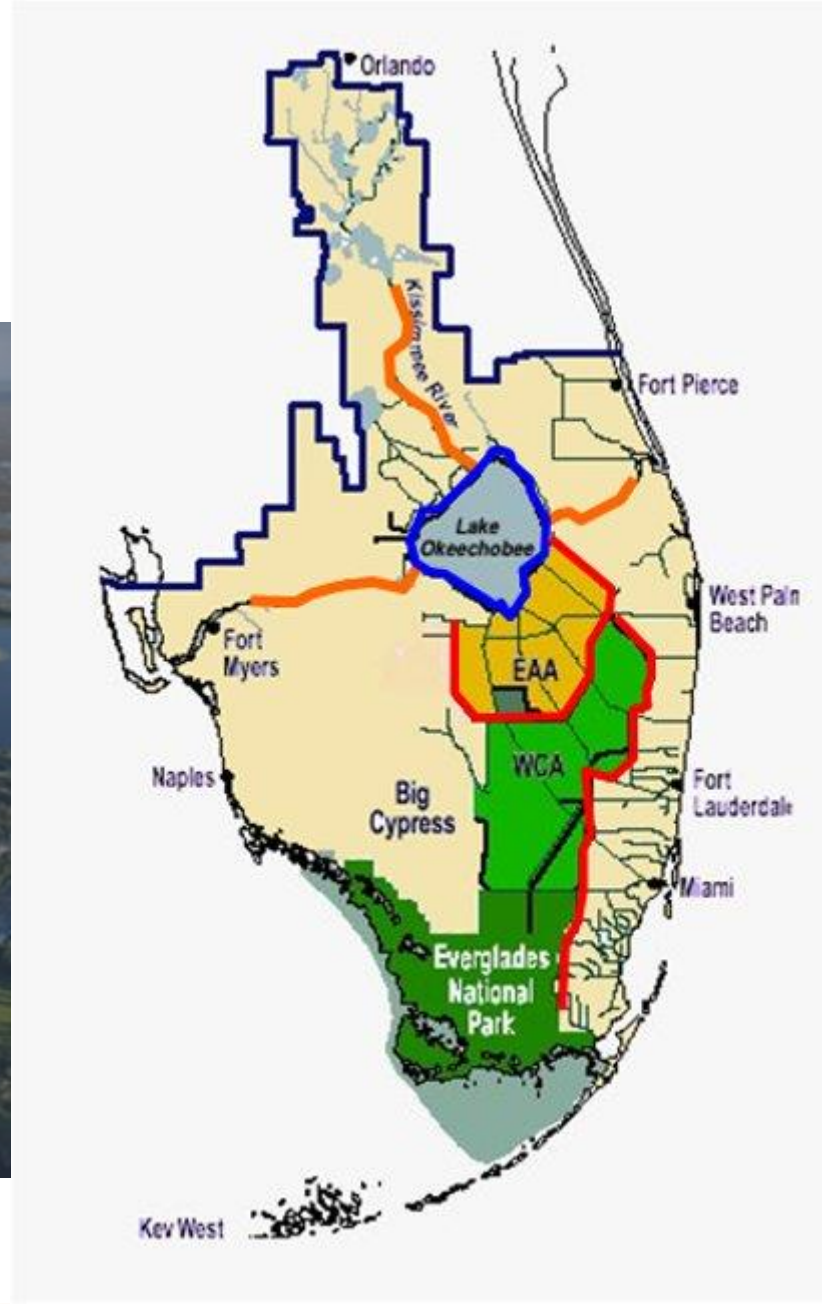
Source: Broward County

Source: Florida Center for Instructional Technology – University of South Florida

C&SF Major Features and Purposes

Congressionally-authorized 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



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Recognizing Changed Conditions

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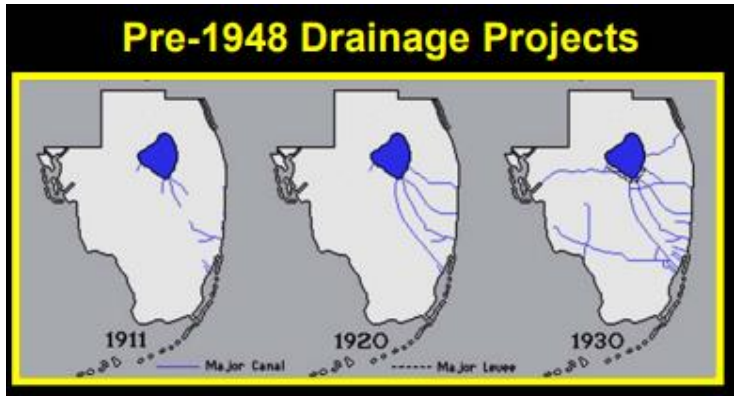
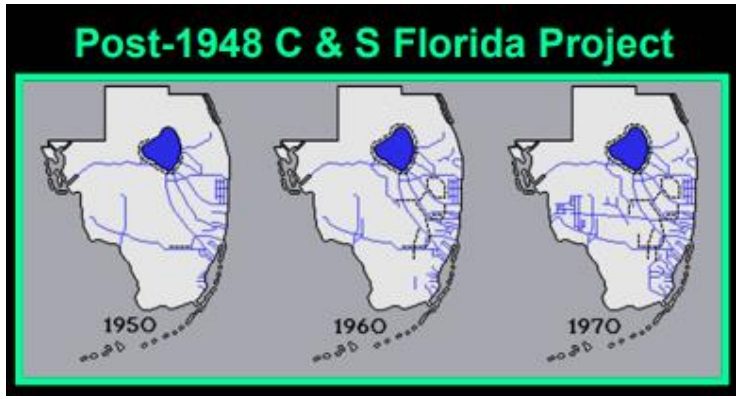
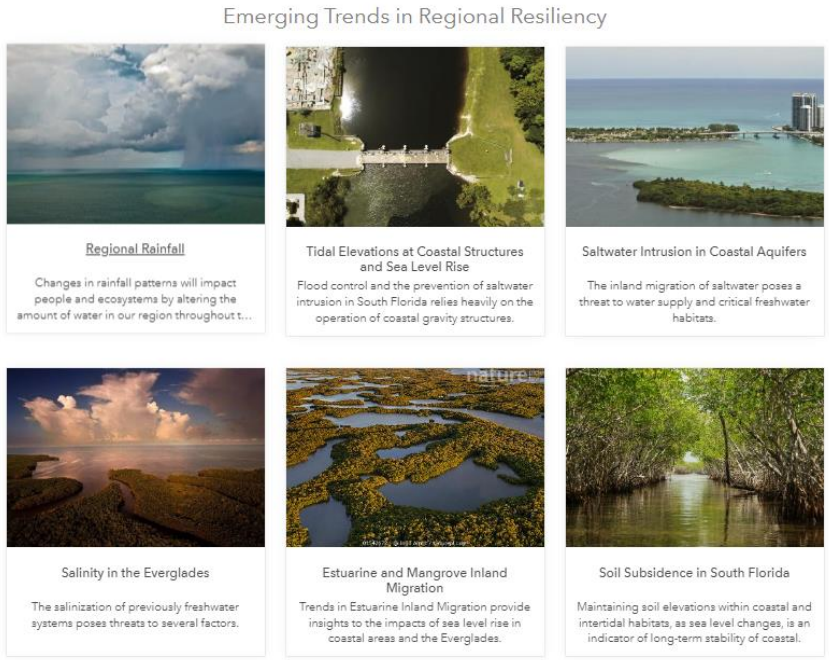


