



# **Resiliency Coordination Forum**

**March 1, 2023**

# 1. Opening Remarks



Drew Bartlett

Executive Director

South Florida Water Management District

# Housekeeping

*Moderator: Yvette Bonilla*





## 2. Statewide Office of Resilience



Wes Brooks, Ph.D.

Chief Resilience Officer

Florida Statewide Office of Resilience



## 3. Overview of District Resiliency Efforts



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

March 1st, 2023



# Governor DeSantis' Executive Order 23-06: Achieving Even More Now for Florida's Environment



Exec. Order further advances the protection of Florida's environment and water quality.

Ramps up efforts to accomplish even more by securing \$3.5 billion over four years for:

- Everglades restoration and the protection of water resources
- Continuing to expedite the Comprehensive Everglades Restoration Plan projects
- Strengthening resiliency efforts, through the Resilient Florida Program (Section 3)

# Governor's Budget Recommendation

- “Framework for Freedom Budget” proposal to the Florida Legislature for Fiscal Year 2023-2024.
- Follow Executive Order 23-06: over \$3.5 billion in Everglades restoration and Florida’s water resources
- Budget highlights include:
  - **\$610 million for Everglades Restoration.**
    - More than \$475 million for the Comprehensive Everglades Restoration Plan, including the EAA Reservoir and Restoration Strategies.
    - More than \$81 million for the Northern Everglades and Estuaries Protection Plan and dispersed water management.
    - \$50 million for the Lake Okeechobee Watershed Restoration Project.
  - **\$370 million for Targeted Water Quality Improvements.**
  - **\$50 million for Alternative Water Supply.**
  - **\$60.8 million to Combat Harmful Algal Blooms and Red Tide.**
  - **\$80 million in Operational and Maintenance Funding for SFWMD.**
  - **\$406 million for Resilience.**





# Resilient Florida Grants Announcement

## ➤ Nearly \$20M received in Resilient Florida awards

- Coastal Structures Enhancement and Self-Preservation Mode
- Hardening of S-2, S-3, S-4, S-7, S-8 Engine Control Panels - Building Resiliency in Water Management South of Lake Okeechobee
- L8 FEB / G-539 Pump Resiliency Upgrade

## ➤ Palm Beach County - Indian Trail Improvement District - SFWMD Partnership: Corbett Water Management Area Levee Upgrade to Protect ITID from Overtopping and Breaching and Provide Southeast Corbett with Improved Recession Rates

### Governor Ron DeSantis Announces Award of More than \$275 Million through the Resilient Florida Grant Program

*On February 6, 2023, in News Releases, by Staff*

**TALLAHASSEE, Fla.** — Today, Governor Ron DeSantis announced the award of more than \$275 million immediately available for 75 resilience projects using already-appropriated funding through the Resilient Florida program to help prepare coastal and inland communities for the adverse impacts of flooding and storm surge. A list of awards can be found [here](#).

“Under my administration, the state of Florida has invested an unprecedented level of funding, totaling more than \$1.1 billion, to create or fortify infrastructure in Florida’s communities,” said **Governor Ron DeSantis**. “The projects announced today will ensure inland and coastal communities are prepared for the impacts of storm surge, hurricanes, and flooding, continuing our aggressive efforts to protect Florida’s natural resources and infrastructure.”

“Key investments in resilient communities help safeguard homes, businesses, and other infrastructure against the damages caused by storm surge and other coastal and inland flooding,” said **Senate President Kathleen Passidomo**. “As my own community continues to recover and rebuild from the damaging storm surge caused by Hurricane Ian, I now have an even greater appreciation for the benefits of the forward-thinking, long-term strategy for resilience planning Governor DeSantis and the Florida Legislature have put in place here in Florida.”

# District Resiliency Planning

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

Open for Public Comments at the Upcoming Forum in May

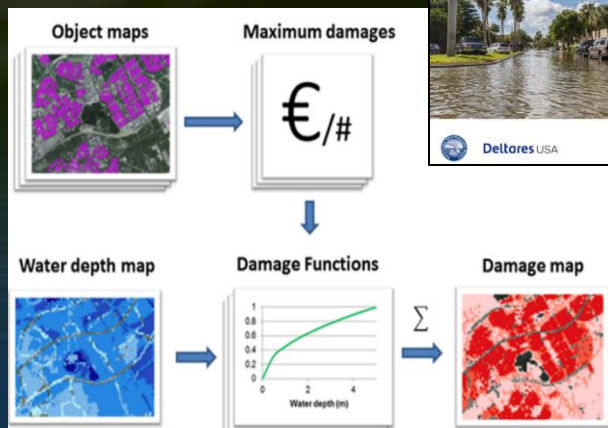
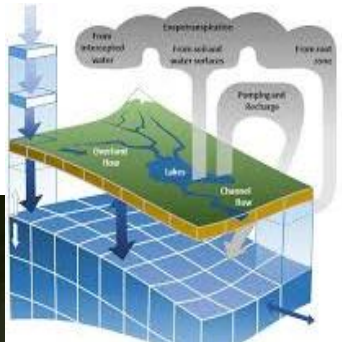
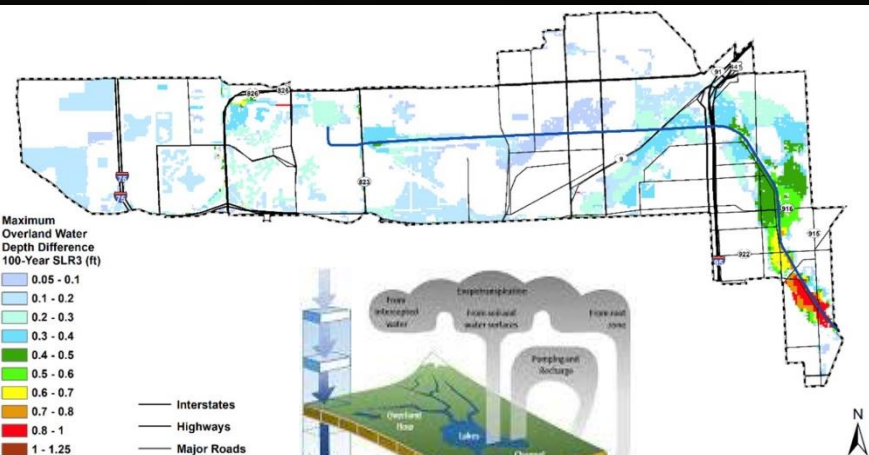
<https://www.sfwmd.gov/our-work/sea-level-rise-and-flood-resiliency-plan>

