

REVIEW AND EVALUATION OF FEMA'S COASTAL FLOOD RISK STUDY

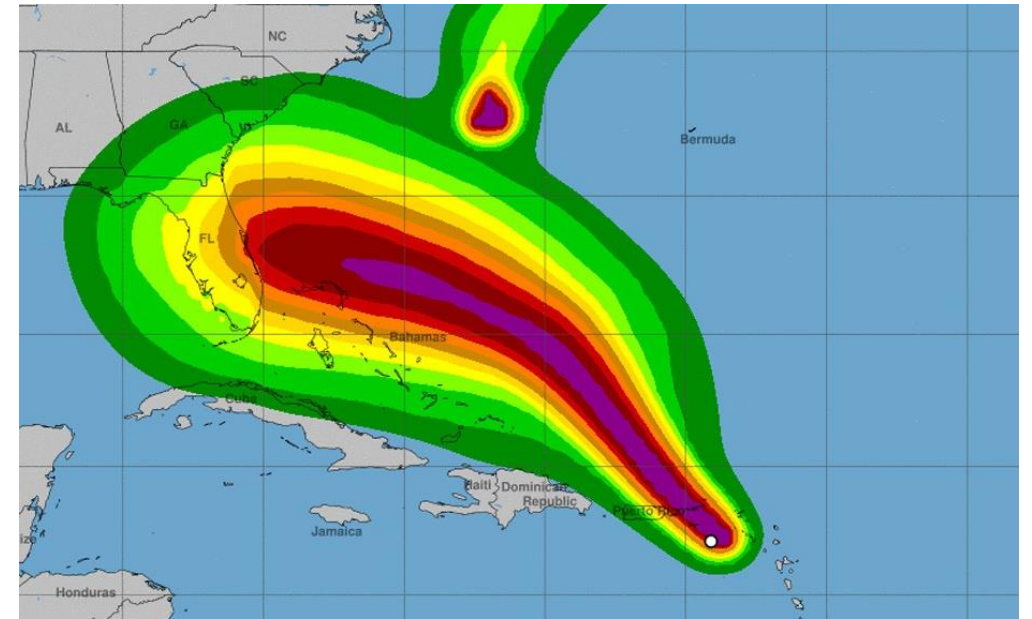


BCC Workshop
September 22, 2020

Baird.
Innovation Engineered.

AGENDA

- Background and History
- FEMA's Coastal Study
- Review and Evaluation Tasks
- Key Findings
- Process and Appeals
- Activities of Other Affected Counties
- Completed and Future Coordination
- Direction Requested / Discussion



BACKGROUND AND HISTORY

The National Flood Insurance Program (NFIP) is a voluntary Federal program intended to:

- Reduce future flood damage through community floodplain management ordinances, and
- Provide protection for property owners by enabling the purchase of flood insurance

The Federal Emergency Management Agency (FEMA) is responsible for administering the NFIP

Flood Insurance Study (FIS) reports and Flood Insurance Rate Maps (FIRMs), prepared by FEMA, provide flood hazard information that is used to establish flood insurance premiums

FEMA periodically updates information on flood hazards

BACKGROUND AND HISTORY (CONT'D)

The most recent coastal storm surge analysis for south Florida used data and tools from the 1970s

In 2013, FEMA initiated the Coastal Flood Risk Study Project for the South Florida Study Area (Coastal Study), which includes Palm Beach, Broward, Miami-Dade and Monroe Counties

In December 2019, FEMA published preliminary FIRMs and FIS reports for coastal Palm Beach County