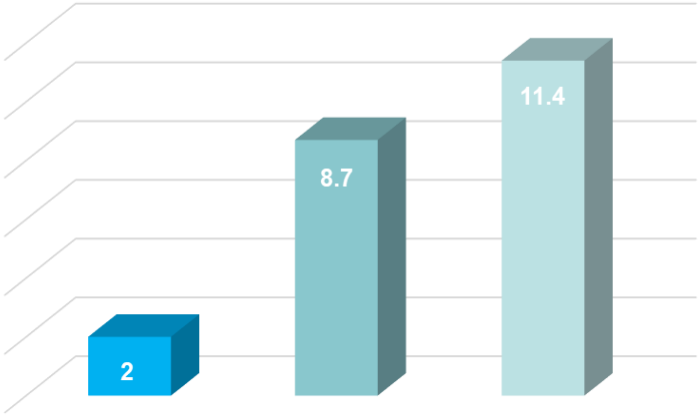


CLIMATE CHANGE



LAND DEVELOPMENT

POPULATION GROWTH



* Estimate taken from BEBR 2017 publication (Median, SFWMD boundaries)

Presenter: Carolina Maran

Recognizing Changed Conditions

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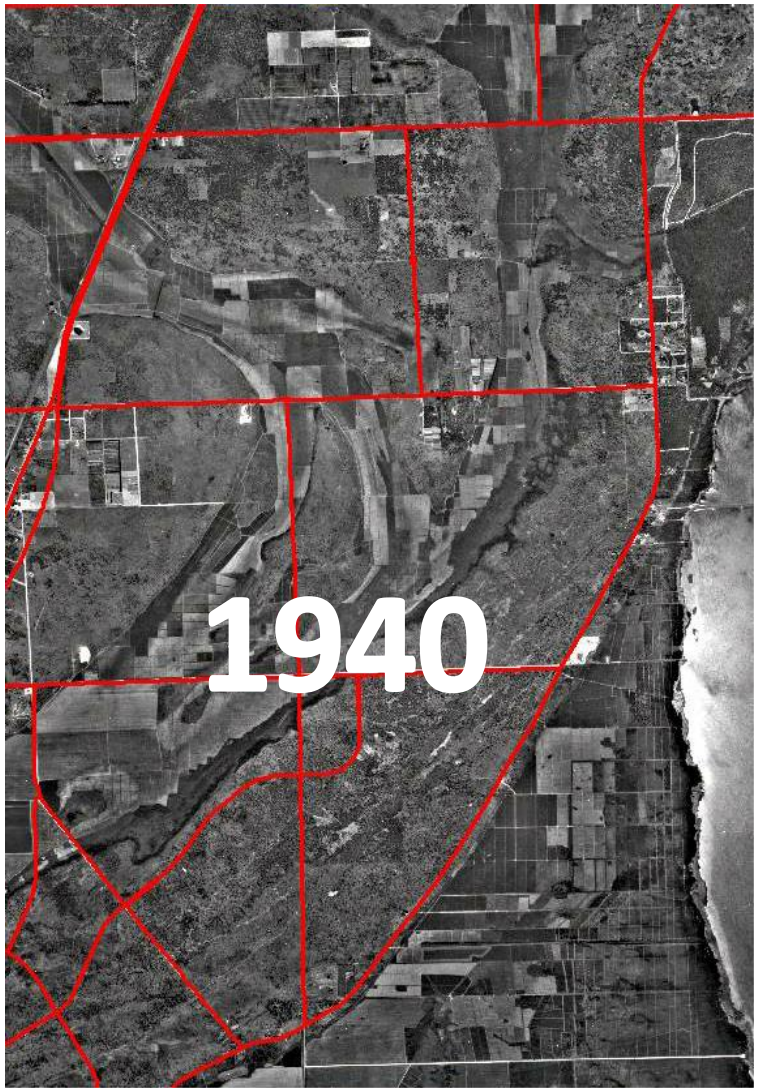