## SEA LEVEL RISE AND FLOOD RESILIENCY PLAN

Building Resilience and Mitigating Risks on South Florida Water Resources



SEPTEMBER 2022

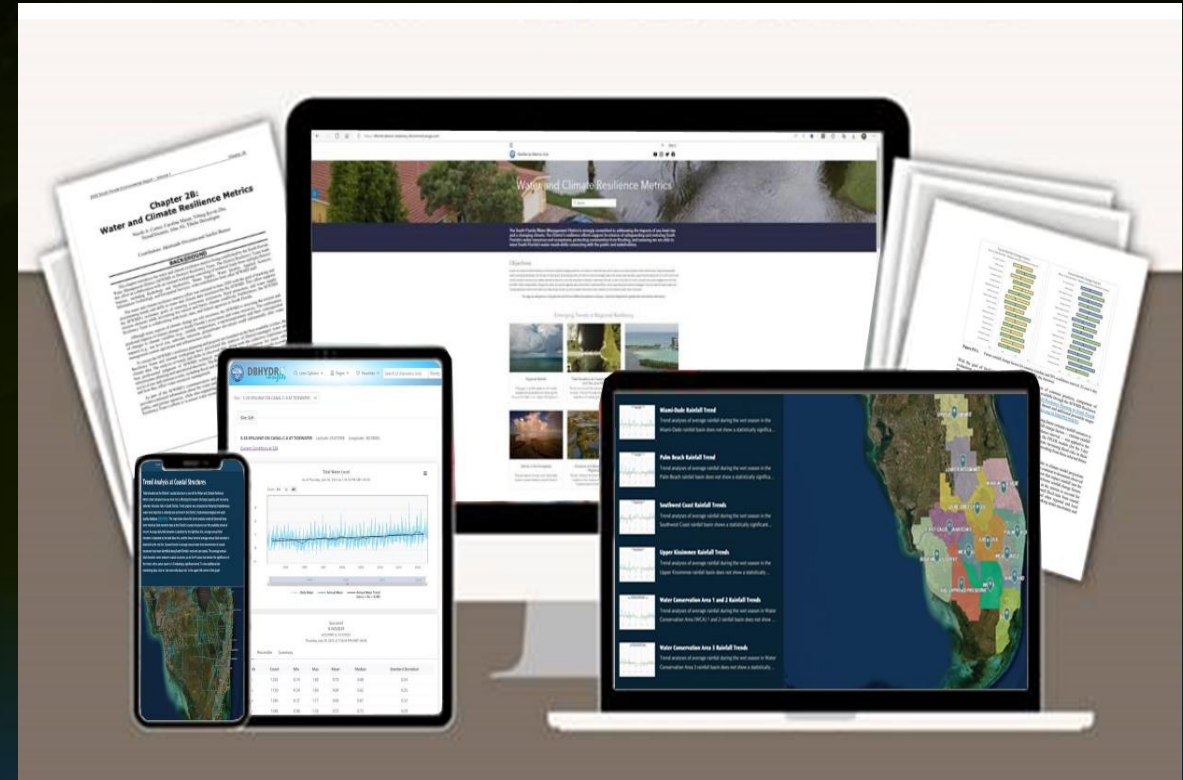




# Water and Climate Resilience Metrics

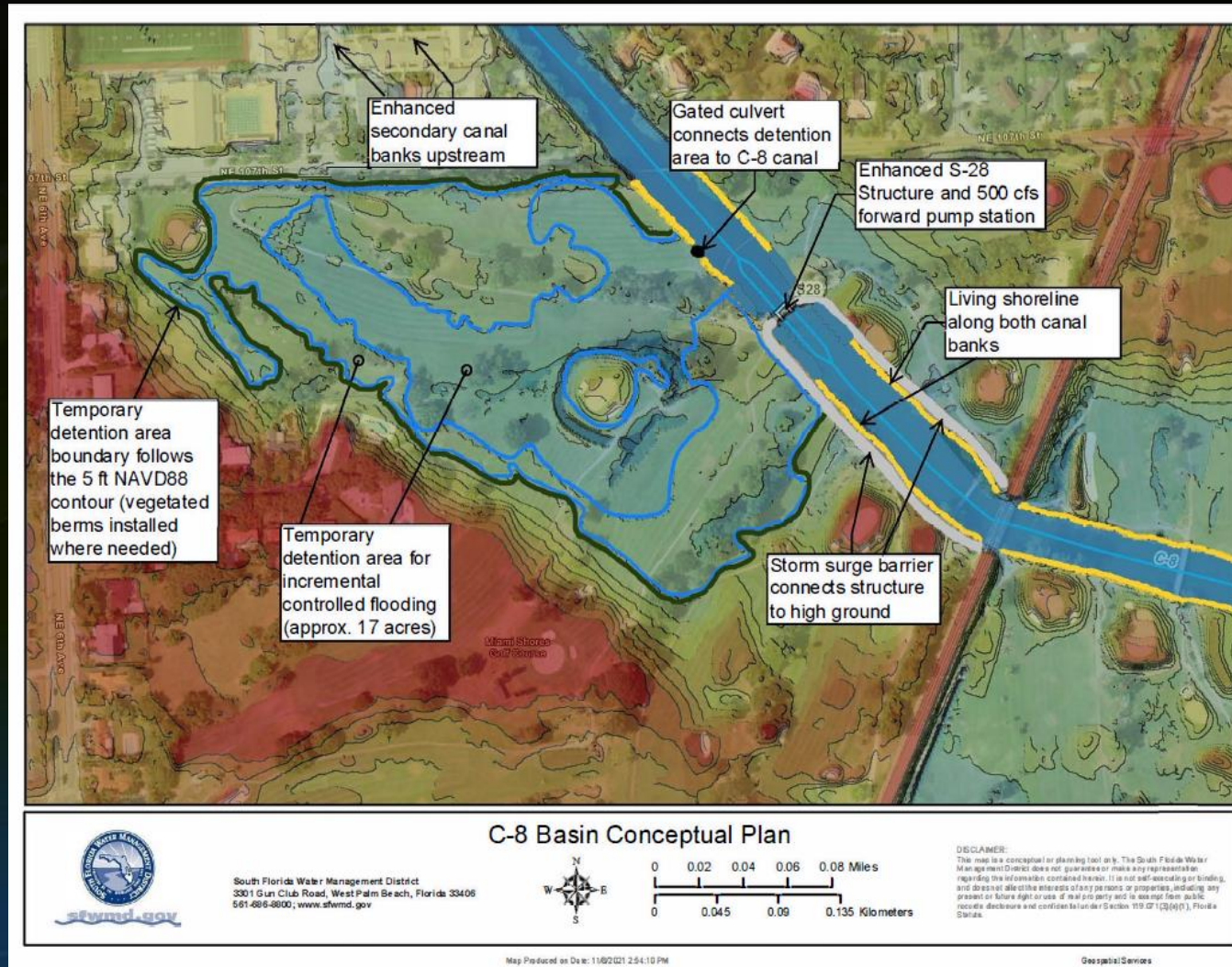
- Track and document shifts and trends in District managed water and climate observed data
- Support the assessment of current and future climate condition scenarios, operational decisions, and District resiliency priority projects
- Inform stakeholders, the public, and partner agencies to support local resiliency strategies

## New Data Resilience: ET Trends



# Moving into Implementation: C-8 Basin Resiliency

- Recent Award Recommendation from FDEM/FEMA BRIC
- Waiting for Green Light to Start Design
- Basinwide strategy to reduce flood risks due to sea-level rise and extreme rainfall; protect water resources and water supply sources
- Combination of Green and Gray Infrastruct.
- Increasing water management flexibility
- Restore S-28 Structure discharge capacity
- Increase the basin's flood protection level of service, including Miami Dade's secondary canal enhancements
- Enhance quality of life in the region





# Coastal Structures Hardening and Self Preservation Mode

Additional Programing; storm resilient Back Up Controller instrument and platform

Install Backup Controller and other automation features

Modify gates for added high tide protection against reverse flow

Modify Structure by adding seals

Other automation and floodproofing needs

Control Panel Upgrades / Hardening



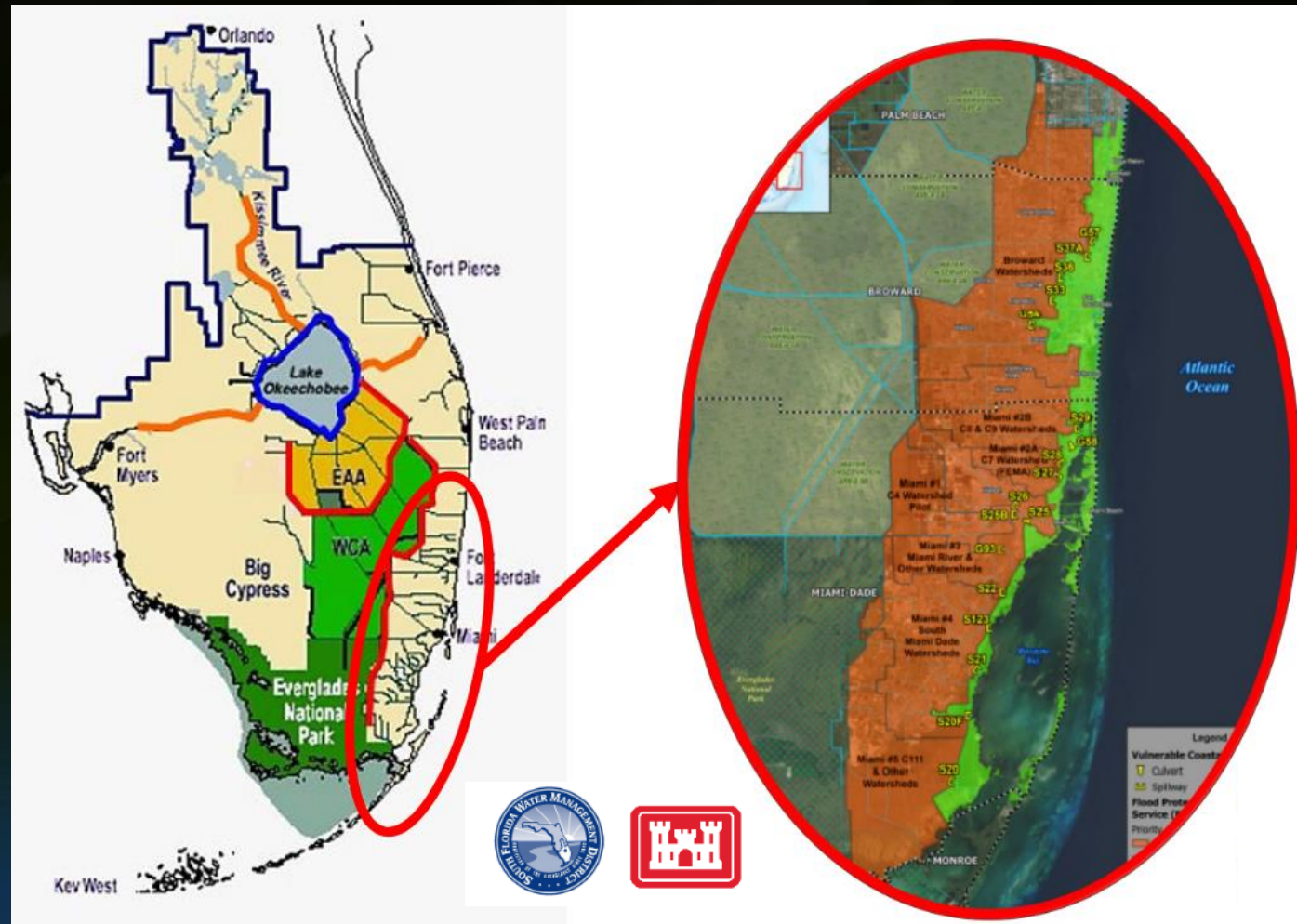
- Award from Resilient Florida Program – 20+ Coastal Structures
- Urgent need to optimize and harden operation of structures during storm surge and higher tide events, addressing Hurricane Irma/Matthew/Dorian/Ian gate-open lockouts
- Water Supply exposure to saltwater intrusion: wellfield protection zones vulnerability – **Regional Significant Assets (RSA)**
- Exacerbated upstream flood risks
- Focus on enhancing electronic/mechanical components, modifying gates, remote automation and floodproofing of RSAs

