SOUTH FLORIDA WATER MANAGEMENT DISTRICT



Central and Southern Florida Flood Resiliency Study

Carolina Maran, P.E., Ph.D., District Resiliency Officer

Governing Board Meeting March 12, 2020

Overview

- Central and Southern Florida (C&SF) project background
- Previous review study: Comprehensive Everglades Restoration Plan
- New review study due to changed conditions: C&SF Flood Resiliency Study
- Impacts observed and SFWMD efforts to address changed conditions
- Other Coastal Studies & USACE Coordination
- Initial Appraisal Report request and next steps

Board's Action: consider approval of SFWMD Letter of Endorsement to <u>C&SF Flood Resiliency Study – USACE Budget Request</u>

Background: Central & Southern Florida Project

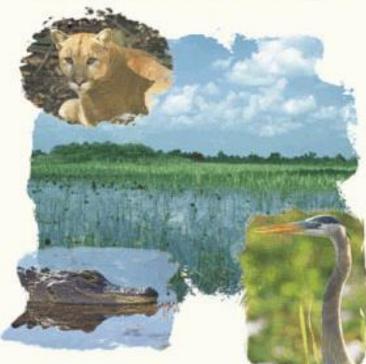


Flood Control Act of 1948 – Congress authorizes the U.S. Army Corps of Engineers to design and construct water management infrastructure

- Projected to serve a population of 2 million people
- Authorized purposes: flood control, water supply, navigation, prevention of saltwater intrusion, and protection of fish and wildlife resources
- Served as the foundation for the creation of the District

Comprehensive Review Study

Rescuing an Endangered Ecosystem: The Plan to Restore America's Everglades



The Central and Southern Florida Project Comprehensive Review Study (The Restudy) Central and Southern Florida Project (C&SF) Restudy – WRDA 1992

> Reconnaissance Report by USACE -1994

Governor's Commission for a Sustainable South Florida develops Conceptual Plan – 1996

> Comprehensive Review Study by USACE - 1999

CERP authorized by Congress - 2000

CENTRAL AND SOUTHERN FLORIDA PROJECT COMPREHENSIVE REVIEW STUDY

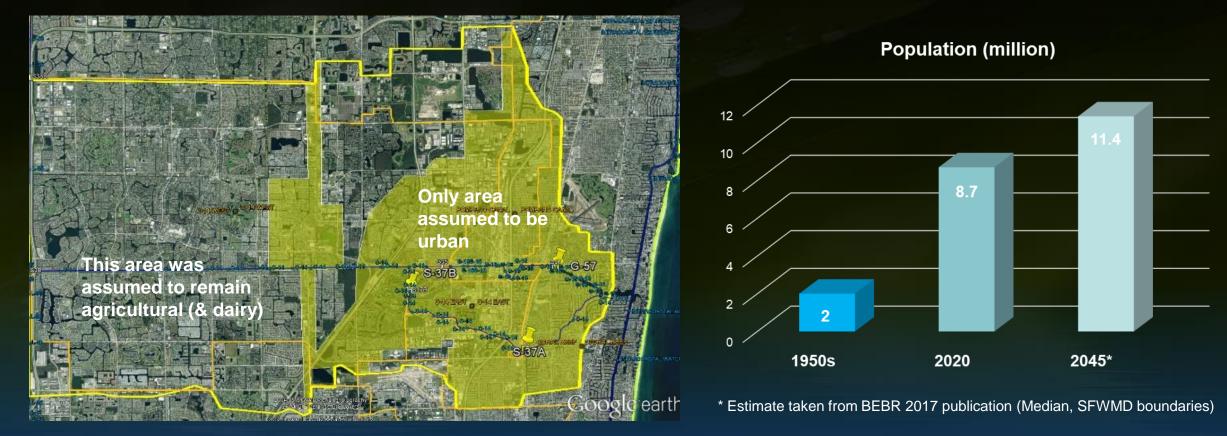
FINAL INTEGRATED FEASIBILITY REPORT AND PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT



New Review Study: Changed Conditions

LAND DEVELOPMENT

POPULATION GROWTH



Climate Changed Conditions

SEA LEVEL RISE **MORE EXTREME RAINFALL** 8724580 Key West, Florida 2.40 +/- 0.15 mm/yr 48-Hour Rainfall - Thru 8 AM June 07, 2017 Source: ASOS, AWOS, AWSS, Co-Op observers, CoCoRaHs observers, SFWMD and AHPS data - Linear Mean Sea Level Trend RDAR I observations. Yellow dots are estimated values. Values between the observations have been interp The CoCoBaHS list was last undated on 6/3/14. This information is not official and should be conside Upper 95% Confidence Interval 0.45 Lower 95% Confidence Interval Monthly mean sea level with the average seasonal cycle removed 0.1 Glades 2.62 .3.16 0.00 -0.1Palm Beach 10 49 - 0.3 Hendry -0.4 -0.60 Rainfall (inches) 1900 1910 1920 1980 1990 2000 2010 0.00 or T Associated with High Tides **HIGHER GROUNDWATER** 0.01 - 0.50 0.51 - 1.00 Gulf of Mexico Atlantic Ocean 1.01 - 2.00 Miami-Dade 2.01 - 5.00 Mainland Monroe USGS 260155080092002 G -2612 5.01 - 7.50 2.0 7.51 - 10.00 4.5 jee land 2.5 10.01 - 12.50 belou 4.0 3.0 12.51 - 15.00 NGVD 3.5 15.01 - 20.00 NWS Miami, F Site Number: 26015508009200 level Site Name: G -2612 Site Type: Well 4.5 Agency: USGS 5.0 2.0 5.5 1.5