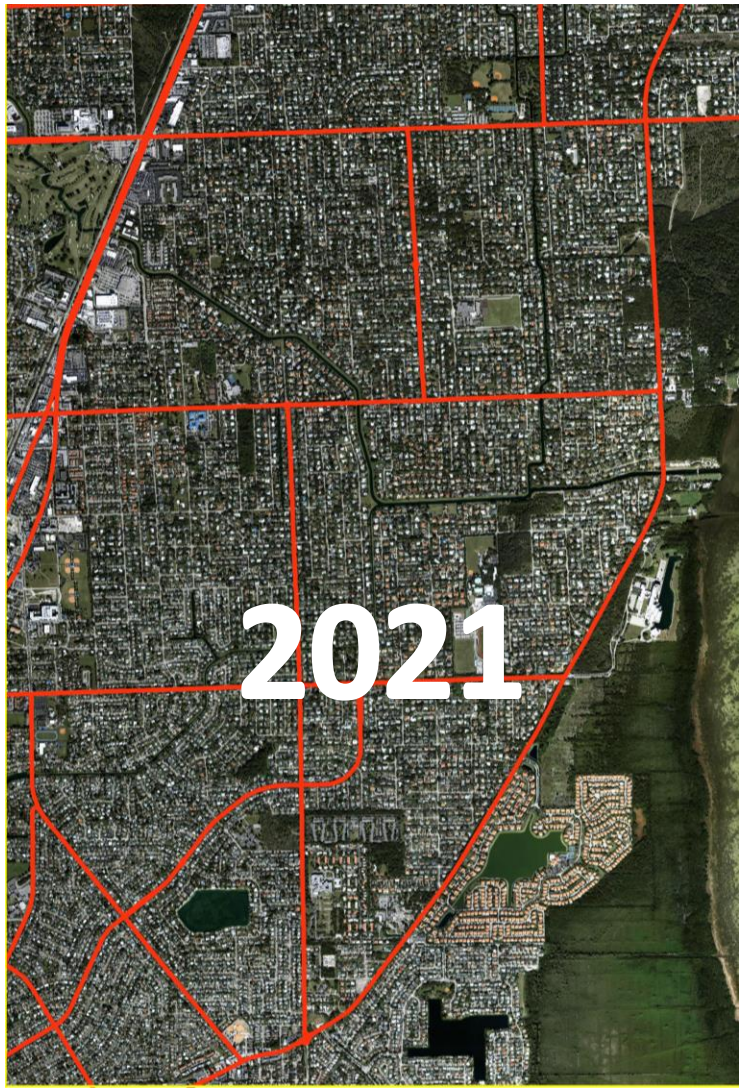

Presenter: Carolina Maran

Current Limitations in C&SF Operation

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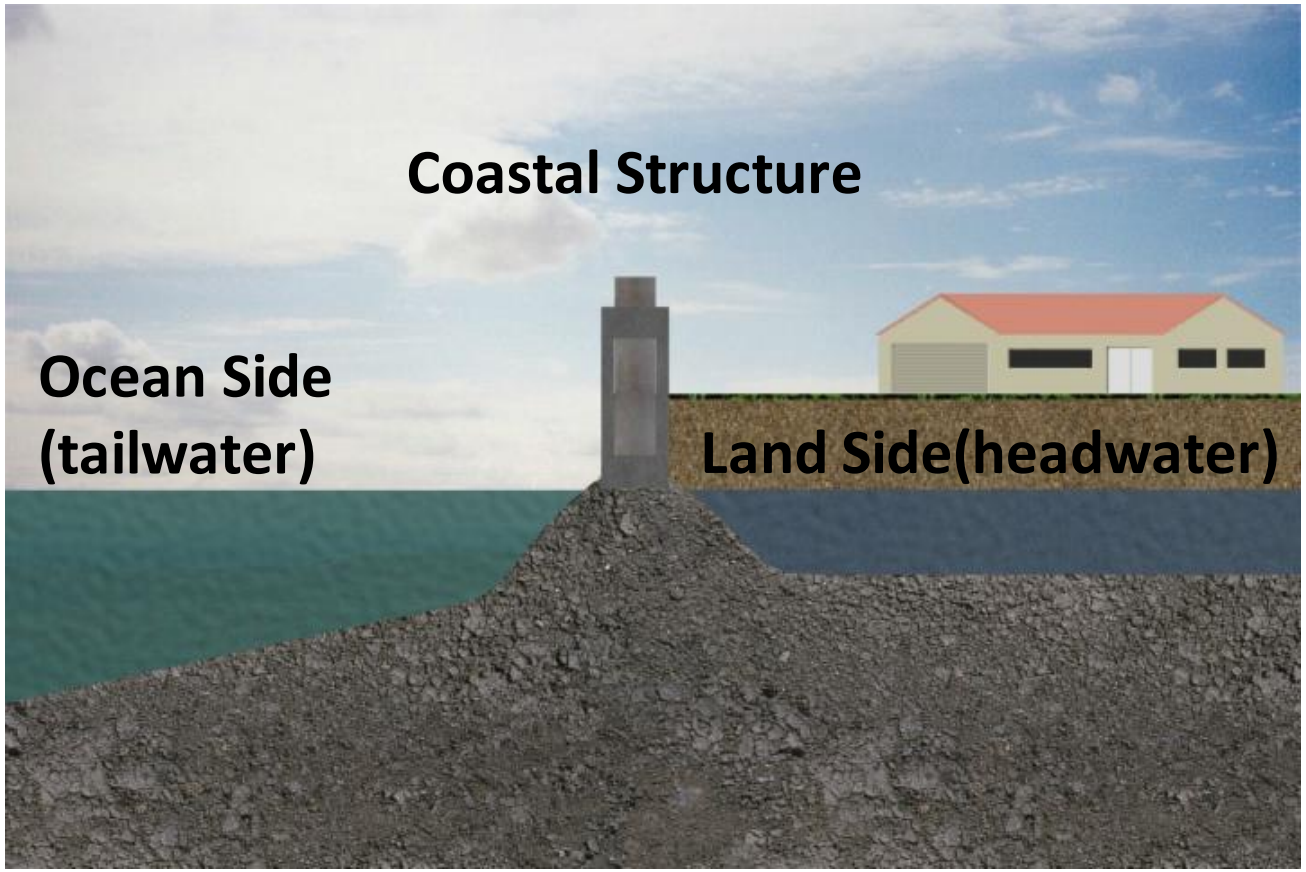
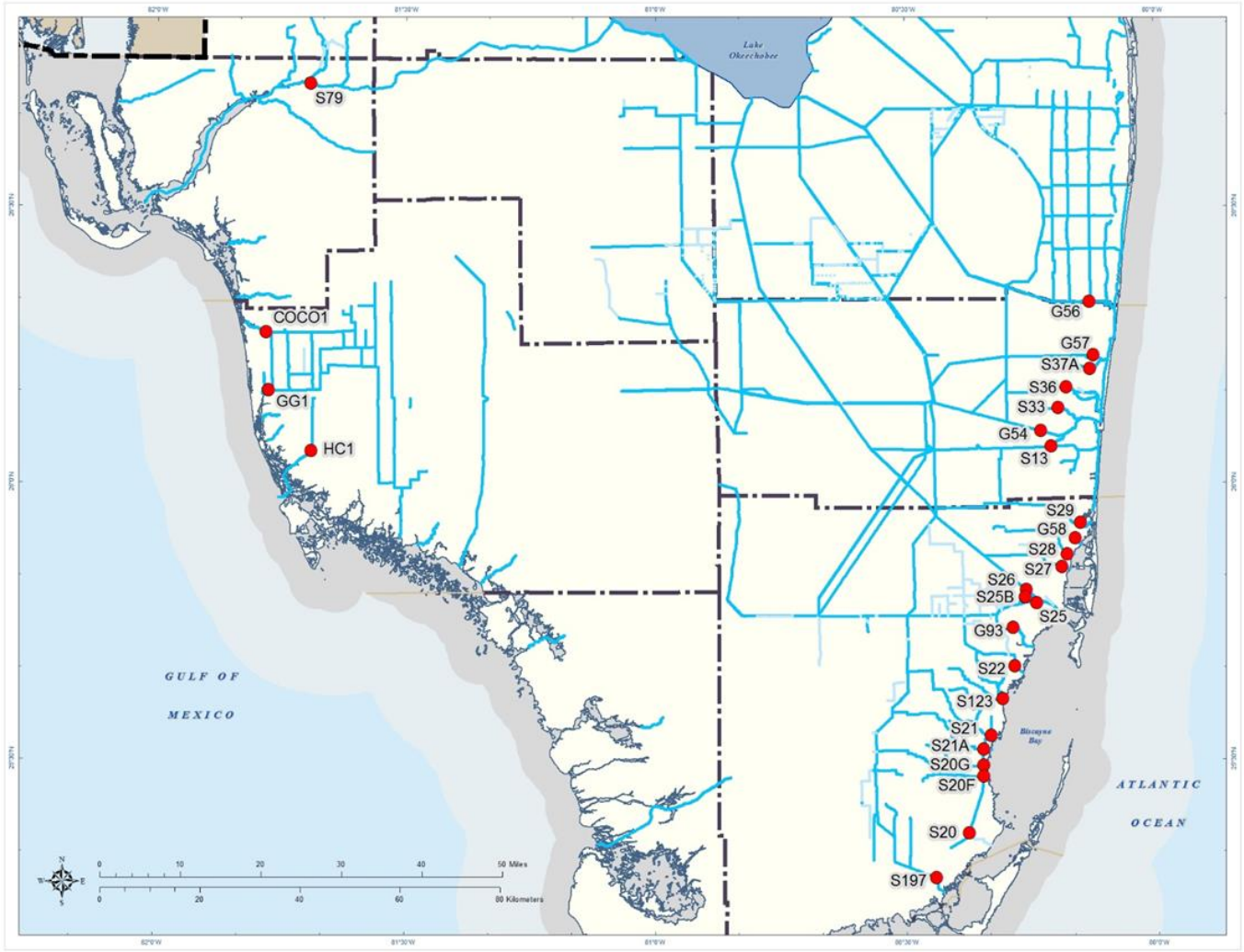
Reduction in discharge capacity at costal structures as a result of Sea Level Rise