# C&SF Flood Resiliency Study

Under the Authority of Section 216 of the Flood Control Act of 1970

- Reduce flood risk and increase flood resiliency in high-risk urban watersheds in southeast Florida, while looking to enhance the overall benefits of the multipurpose C&SF Project
- Improve the C&SF Project and enhance SEFL Communities' quality of life
- Ongoing study phase: Development of Alternatives - Alternatives Milestone Meeting
- Inviting all stakeholders to provide contributions to this ongoing study

[www.sfwmd.gov/C&SF](http://www.sfwmd.gov/C&SF)





# Questions?

Carolina Maran, Ph.D., P.E.,  
[cmaran@sfwmd.gov](mailto:cmaran@sfwmd.gov)  
District Resiliency Officer

South Florida Water Management District  
[www.sfwmd.gov/resiliency](http://www.sfwmd.gov/resiliency)

# Thanks!





## **4. 2023 Legislative Session Update on Resilience**

**Phil Flood**  
**Legislative Liaison / Regional Representative**  
**March 1, 2023**



# 2023 Legislative Session

## 125<sup>th</sup> Regular Session Since Statehood

January 3<sup>rd</sup> - February 24<sup>th</sup> Interim Committee Weeks

- Status reports, presentations from state agencies, and subject matter experts about state programs
- Begin to take up bills that have been filed

March 7<sup>th</sup> First day of Regular Session

May 5<sup>th</sup> Last day of Regular Session - Sine Die

# Legislative Committees of Interest

## House

- Agriculture, Conservation & Resiliency Subcommittee
- Select Committee on Hurricane Resiliency & Recovery

## Senate

- Select Committee on Resiliency

# Legislative Bills of Interest

## **HB 111                      Public Financing of Potentially At-risk Structures and Infrastructure** **SB 1170                      Flooding and Sea Level Rise Vulnerability Studies**

Expands the existing SLIP statute (Sea Level Impact Projection study) to include all areas at risk due to sea level rise, as opposed to just the coastal building zone. A SLIP study would need to be conducted for any location that is projected to be below the threshold for tidal flooding within the next 50 years that receives state funding.

## **SB 734/HB 1079                      Saltwater Intrusion Vulnerability Assessments**

Authorizes the Department of Environmental Protection to provide grants to coastal counties for saltwater intrusion vulnerability assessments. Also requires DEP to update the comprehensive statewide flood vulnerability and sea level rise data set and make information from the saltwater intrusion vulnerability assessments available on its website.

# Legislative Bills of Interest

## **HB 1147/SB 1200      Resilience Districts**

Authorizes establishment of infrastructure resilience districts and condominium resilience districts through a citizen-initiated petition to address infrastructure and resilience problems. The resilience districts would implement projects that mitigate the risk of flooding and sea level rise and may utilize a local government as the project manager for the projects.

## **SB 100/HB 561      Mangrove Replanting and Restoration**

Requires DEP to adopt rules for mangrove replanting and restoration. Rule must assist Everglades restoration and Biscayne Bay revitalization efforts and include development of living shoreline design options.



# Legislative Bills of Interest

## **HB 859/SB 1018      Flood Damage Prevention**

Provides specified maximum voluntary freeboard requirements for new construction & substantial improvements to existing construction. Also authorizes local governments to adopt by ordinance minimum freeboard requirement or maximum voluntary freeboard that exceeds minimum requirements and requires the Florida Building Commission to adopt by rule minimum freeboard requirements and review freeboard requirements every 5 years.

## **SB 484/HB 759      Flood Disclosures for Real Property Sales**

### **HB 325      Flood Disclosure for Residential and Commercial Property Sales**

Will require the seller of residential and commercial properties to disclose information to prospective purchasers about the risk of flooding prior to the execution of the contract for sale and purchase.

## **SB 716      Flood Zone Disclosures for Dwelling Units**

Would require a landlord to disclose to renters whether the dwelling unit is located within a Federal Emergency Management Agency designated flood zone.

# Legislative Bills of Interest

## House and Senate Appropriations Bills

- Initial House and Senate Appropriation bills will likely be filed the first week of April
- Conference committees to resolve differences by first week of May
- May 5<sup>th</sup> for the scheduled last day of session

## Includes:

- Local Funding Projects
- Resilient Florida Program

# Questions?

*2023 Legislative Session Update on Resilience*

*Phil Flood, Legislative Liaison, Regional  
Representative*





# 5. RESILIENCE ACTION PLAN

presented to

*South Florida Water  
Management District  
Resiliency Coordination  
Forum*

*March 1, 2023*

presented by

*Jennifer Z. Carver, AICP  
FDOT Office of Policy Planning*

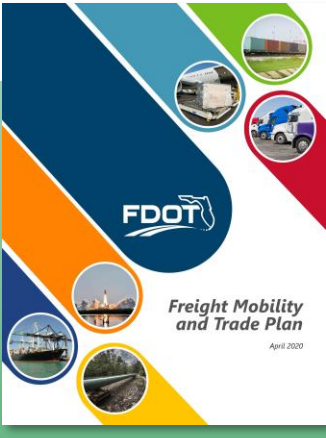
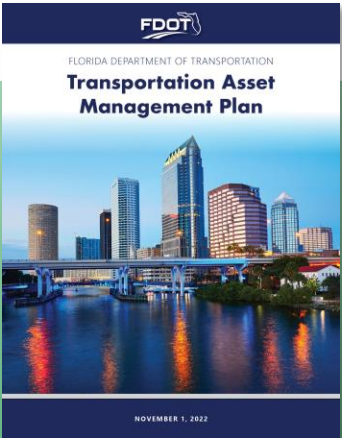
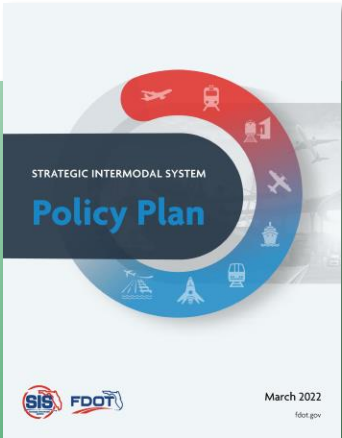
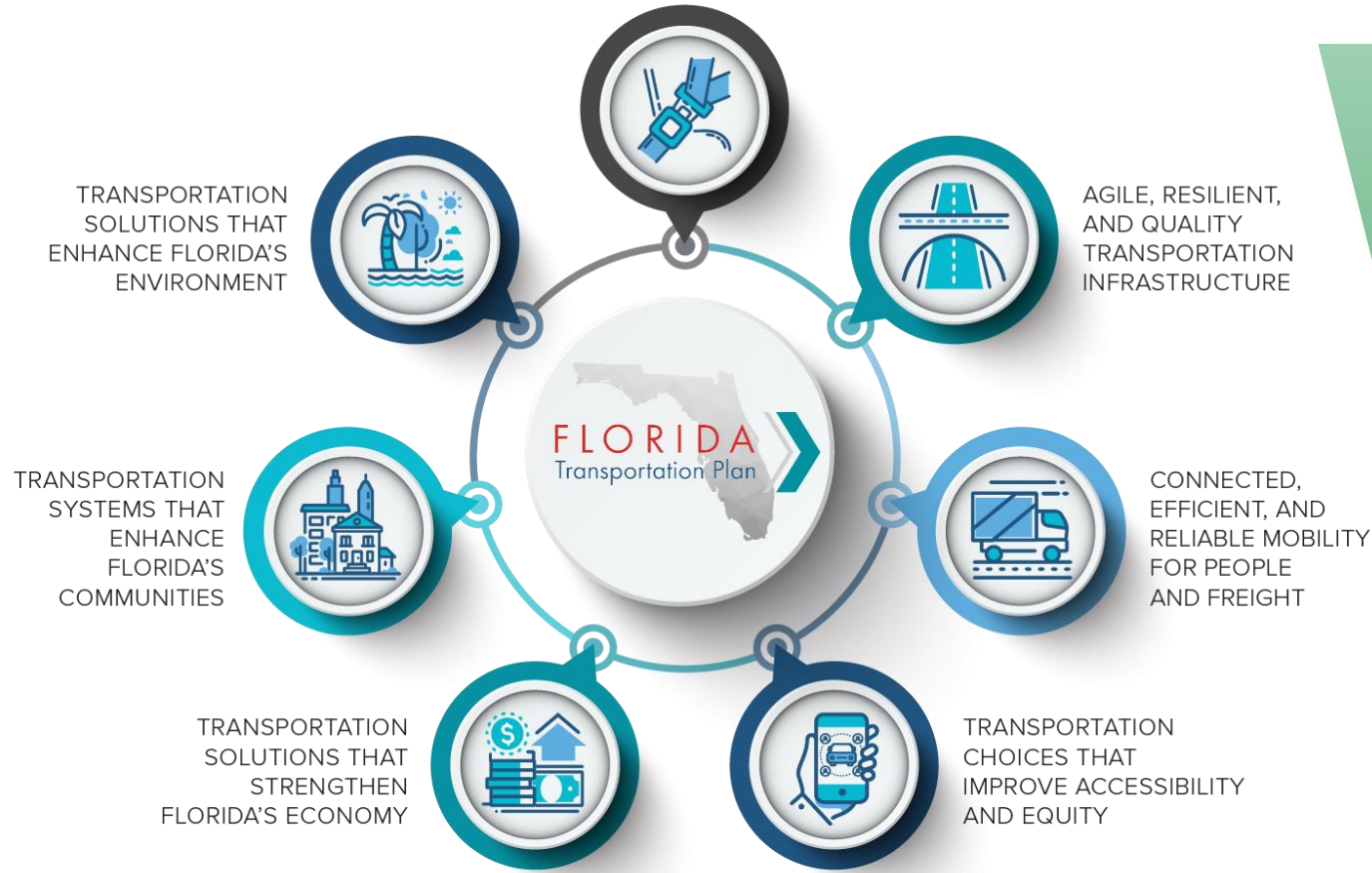