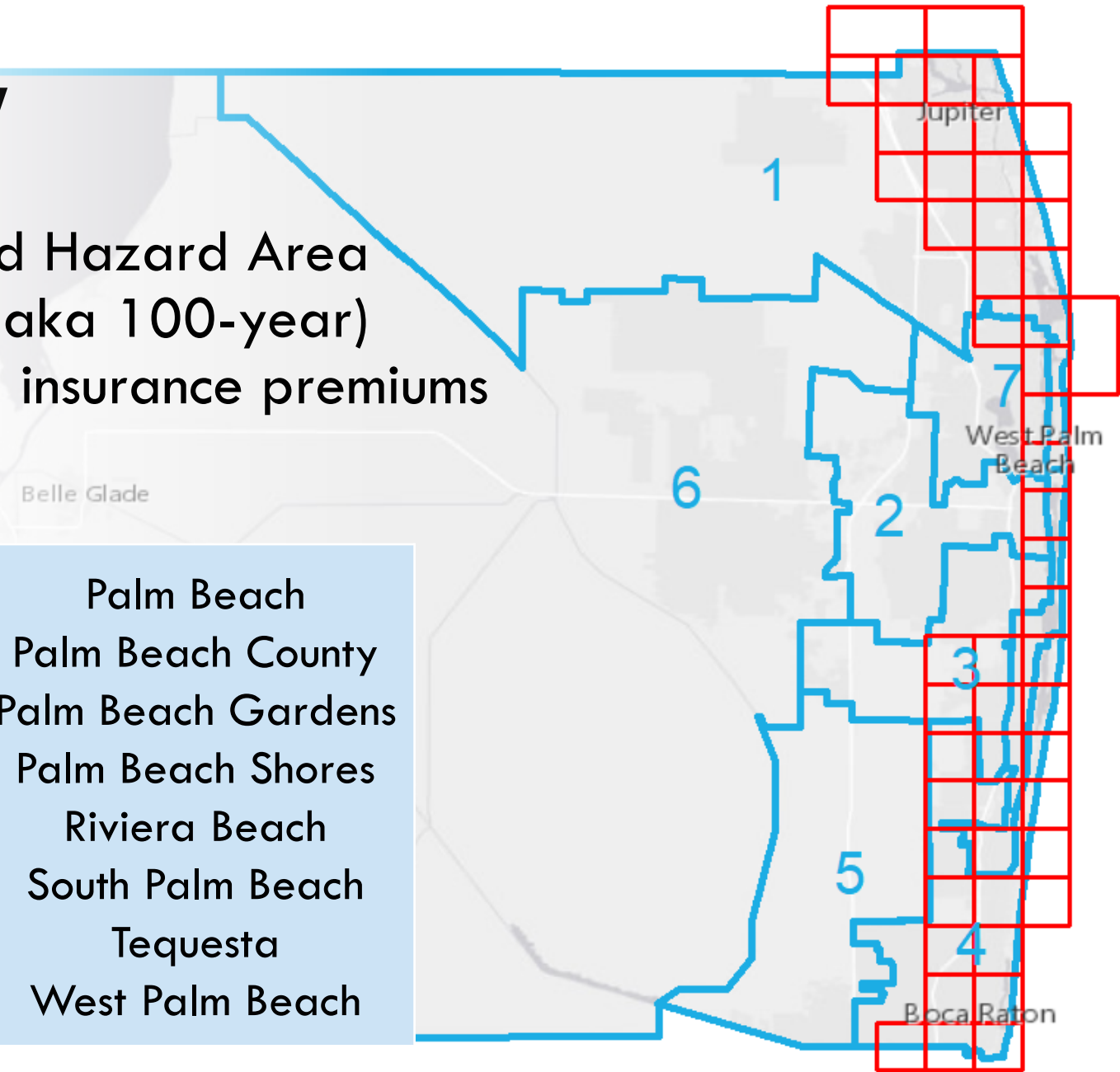
In January 2020, the County issued a task order to an engineering consultant to review and evaluate the data and methods used by FEMA

FEMA'S COASTAL STUDY

FEMA is updating the Special Flood Hazard Area (SFHA) for the 1% annual chance (aka 100-year) event – which is the basis for flood insurance premiums

Municipalities Affected:

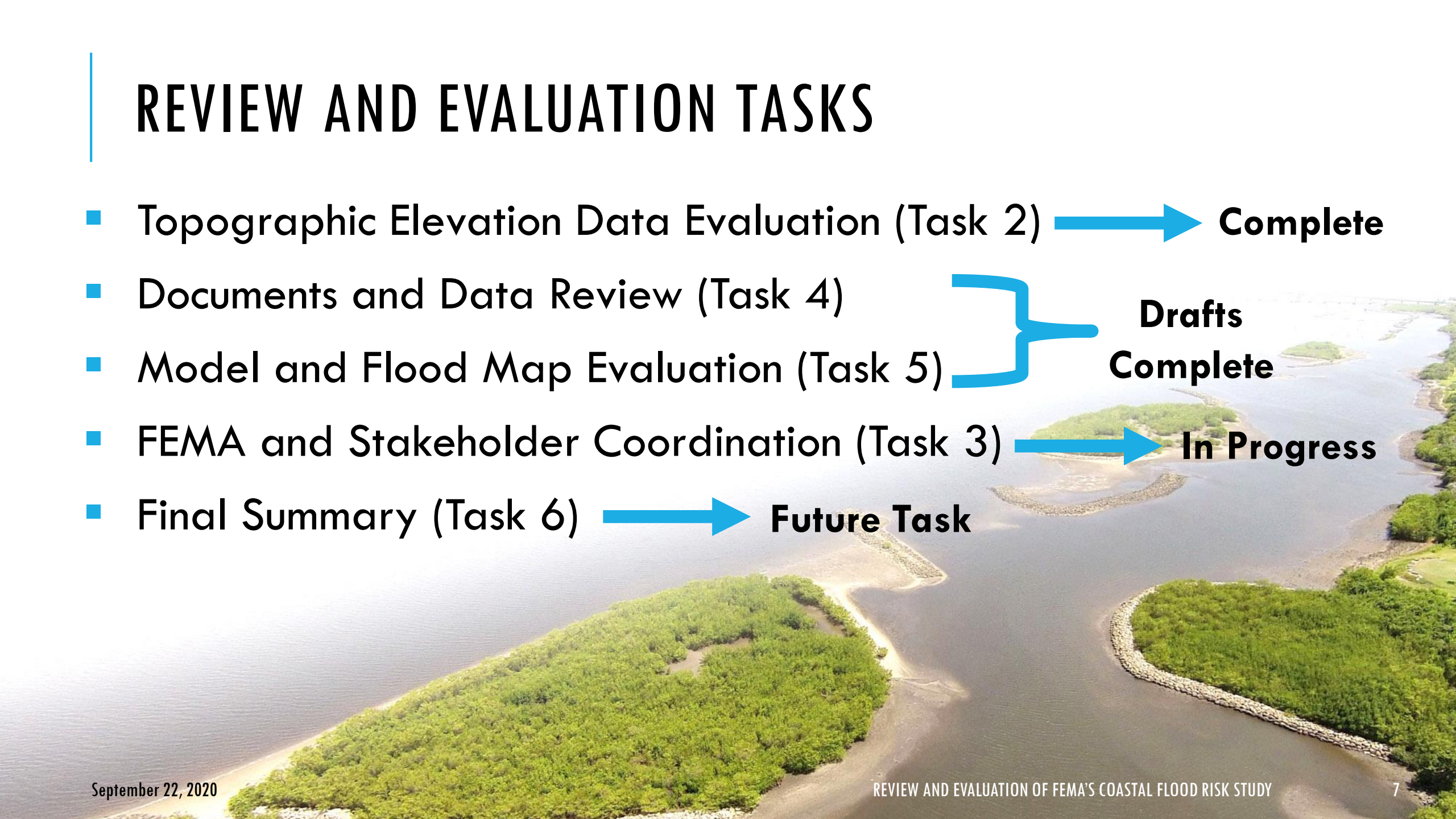
Boca Raton	Jupiter	Palm Beach
Boynton Beach	Jupiter Inlet Colony	Palm Beach County
Briny Breezes	Lake Park	Palm Beach Gardens
Delray Beach	Lake Worth Beach	Palm Beach Shores
Gulfstream	Lantana	Riviera Beach
Highland Beach	Manalapan	South Palm Beach
Hypoluxo	North Palm Beach	Tequesta
Juno Beach	Ocean Ridge	West Palm Beach