October 2019: Gates closed, high tide water reverse flowing over the top of the gate



Vulnerable C&SF Structures



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C&SF Resiliency: Current District's Planning Efforts

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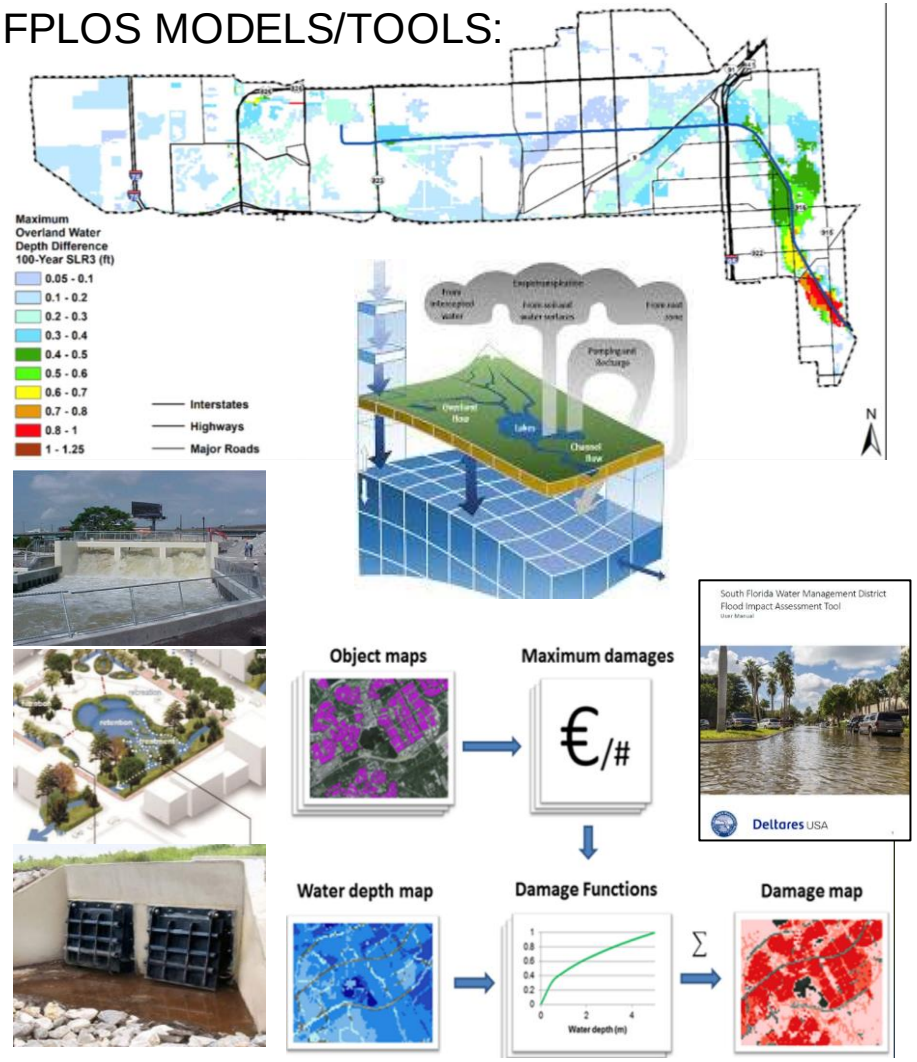
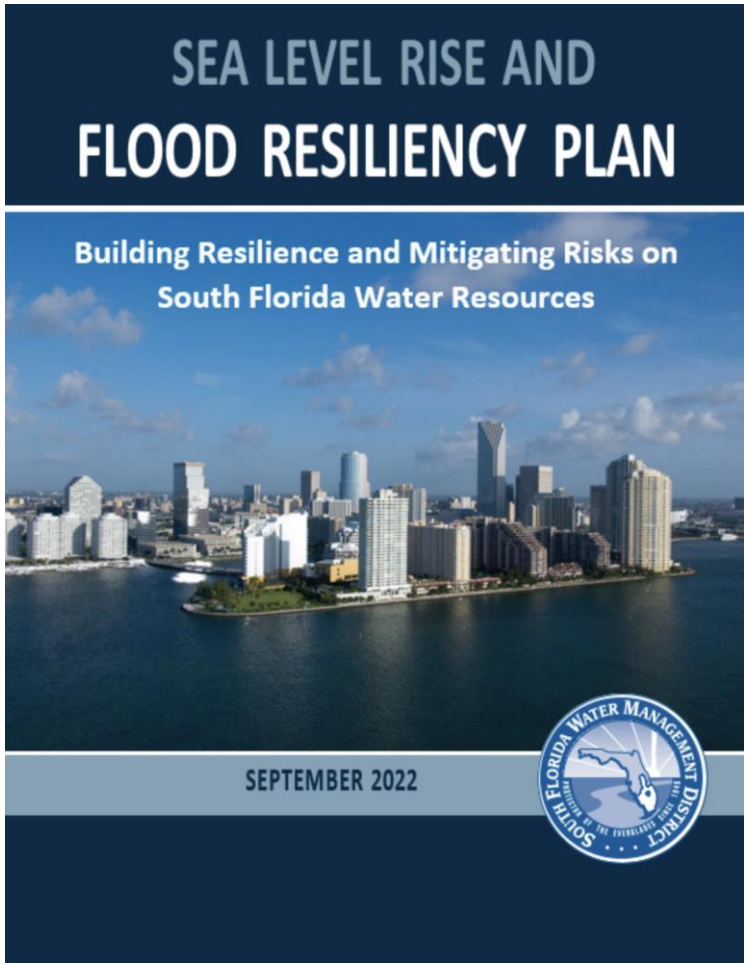
FPLOS MODELS/TOOLS:



GOAL:

Reducing the risks of flooding, sea level rise and other climate impacts on water resources and increasing community and ecosystem resiliency in South Florida



Presenter: Carolina Maran

Additional Flood Vulnerability Modeling Efforts in Southeast Florida

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- Traditional FEMA Floodplain Mapping 
- Community Flooding Maps 
- Broward County Future Conditions Map Series (groundwater, flood)
- Miami Dade County Water Control Map & County Flood Criteria Map 
- NOAA Inundation Maps & NOAA SLOSH Models 
- USACE South Atlantic Coastal Study & Back Bay Studies 
- Recent FEMA Coastal Mapping 