# FLORIDA TRANSPORTATION PLAN

SAFETY AND SECURITY FOR  
RESIDENTS, VISITORS, AND BUSINESSES



# RESILIENCE POLICY

- Ability to **adapt** to changing conditions and **prepare** for, **withstand**, and **recover** from disruption
- Identify risks, particularly related to:
  - Storms
  - Flooding
  - Sea level rise
- Assess potential impacts
- Employ strategies to avoid, mitigate, or eliminate impacts





# INHERENT RESILIENCE

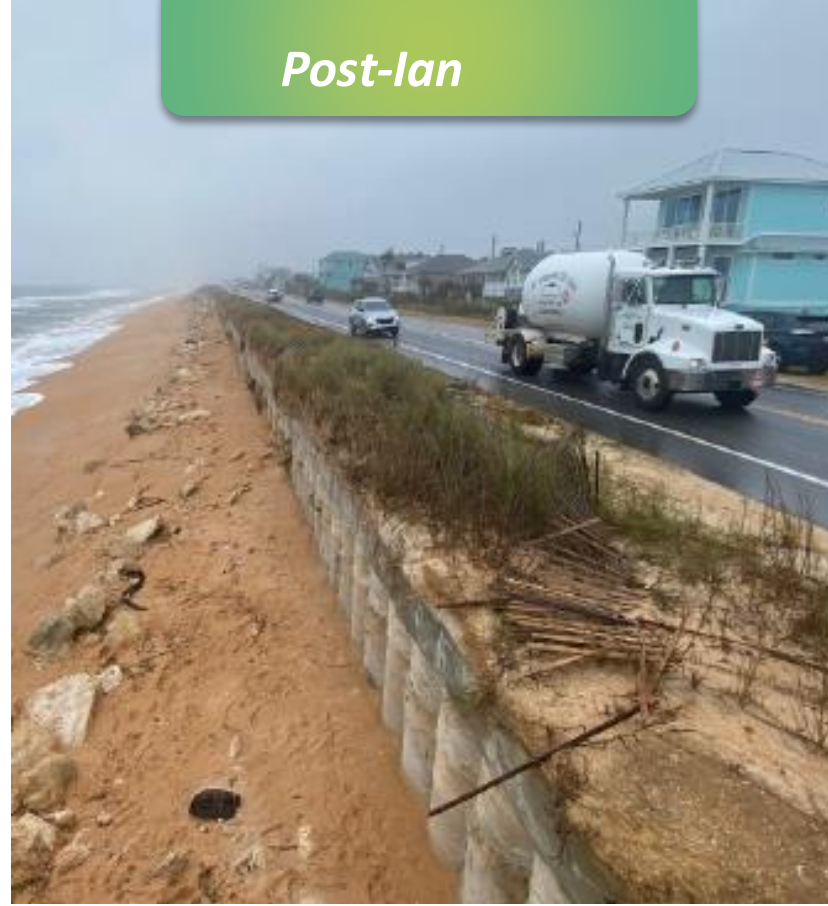
- Design criteria
- Stormwater/drainage design procedures
- Nature-based solutions
- Context sensitive, complete streets
- Local partner coordination



*Pre-Ian*



*Post-Ian*



*Post-Nicole*



# SR A1A HURRICANES IAN & NICOLE

- Nature-based hybrid solution
- Dune washed away, but buried secant-pile bulkhead/seawall
- Protect transportation facility from storm-related wave action and erosion



# RESILIENCE FOCUS IN FLORIDA

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- Sea Level Impact Projection (SLIP) Studies
- Resilient Florida
- Florida Flood Hub
- Statewide Office of Resilience/Chief Resilience Officer
- FDOT Resilience Action Plan (RAP)



# RESILIENCE ACTION PLAN GOALS

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Recommend **strategies**  
to enhance infrastructure  
and operational resilience



Recommend design  
changes for existing  
and new facilities



Enhance partnerships  
to address  
multijurisdictional  
resilience needs



# RESILIENCE ACTION PLAN ELEMENTS

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Historic/  
current issues



Alternatives to retrofit existing  
infrastructures and systems



FDOT policies  
& procedures

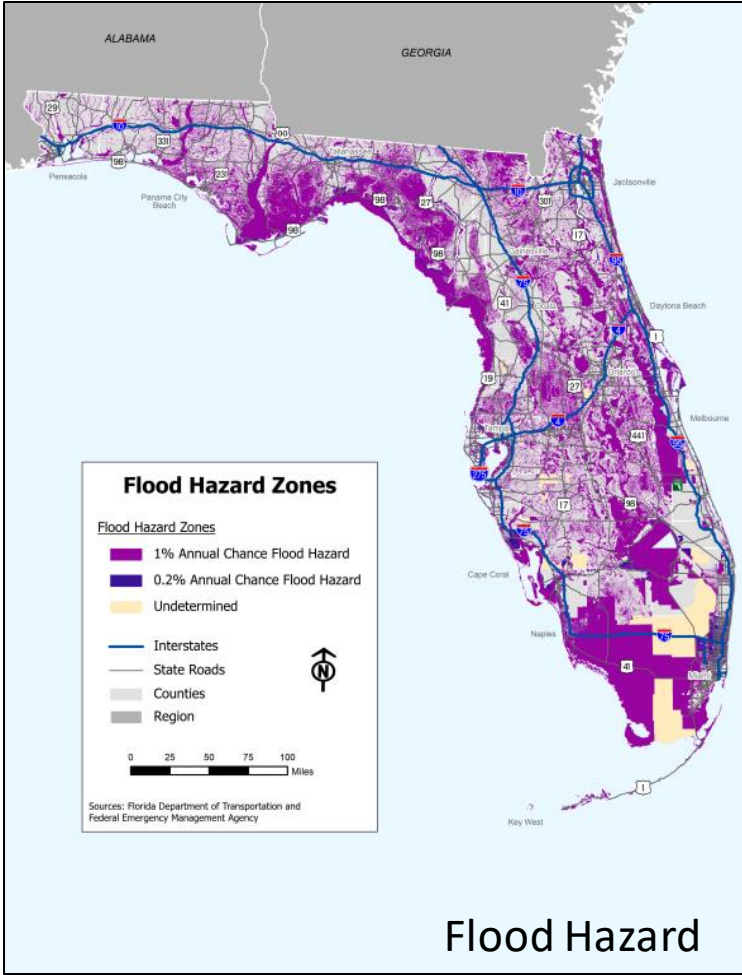


Database of vulnerable assets



Vulnerability assessment  
of State Highway System

# VULNERABILITY ASSESSMENT

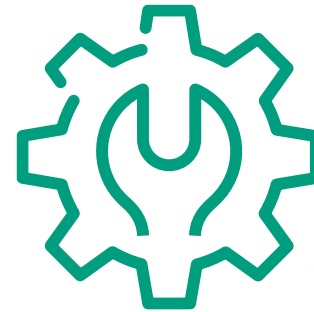


# RESILIENCE ACTION PLAN STRATEGY AREAS

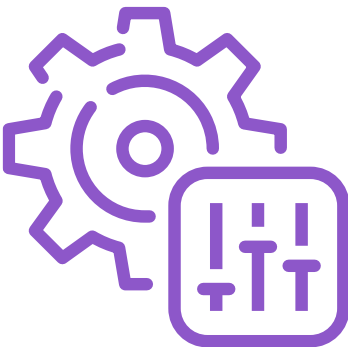
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Planning/PD&E