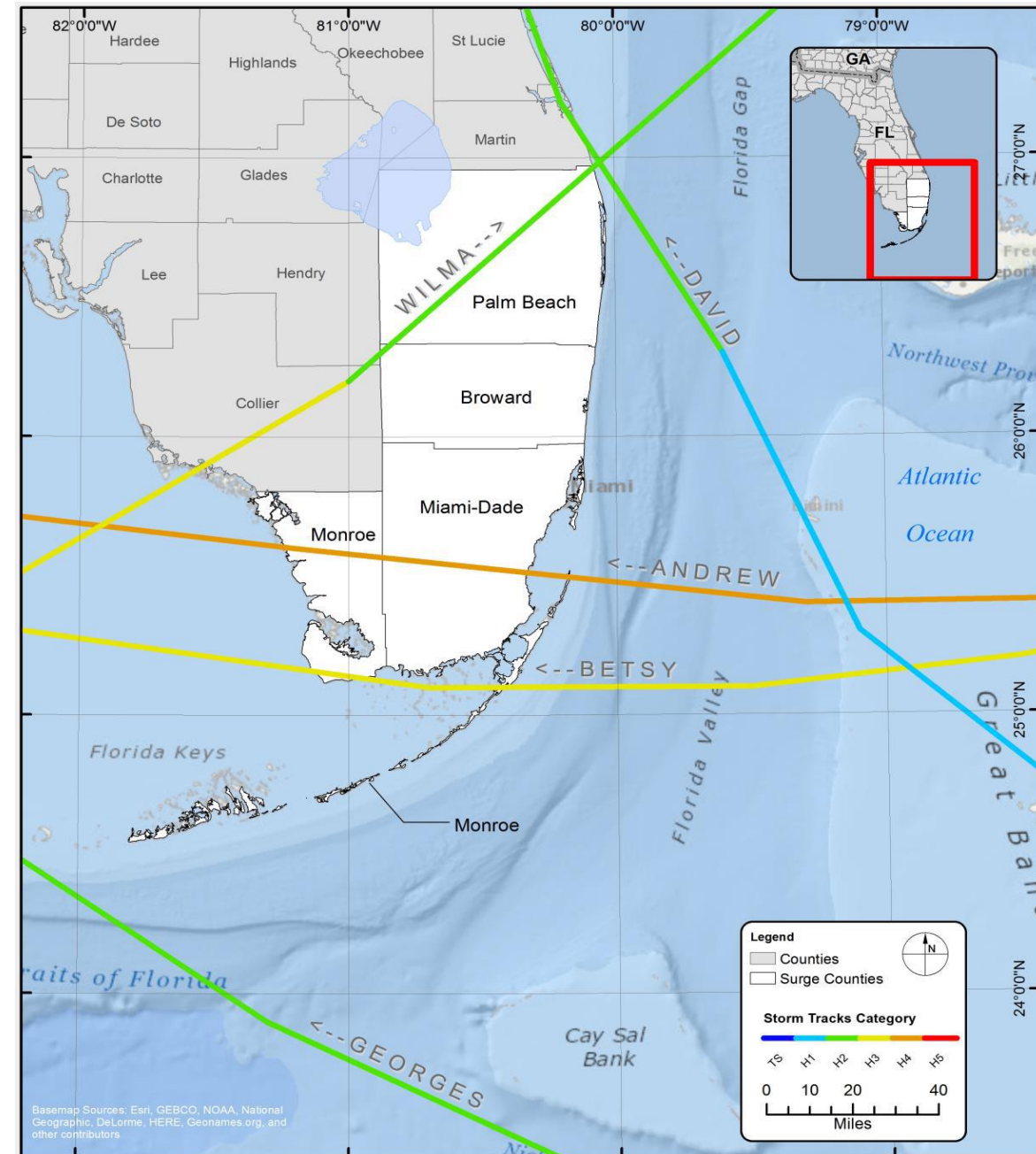
September 27, 2020

REVIEW AND EVALUATION TASKS

- Topographic Elevation Data Evaluation (Task 2) → **Complete**
 - Documents and Data Review (Task 4)
 - Model and Flood Map Evaluation (Task 5)
 - FEMA and Stakeholder Coordination (Task 3) → **In Progress**
 - Final Summary (Task 6) → **Future Task**
- Drafts Complete**
- 