1.0 10

2008

Period of approved data

2010 2012 2014 2016

— Period of provisional data



Meters

Impacts Already Being Observed



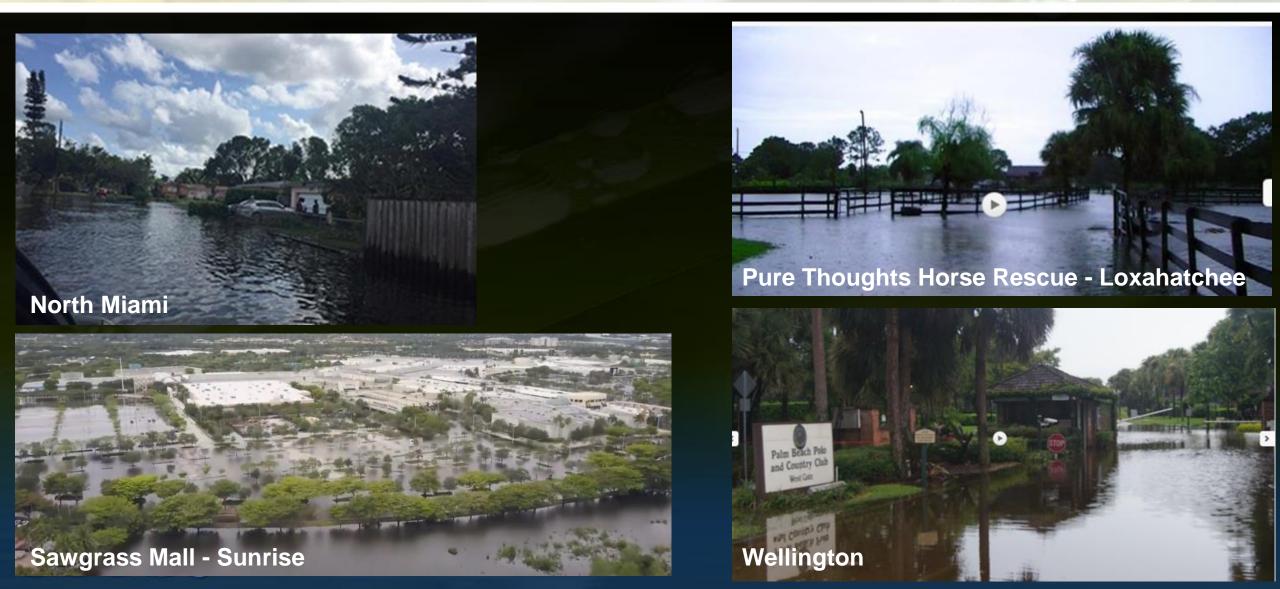
7

Sunny Day Flooding

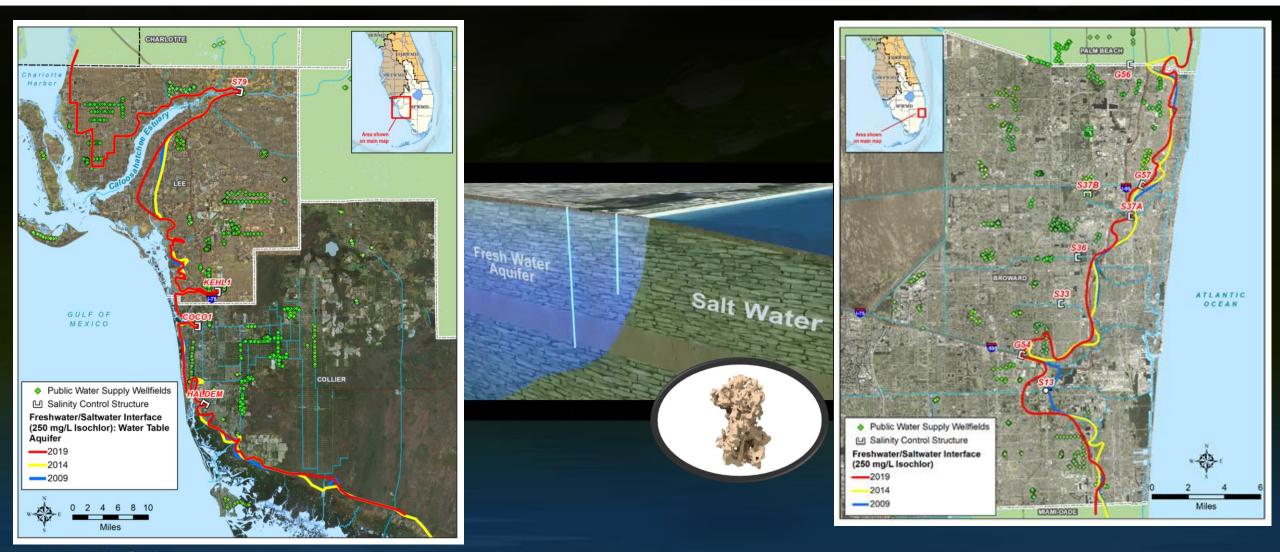


sfwmd.gov

Extreme Rainfall Flooding



Saltwater Intrusion



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

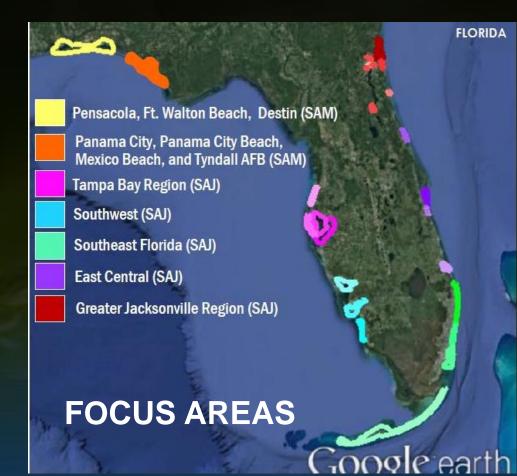
Flood Protection Level of Service Program



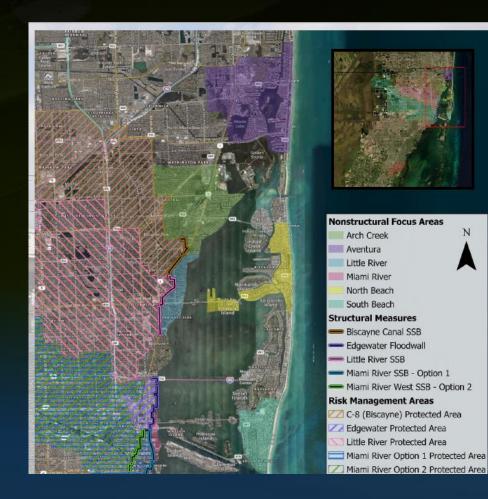
sfwmd.gov

Additional Efforts: Coastal Study Examples

SOUTH ATLANTIC COASTAL STUDY (SACS)



MIAMI-DADE BACK BAY COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY



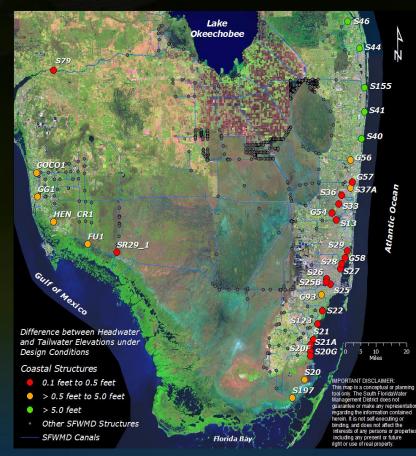
C&SF Flood Resiliency Study

- Current request: C&SF Review Study due to changed physical conditions
- Conducted under section 216 of the Flood Control Act of 1970
 - Initial request for \$6M over 4 years
- USACE Jacksonville District is completing a 216 Initial Appraisal Report in order to qualify for study funds
- FY22 Regular Budget or FY21 Workplan



C&SF Flood Resiliency Study

- Opportunity to address vulnerabilities with a phased approach
- Identify improvements needed and inform how the system should look, operate, and adapt considering changes since initial construction
- Focus on the project features which can reduce the most immediate flood risk, based on a broad C&SF system overview
- Selection of critical structures will be defined jointly between SFWMD and USACE
- Study would be conducted in coordination with stakeholders, Federal agencies, State, Tribal and local officials.



Next Steps

Consider approval of the SFWMD Letter of Endorsement to the USACE to seek federal funding to initiate a Section 216 Feasibility Study

Federal Cost-Share Agreement for the C&SF Review Study at 50%/50% cost-share

- Preliminary Engineering and Design through a 75%/25% cost-share agreement
- Project Partnership Agreement for construction at 65%/35%

>100% O&M will be SFWMD's responsibility (continue non-federal sponsor)

2020



Discussion

Carolina Maran, P.E., Ph.D., District Resiliency Officer

cmaran@sfwmd.gov

Photo by Paul Krashefski