Design &  
Construction



Operations



Asset  
Management

Plan due to Governor and Legislature by June 30, 2023



# FEDERAL PROTECT PROGRAM

- Promoting Resilience Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT)
- Formula and discretionary funding
- Emphasis on incremental improvements and natural hazards
- Optional resilience improvement plan

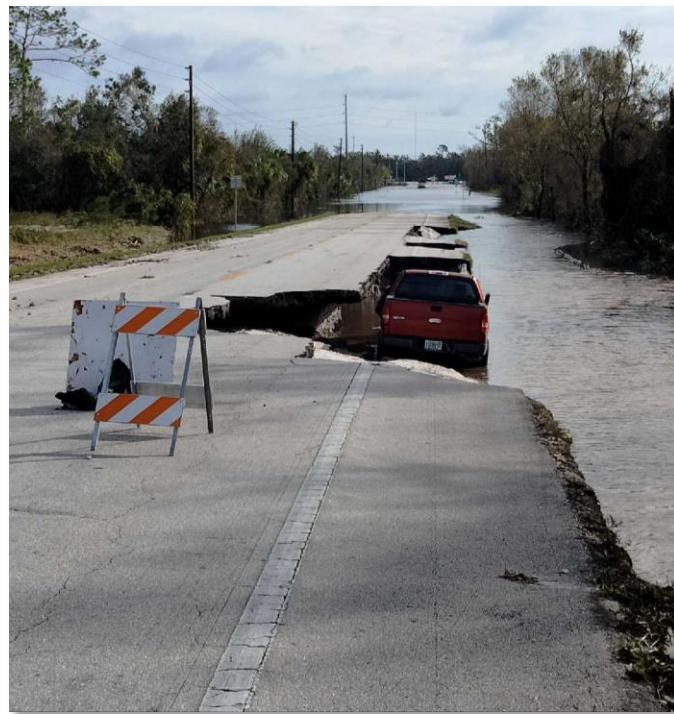


# FDOT DISTRICT 1: HURRICANE IAN DAMAGE & RECOVERY

- Roadway Assessment Team - Total of 137 Damage Sites investigated
- Flood Assessment Team - 45 Locations where Flooding/Erosion occurred



SR 78 East of Pine  
Island  
(Lee County)



SR 70 West of SR 72  
(Desoto County)



SR 64 at Peace River Bridge  
(Hardee County)

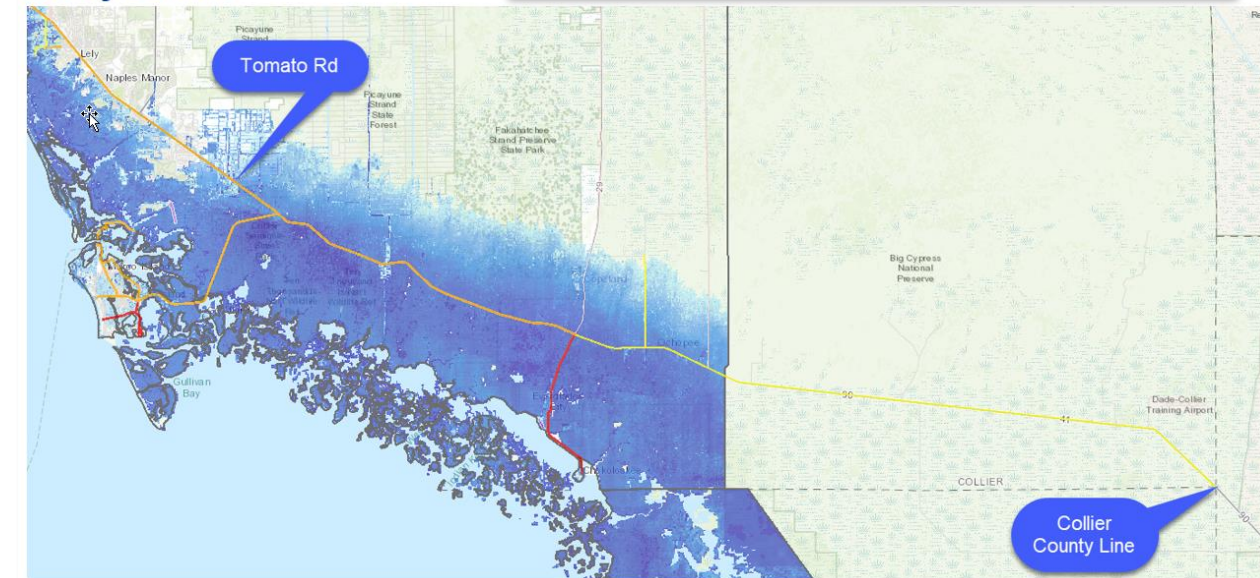


# FDOT DISTRICT 1: US 41 RESILIENCY STUDY

- USACE Silver Jackets project for US 41 in Collier County
- Facility susceptible to sea level rise and storm surge
- Planning Study to evaluate alternatives to raise US 41 and replace aging bridges
- Coordination with stakeholders and agency representatives



Study Limits



# FDOT DISTRICT 1 – PROTECT FUNDS

➤ 26 projects throughout D1 Counties for PROTECT Funds from FY23–28

- 441562-1: SR 70 Downtown Arcadia (Desoto County)
- 446369-1: SR 17 at Hillcrest Avenue (Polk County)
- 439032-1: SR 15 in Okeechobee (Okeechobee County)



441562-1



446369-1



439032-1



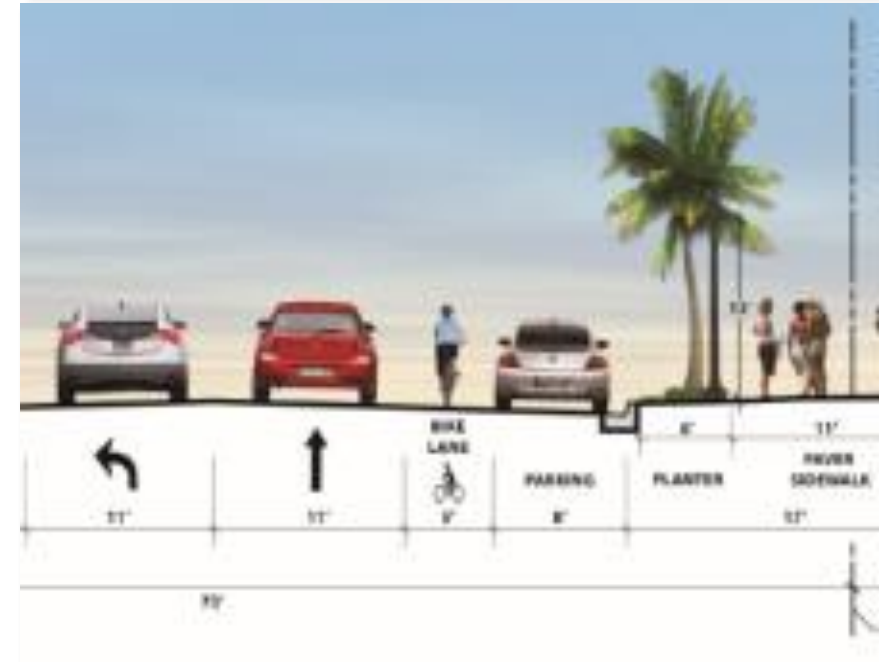
# DISTRICT 4: SR A1A IN BROWARD COUNTY

➤ Hurricane Sandy - SR A1A in Fort Lauderdale



# DISTRICT 4: SR A1A IN BROWARD COUNTY

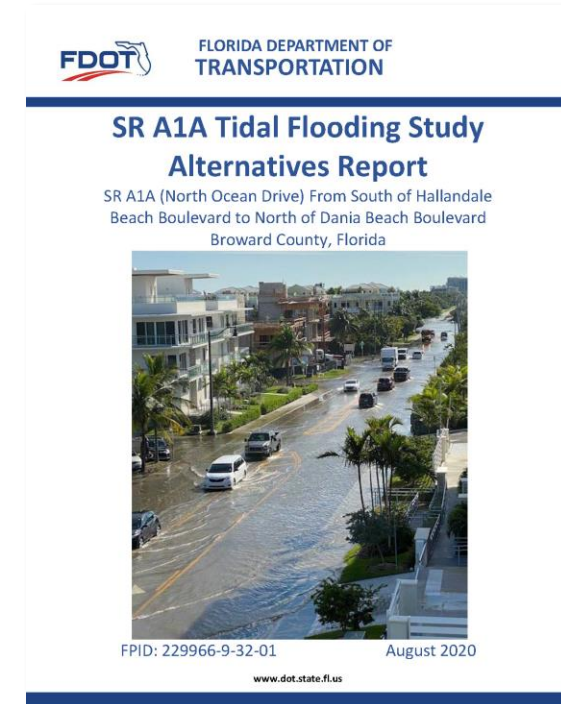
- Permanent Project Reflecting Resiliency and Community
- Goals for SR A1A in Fort Lauderdale