Flood Drivers: 
Rainfall Storm Surge Groundwater

Scenarios: 
Current Future Conditions

Leveraging Available Data, Tools and Approaches

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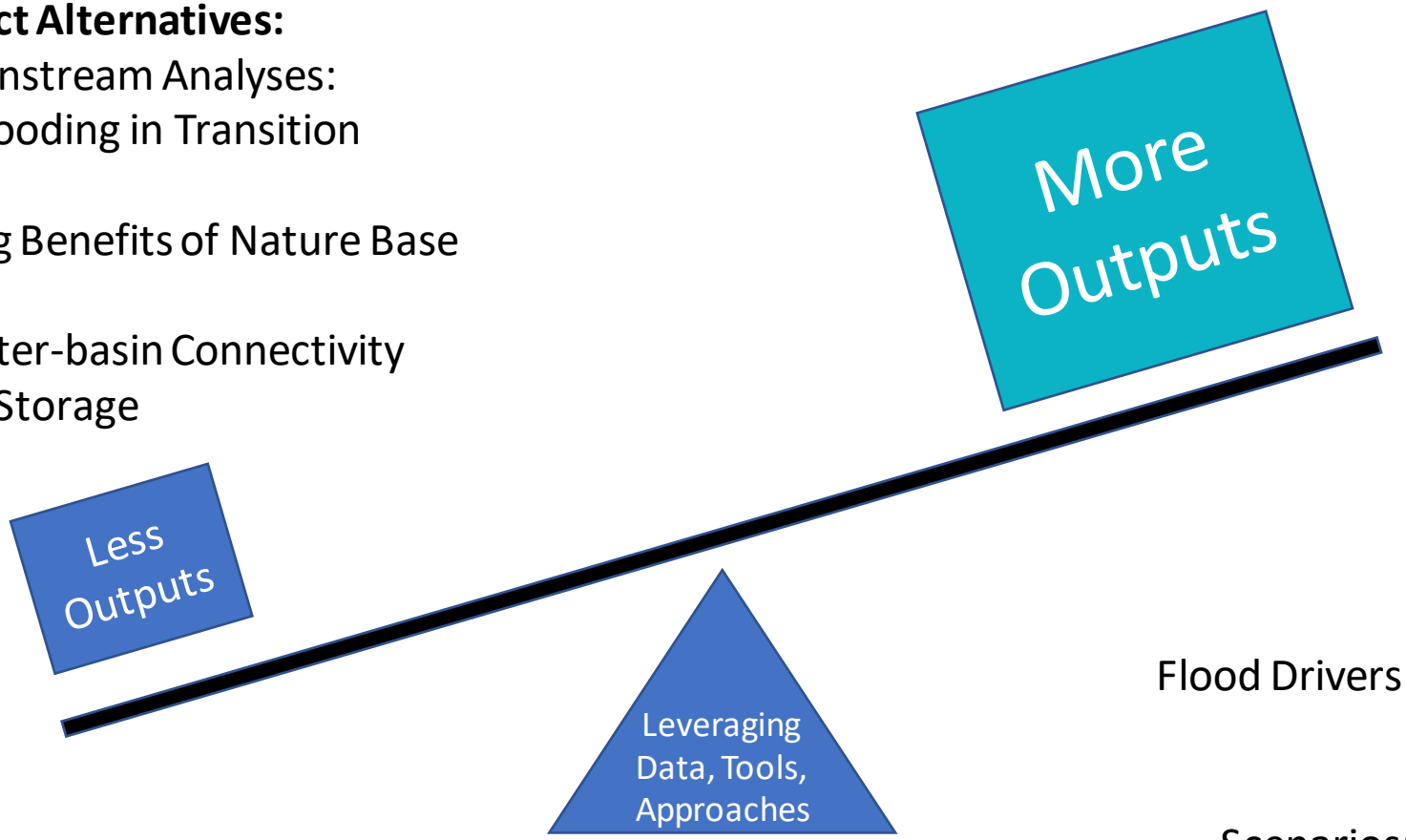
Enhancing Project Alternatives:

- Advance Downstream Analyses: Compound Flooding in Transition Zones
- Characterizing Benefits of Nature Base Solutions
- Integrating Inter-basin Connectivity and Regional Storage



Flood Drivers:

Rainfall Storm Surge Groundwater

Scenarios:

Current Future Conditions

Presenter:

Section 216 C&SF Flood Resiliency Study

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E. Timothy Gysan, P.E., PMP
Resiliency Senior Project Manager
U.S. Army Corps of Engineers
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Strategic Topics

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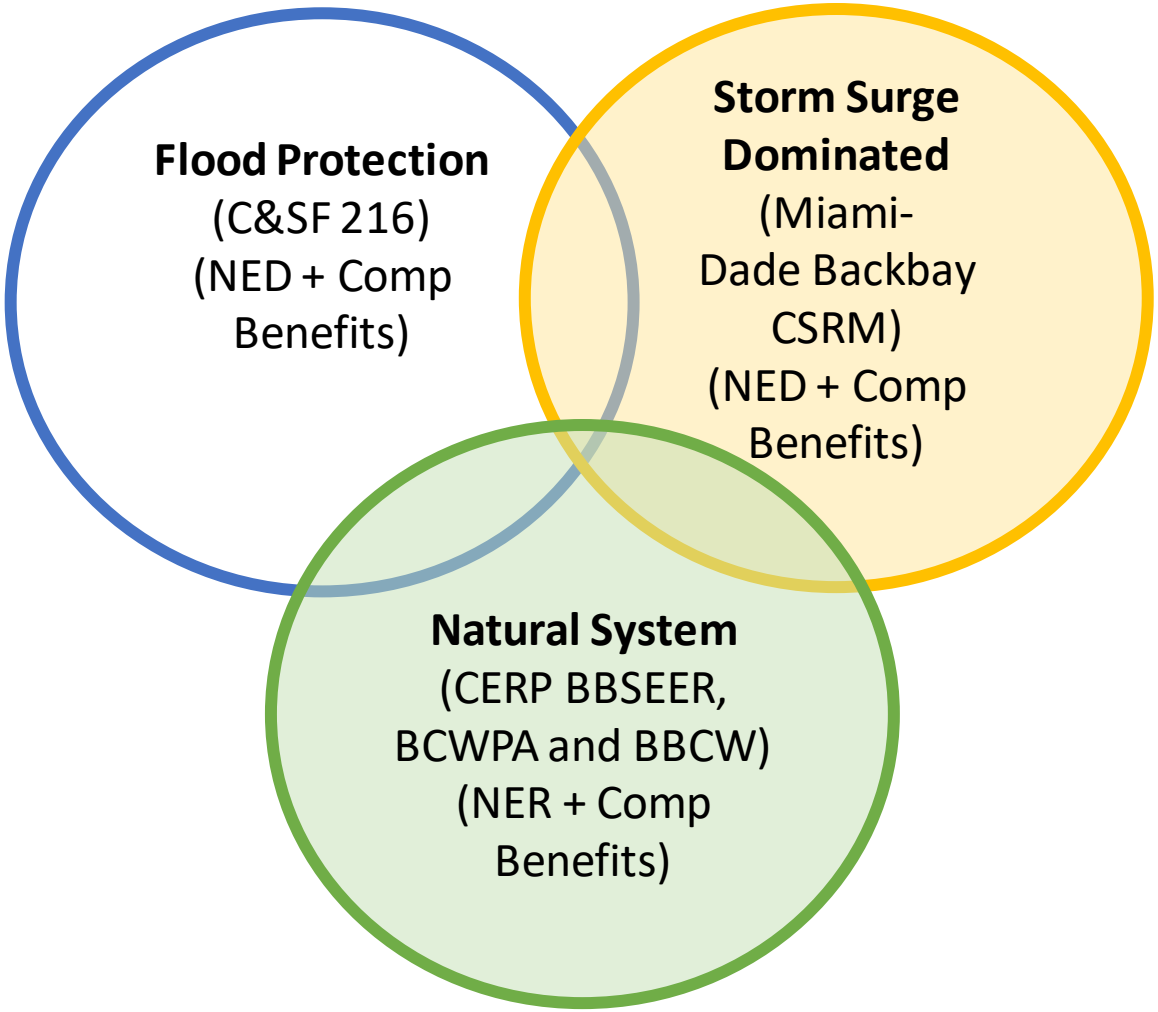
BUILDING COMMUNITY RESILIENCE: A COMPREHENSIVE AND COLLABORATIVE APPROACH