# DISTRICT 4: SR A1A TIDAL FLOODING STUDY IN HOLLYWOOD

- Review of existing devices
- Proposed remedies:
  - Prevention
  - Attenuation
  - Restoration



# DISTRICT 6: INTEGRATING RESILIENCE: TAMAMI TRAIL

- Partnership with National Park Service to raise 8 miles of Tamiami Trail to help restore sheet flow to the Everglades
- New bridges provide more natural wildlife crossings
- Collaborative improvements with the Miccosukee Tribe of Indians of Florida to Tigertail Camp
- Phase 1: completed 2019
- Phase 2: ongoing, began 2020





# DISTRICT 6: SEA OATS BEACH AND THE FILLS

- US 1/Overseas Highway Shoreline Protection and Road Raising Projects





# DISTRICT 6: INTEGRATING WATER WITH TRANSPORTATION - MIAMI BEACH

- Addressing flooding to improve level of service for roadways – Indian Creek Drive/SR A1A Emergency Evacuation Route
- Pump stations – emergency by-passes
- Outfalls with backflow preventers



# DISTRICT 6: COMMUNITY AND AGENCY PARTNERSHIPS

- USACE Florida Keys Coastal Storm Risk Management (CSRM) Feasibility Study
- USACE Miami-Dade Back Bay CSRM Feasibility Study
- Tamiami Trail Modification: Next Steps Project
- Resilient305 Strategy





***Don't Drive Into the Unknown.....***



***.....Stay Away from Flooded Streets!***

**For more information, please contact:**

**Jennifer Z. Carver, AICP**



[Jennifer.Carver@dot.state.fl.us](mailto:Jennifer.Carver@dot.state.fl.us)



850-414-4820






PBC volunteers celebrating World Ocean Day by participating in a coastal clean up at Coral Cove Park, Jupiter, FL.

# 6. Palm Beach County Vulnerability Assessments

March 1, 2023







**Ensure a resilient, thriving PBC by  
adapting to and mitigating climate change  
and developing sustainably.**

**1. Adaptation**

**2. Mitigation**

**3. Sustainable Development**

# OUR VALUES



## EQUITY

Prioritizing “frontline communities,” i.e., people both highly exposed to climate risks and with fewer resources, capacity, safety nets or political power to respond to those risks in planning, processes, and outcomes



## ADAPTATION

Anticipate, prepare for, and respond to acute shocks, disruptions and hazardous events or longer-term, chronic stressors related to or exacerbated by climate change



## MITIGATION

Reducing greenhouse gas emissions to lessen the impacts of climate change



## SUSTAINABLE DEVELOPMENT

Create solutions that serve the environment and inhabitants and promote a better, healthier and cleaner future

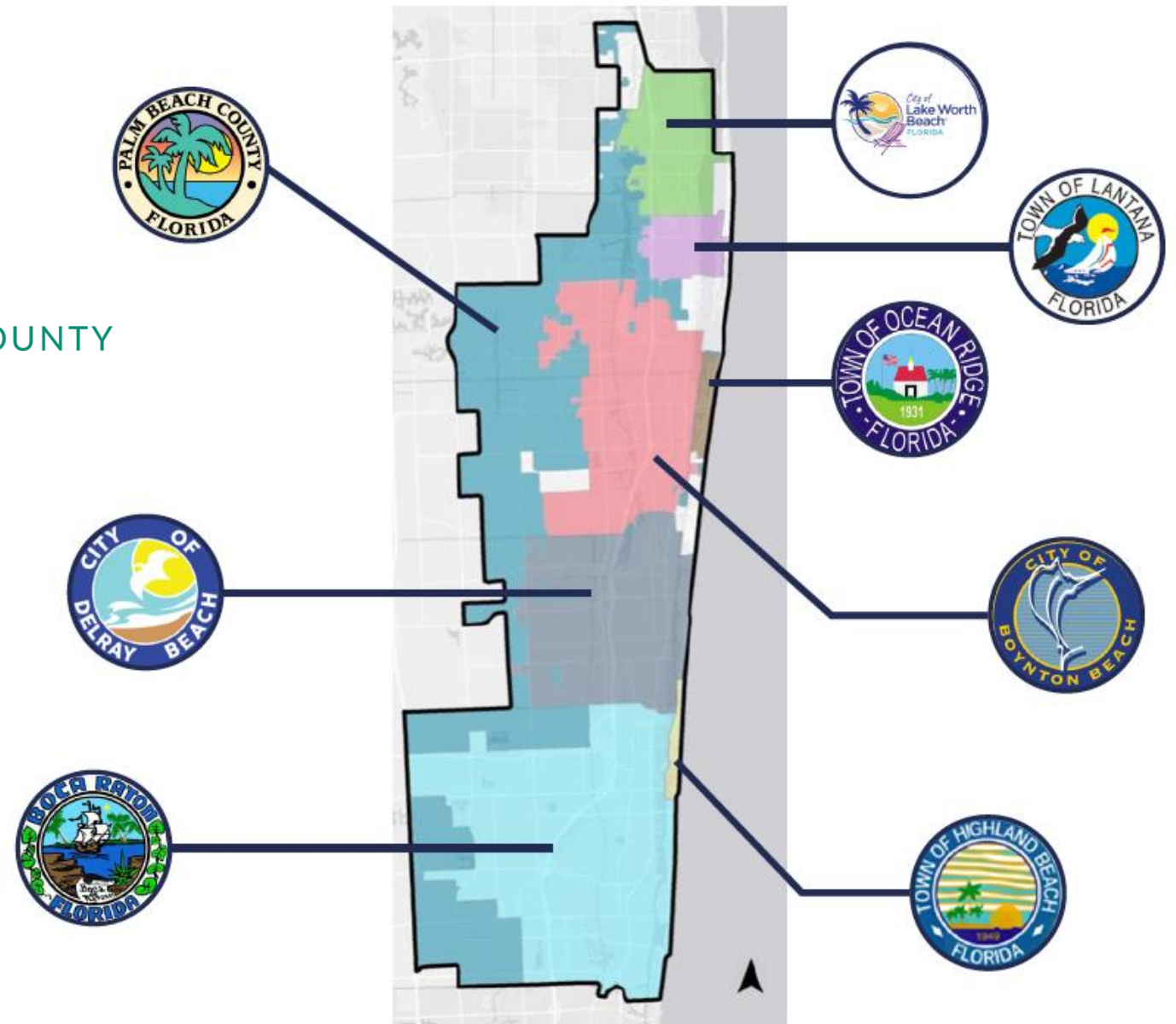
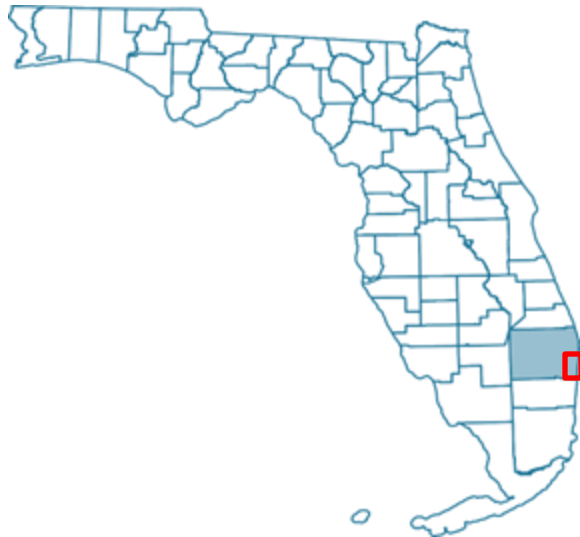




# COASTAL RESILIENCE PARTNERSHIP

SOUTHEAST PALM BEACH COUNTY

## Multi-Jurisdictional Climate Change Vulnerability Assessment



THIS MAP REPRESENTS THE STUDY AREA FOR THE COASTAL RESILIENCE PARTNERSHIP  
OF SOUTHEAST PALM BEACH COUNTY CLIMATE CHANGE VULNERABILITY ASSESSMENT



**COASTAL  
RESILIENCE  
PARTNERSHIP**

SOUTHEAST PALM BEACH COUNTY

# Climate Threats Assessed



**High Winds**



**Rainfall-Induced  
Flooding**



**Harmful Algal  
Blooms**



**Pest & Disease  
Outbreaks**



**Extreme Heat**



**Drought**



**Wildfire**



**Shoreline  
Recession**



**Tidal Flooding**



**Storm Surge**



**Groundwater  
Inundation**



**Saltwater  
Intrusion**

\*Analyses involving sea level rise used the 2017 NOAA intermediate-low and NOAA intermediate-high projections to 2040 and to 2070 to comply with Section 380.093, F.S.



# ASSET CATEGORIES ASSESSED



Critical Facilities



Water Infrastructure



People and Socioeconomics



Transportation & Mobility



Natural Resources



Economic Factors



Property

## 2022 Resilient Florida Critical Assets

Transportation Assets and Evacuation Routes

Critical Infrastructure

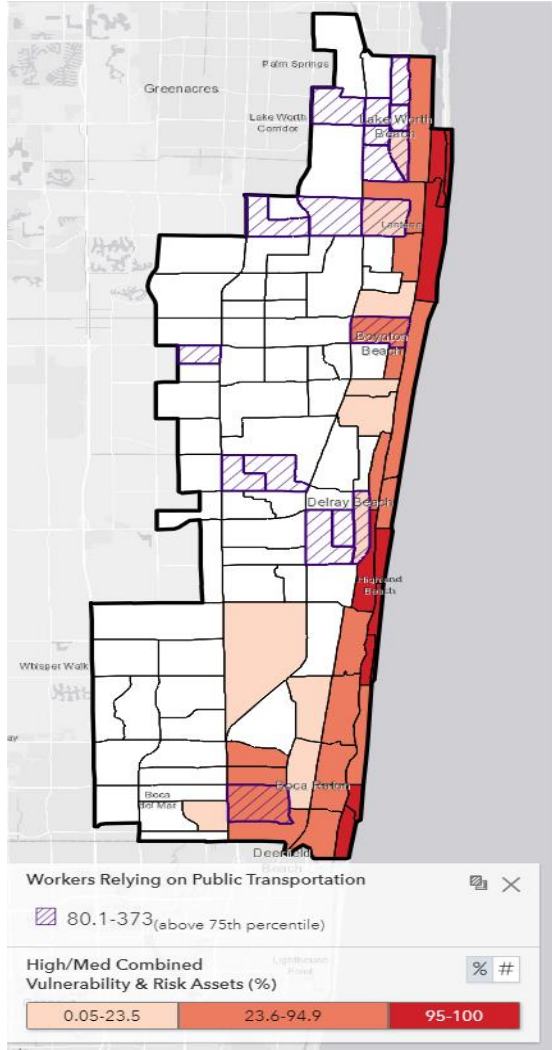
Critical community and emergency facilities

Natural, Cultural, and Historical Resources

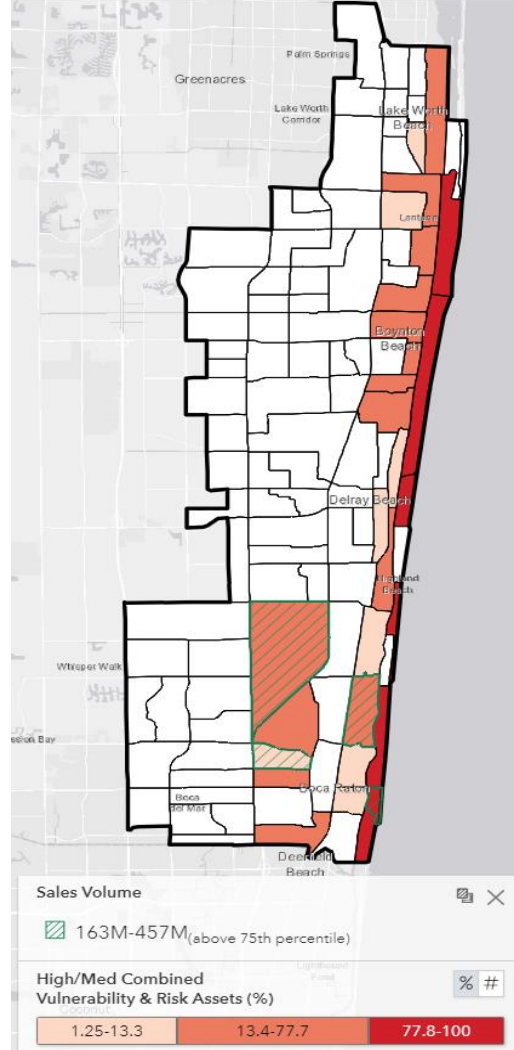


# Storm Surge

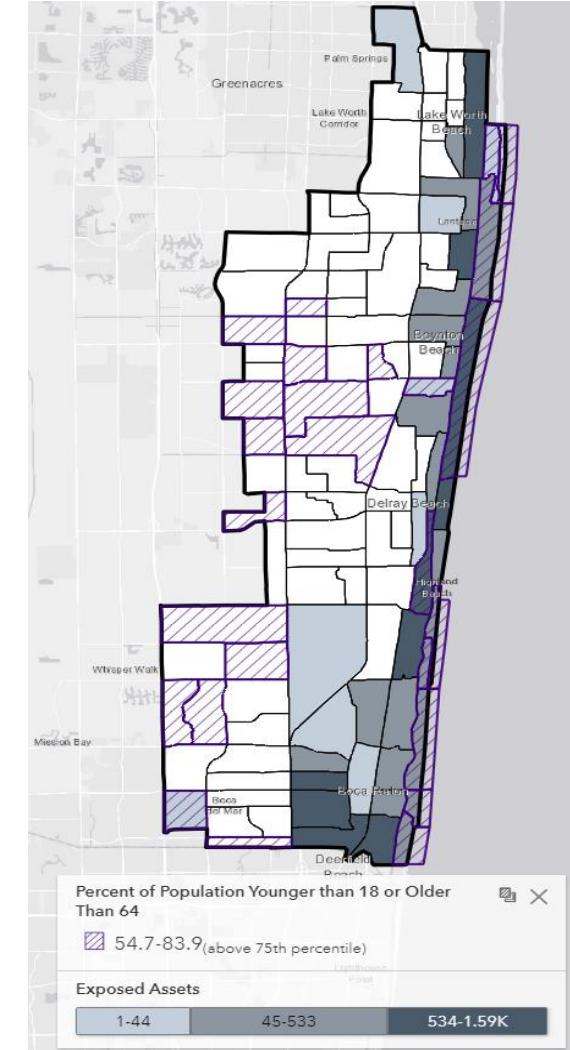
Residential Property & Storm Surge 2070 (2020 baseline +33" SLR, 100-yr) RF 380.093



Commercial and Industrial Property & Storm Surge 2070 (2020 baseline +33" SLR, 100-yr) RF 380.093



Roads and Parcels inaccessible due to Storm Surge 2070 (2020 baseline +33" SLR, 100-yr)