An Effective Resilience-focused Strategy Requires a Coordinated and Integrated Approach Across All Levels of the Public and Private Sectors

Presenter: Tim Gysan

Strategic Topics

C&SF Flood Resiliency (Section 216) Study – One part of an integrated approach



Integration Themes:

- Communication
- Technical consistency

Presenter: Tim Gysan

Why Now?

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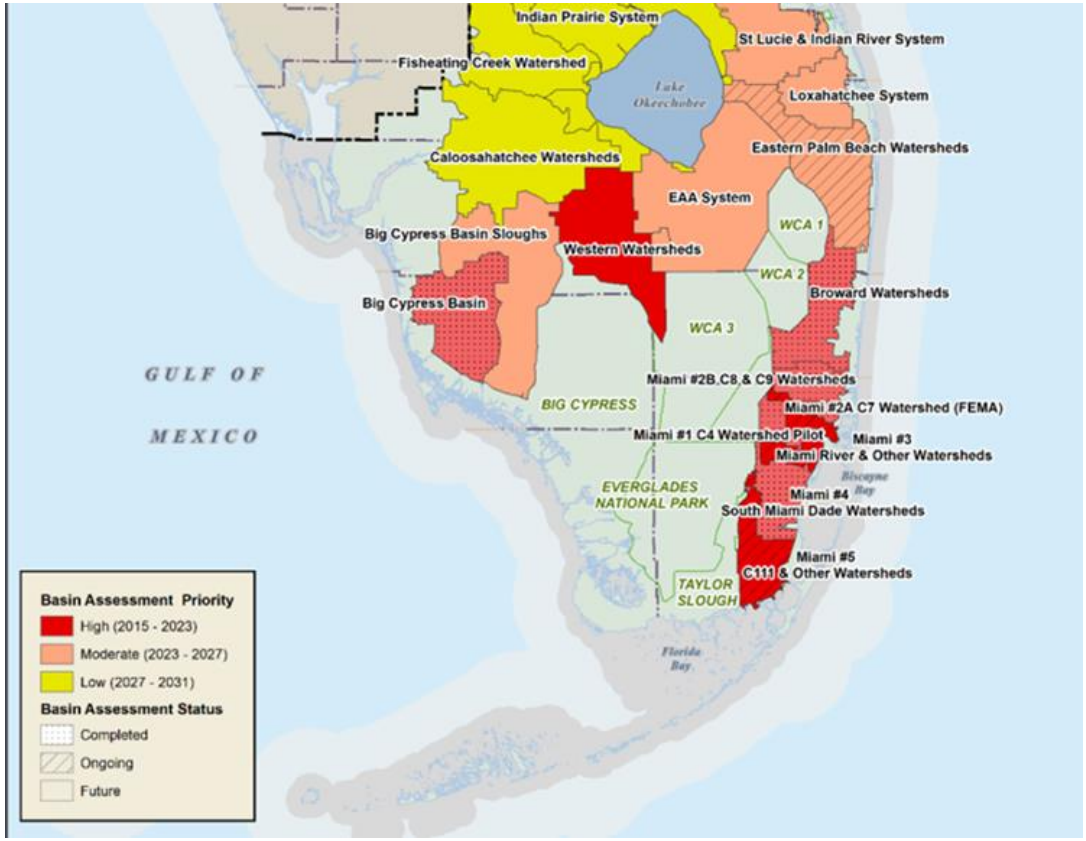
District's Flood Protection Level of Service



USACE's South Atlantic Coastal Study

Presenter: Tim Gysan

Section 216 C&SF Flood Resiliency Study

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Gustavo Suarez, PE
Planning Division
U.S. Army Corps of Engineers
Jacksonville District

Presenter:

USACE Feasibility Process

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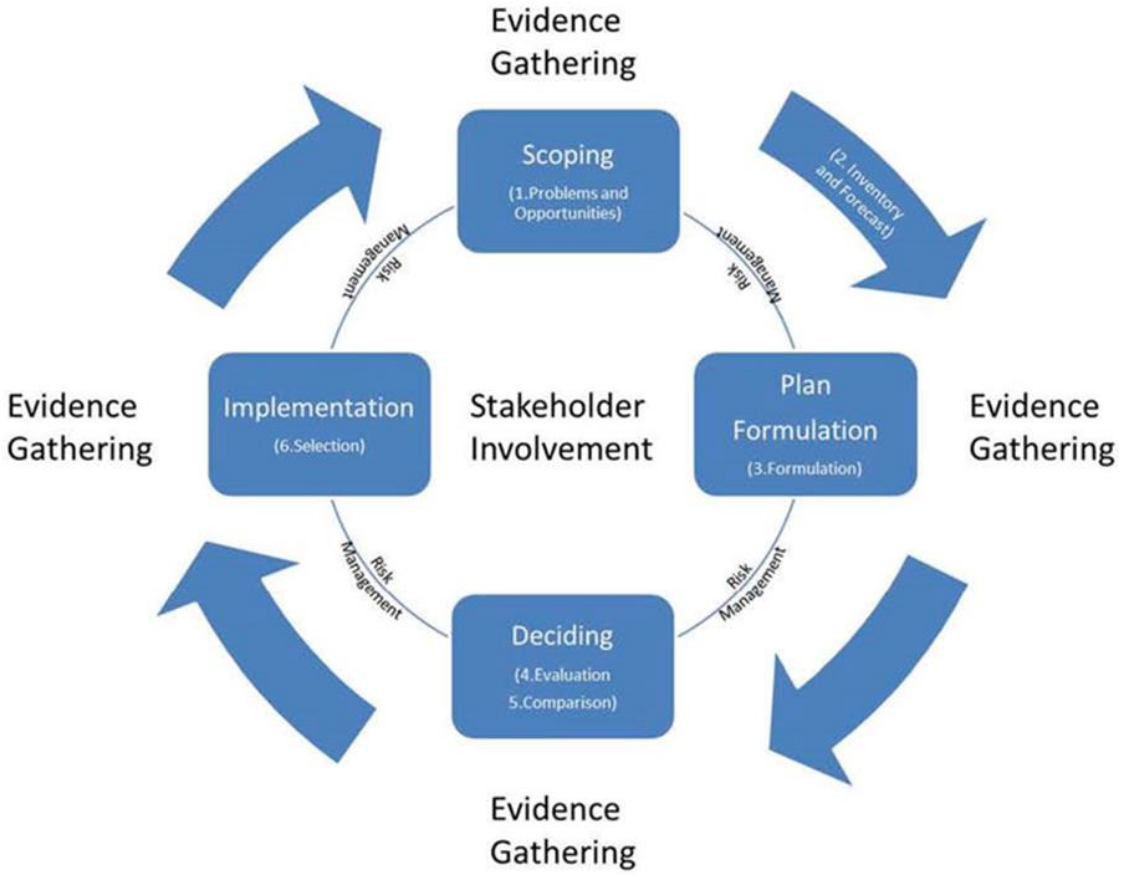
The "6 Steps" of USACE Planning