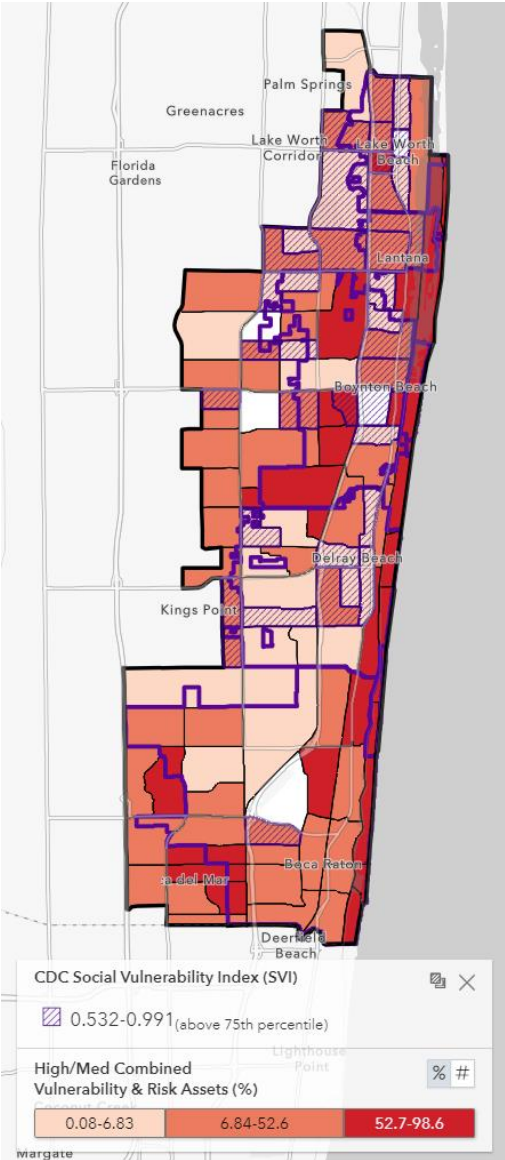


# Rainfall Induced Flooding

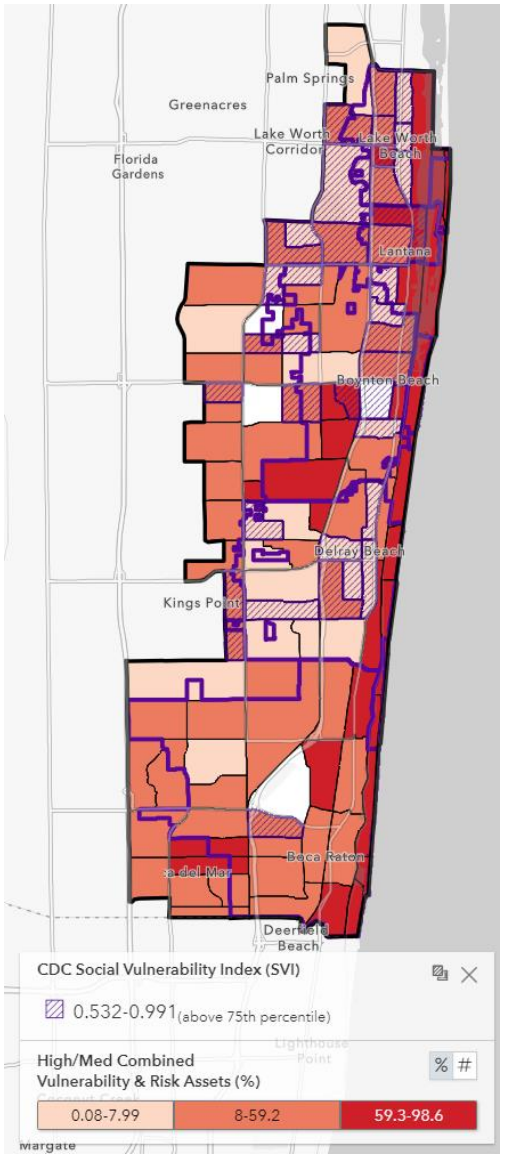
Flooding on normally dry land caused by changes in rainfall patterns



+5" (2040)



+13" (2070)



# VARAP



## **VULNERABILITY ASSESSMENT (VA)**

Assess climate impact risks for County assets within unincorporated Palm Beach County & the western municipalities



## **RESILIENCE ACTION PLAN (RAP)**

Develop an implementation strategy, priority projects, and a greenhouse gas reduction options for County infrastructure in all of Palm Beach County



# VARAP

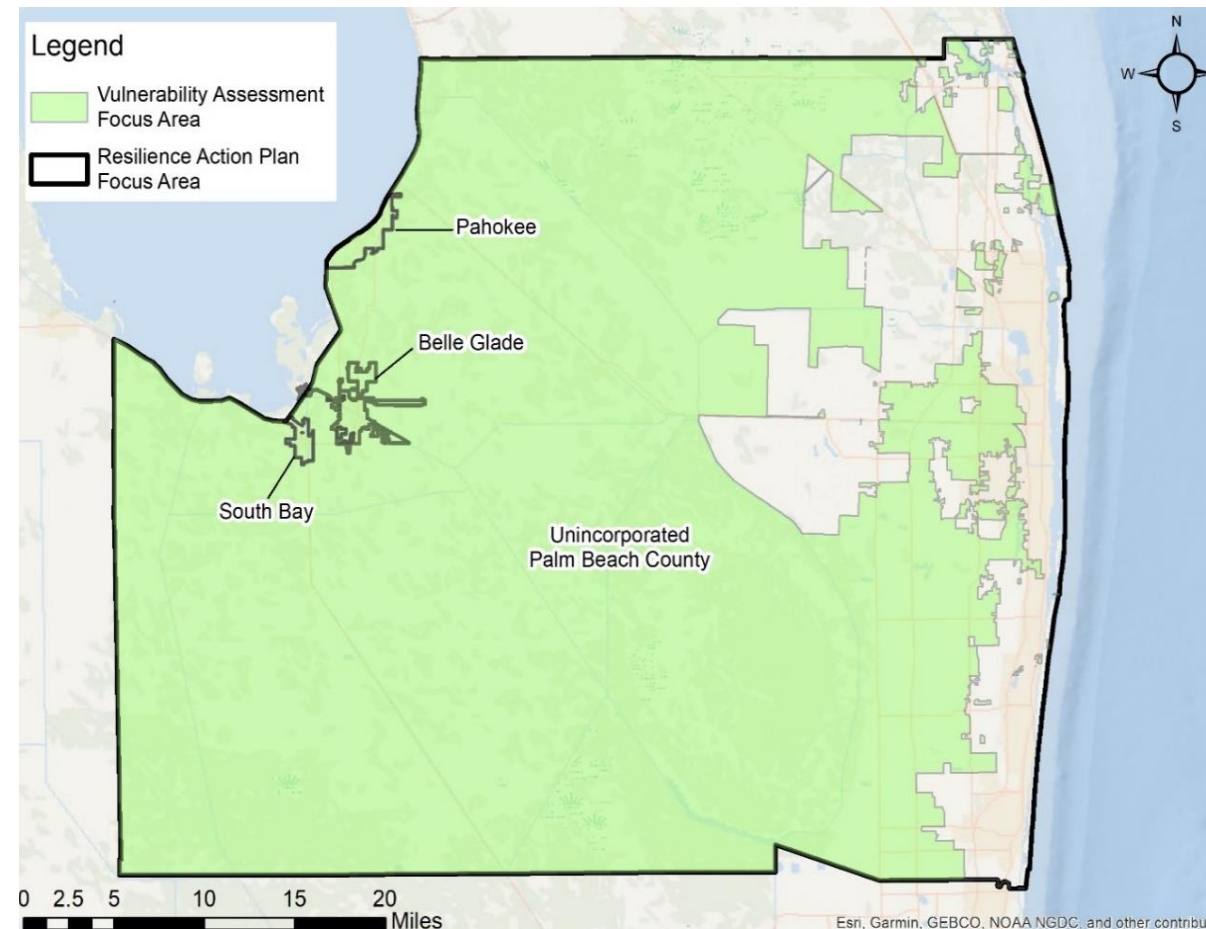
## Project Scope

### 1. Vulnerability Assessment

- Includes Unincorporated PBC
- Select Assets
- Identify Climate Threats
- Calculate Risks
- Incorporate Social Vulnerability
- Resilient Florida Compliant
- Create Visualization Tool

### 2. Resilience Action Plan

- Includes Whole County
- Prioritized Project List
- Detailed Project Descriptions
- Equity Considered
- Net Zero Feasibility



# VARAP

## Community Engagement

Strengthen capacity of frontline communities for climate resilience planning to ensure more equitable processes and outcomes for VARAP.





THANK YOU



Megan Houston  
Resilience Director  
[mshouston@pbcgov.org](mailto:mshouston@pbcgov.org)

SCAN ME



[www.pbcgov.com/resilience](http://www.pbcgov.com/resilience)

## 8. Around the Table Updates from:

**Local,  
Tribal, and  
State Agencies**



## 9. Public Comment:

If you would like to comment, please complete Section 6 of the public comment card and give to a meeting attendant.



3:00



## 10. Closing Remarks



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

**March 1st, 2023**



# Send us your Comments and Feedback

Please take a moment to send us your comments and suggestions for the upcoming meetings and share your topics of interest with us.



<https://forms.office.com/g/4X2kHNe1dj>

# 2023 Southwest Florida Climate Summit

## Invitation to Register

<https://www.chnep.org/2023-climate-summit>



**March 15-16, 2023**



**The Collaboratory  
(2031 Jackson Street,  
Fort Myers, FL 33901)**



**WGCU** npr NEWS  
SOUTHWEST FLORIDA

## 2023 SOUTHWEST FLORIDA CLIMATE SUMMIT



Ricardo Arduengo / AFP via Getty Images

**Register Today!**



An aerial photograph of a coastal city, likely Miami, featuring numerous high-rise apartment buildings and hotels along the waterfront. The water is a vibrant turquoise color, and several sailboats are visible. In the background, a bridge spans a body of water, and the city skyline extends to the horizon under a blue sky with scattered clouds. A swimming pool and palm trees are visible in the foreground near the buildings.

**Thank you for  
joining !**



# 11. Adjourn

Carolina Maran, P.E., Ph.D., Chief Resiliency Officer,  
SFWMD