Step 1 - Identifying problems and opportunities
Step 2 - Inventorying and forecasting conditions
Step 3 - Formulating alternative plans
- *Objectives and Constraints*
- *Measures*
- *Alternatives*

Step 4 - Evaluating alternative plans,
Step 5 - Comparing alternative plans
Step 6 - Selecting a plan



Project Schedule

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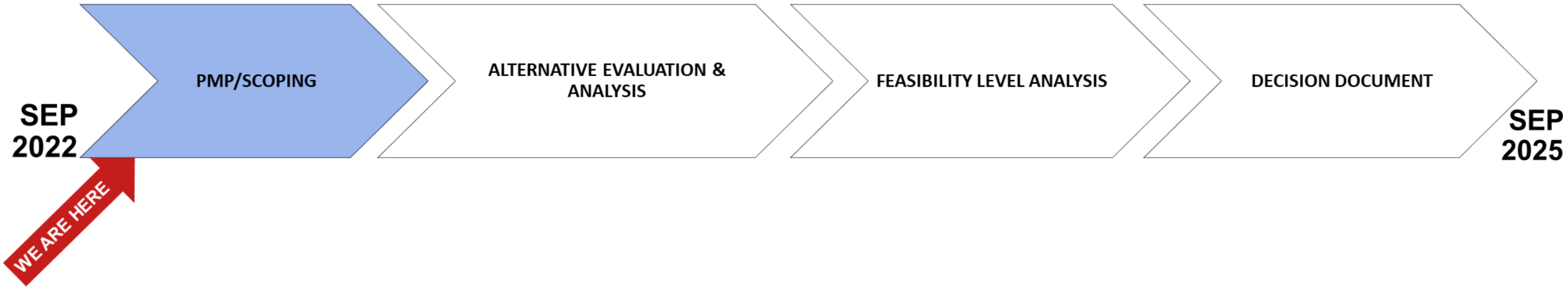


S: Specific
M: Measurable
A: Attainable
R: Risk Informed
T: Timely

- Anticipated to follow the 3x3x3 process
- Scoping: Sep 2022 – Feb 2023 (inc. NEPA scoping meetings)
- Alternative Evaluation & Analysis: Mar 2023 – Jun 2024 (inc. public review period)
- Feasibility-Level Analysis: Jul 2024 – Mar 2025
- Decision Document (Chief's Report): Apr 2025 – Sep 2025

Presenter: Tim Gysan

Problems, Opportunities, Objectives & Constraints

PROBLEMS AND OPPORTUNITIES = RISK IDENTIFICATION

Problem

Existing undesirable condition; description of what is.

Opportunity

Future desirable condition; description of what could or should be.

Problems, Opportunities, Objectives & Constraints (continued)

Constraint

A constraint is basically a restriction that limits the extent of the planning process

Resource constraints

- knowledge, expertise, experience, ability, data, information, money, and time

Planning constraints

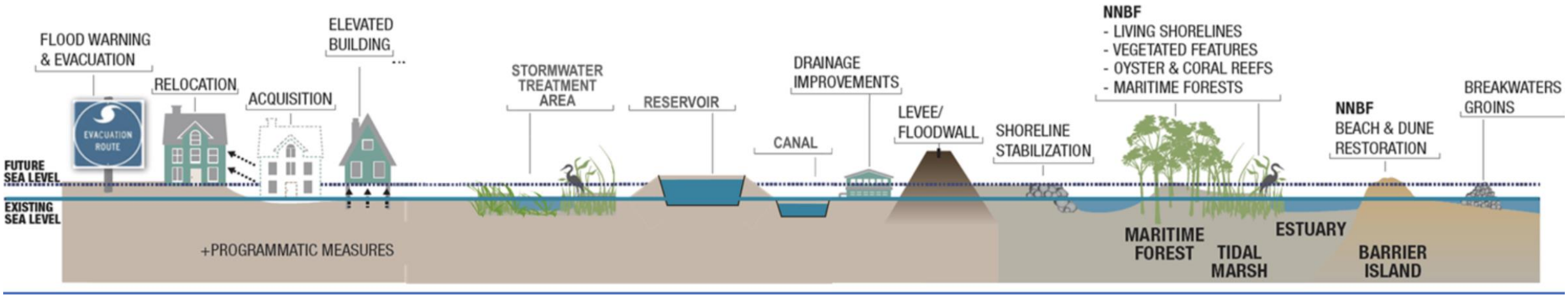
- Universal: legal and policy
- Study-specific: things unique to a specific planning study that alternative plans should avoid

Objective

An objective is a statement of the intended purposes of the planning process; it is a statement of what an alternative plan should try to achieve

Flood Risk Management (FRM) Measures

- Structural
- Non-Structural
- Natural and Nature-Based Features (NNBF)



Example Structural Measures

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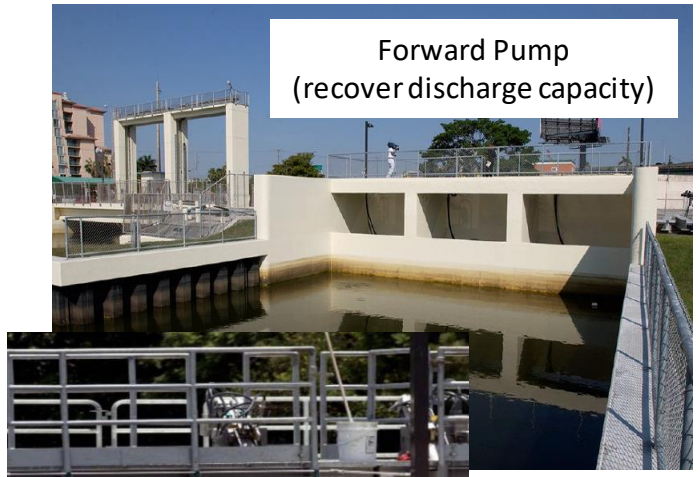
Structural Measures

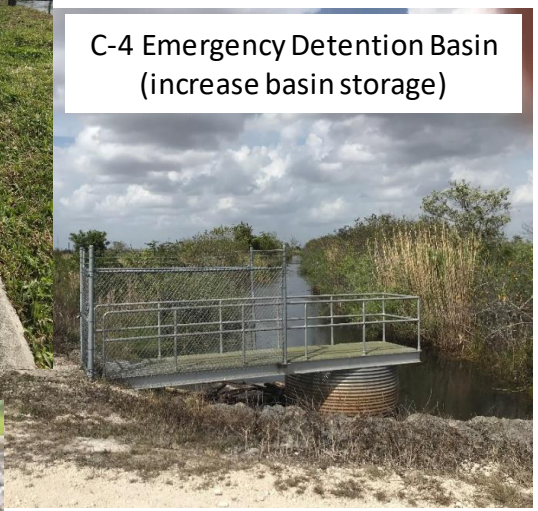
Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation.

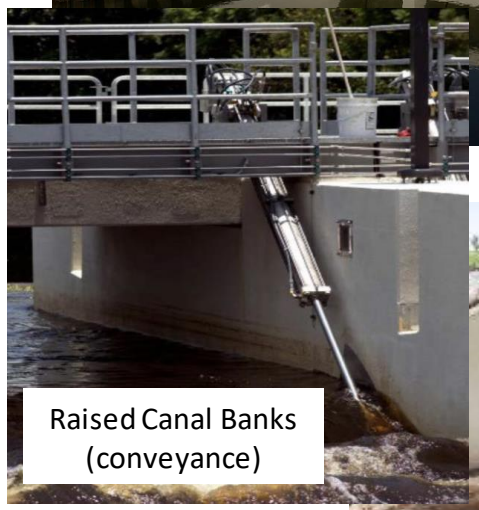
Some examples:

- Levees
- flood walls
- channel modifications
- storages areas
- pumps


Forward Pump (recover discharge capacity)


Floodwall (floodproofing)


C-4 Emergency Detention Basin (increase basin storage)


Raised Canal Banks (conveyance)


Flap Gate (enhance basin connectivity)


Convertible Flood Barrier (harden infrastructure)

Example Non-structural Measures

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Non-Structural Measures

Non-structural measures reduce flood damage risks without significantly altering the nature or extent of the flooding by changing the use of floodplains or by accommodating existing uses to the flood hazard.

PHYSICAL

- Acquisition
- Elevation
- Relocation
- Dry Floodproofing
- Temporary Barriers
- Wet Floodproofing

NONPHYSICAL

- Education / Communication
- Flood Emergency Preparedness & Warning
- Flood Insurance
- Land Use Regulation (Zoning)
- Building Codes

DRY FLOODPROOFING – TEMPORARY

Example Natural and Nature-based Features

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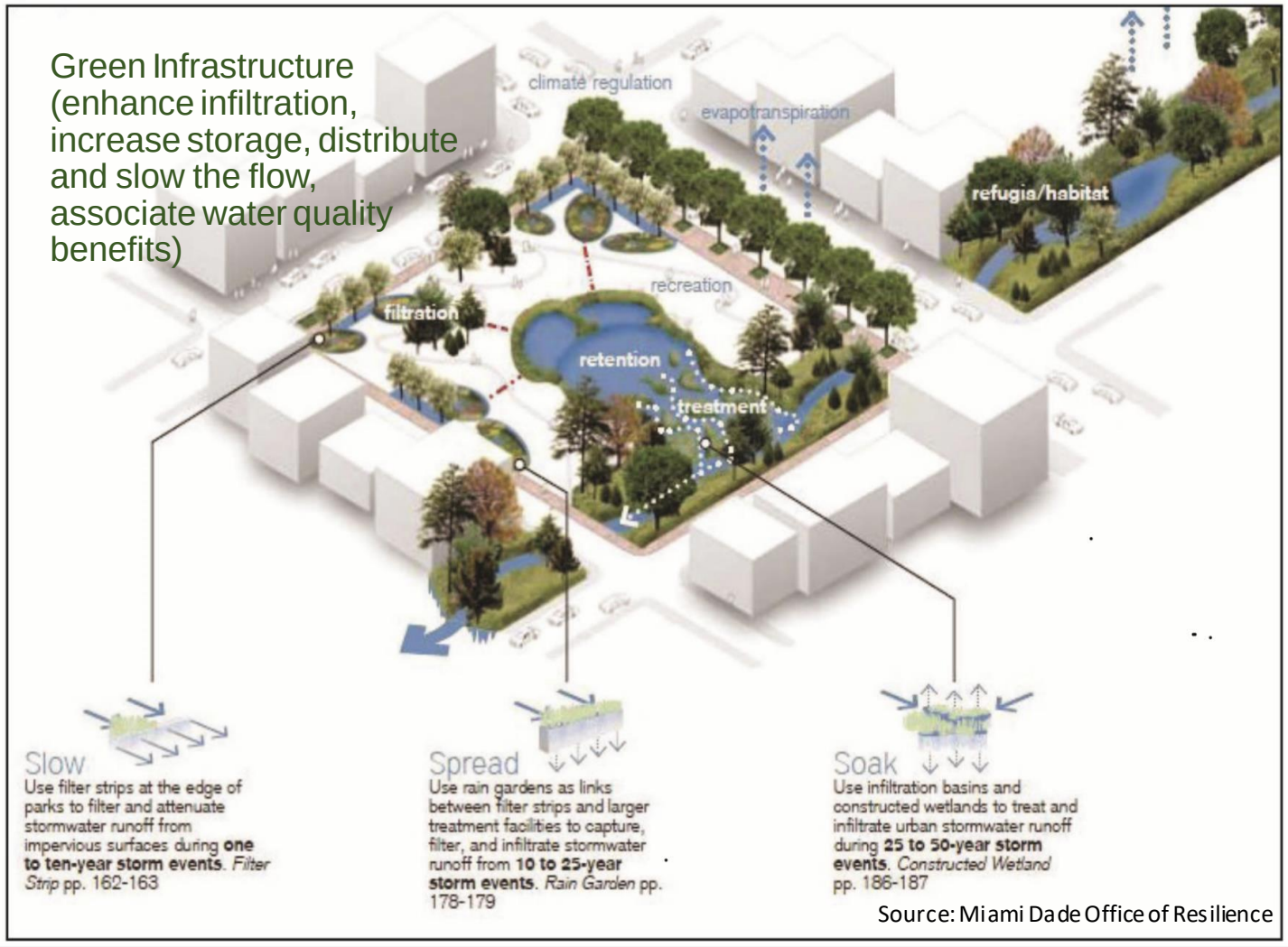
Natural and Nature-Based Features (NNBF)

Natural and Nature Based Features are landscape features that are used to provide engineering functions relevant to flood risk management, while producing additional economic, environmental, and/or social benefits.

Examples of NNBF
- Freshwater wetlands
- Fluvial flood plains restoration



Source: Miami Dade Office of Resilience

Presenter: Gustavo Suarez

Questions and Comments

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We want to hear from you!

Section 216 C&SF Flood Resiliency Study

US Army Corps of Engineers®
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Matthew Biondolillo

Project Manager

South Florida Water Management District

Breakout Session

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Closing Remarks and Next Steps

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Please visit the project website for additional project information; upcoming NEPA Virtual Meeting details; and for contacting us.

THANK YOU!