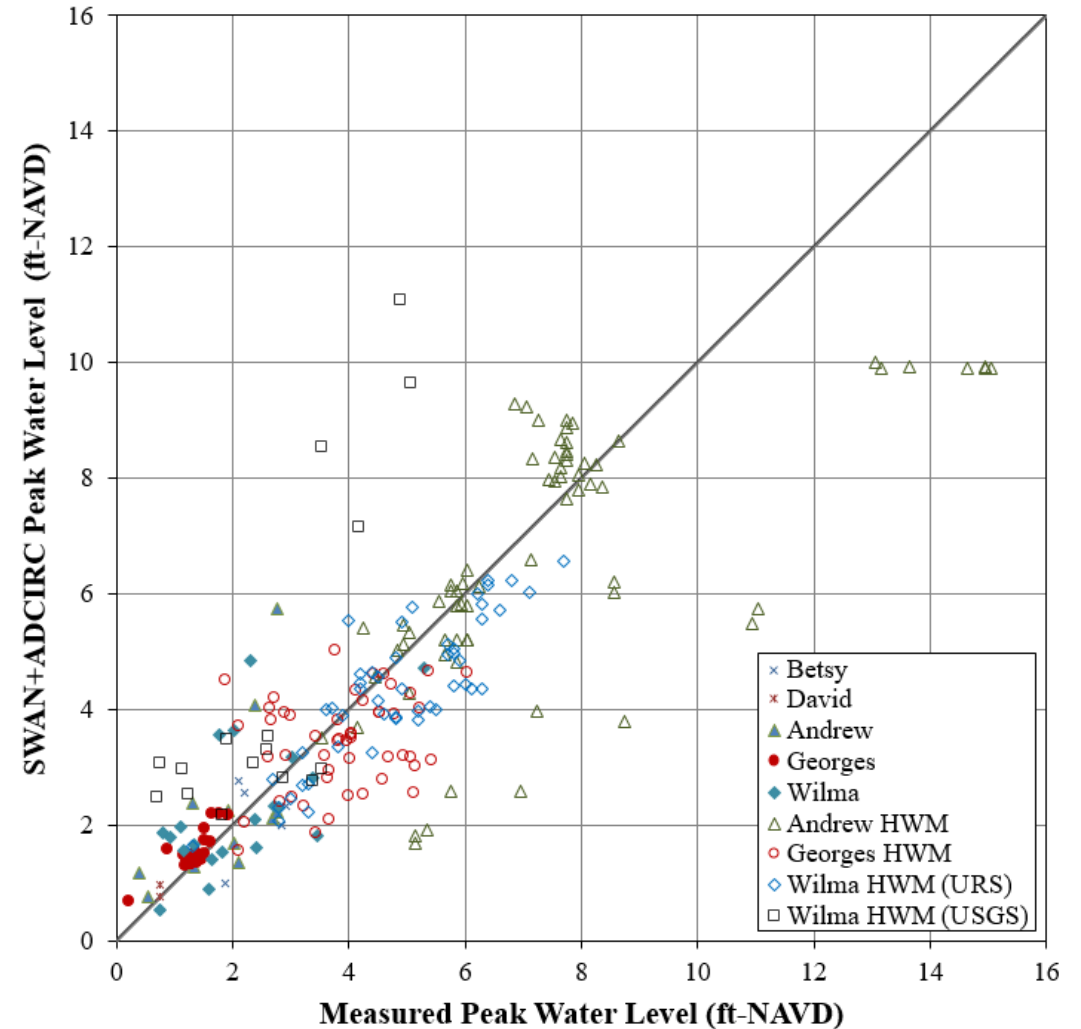
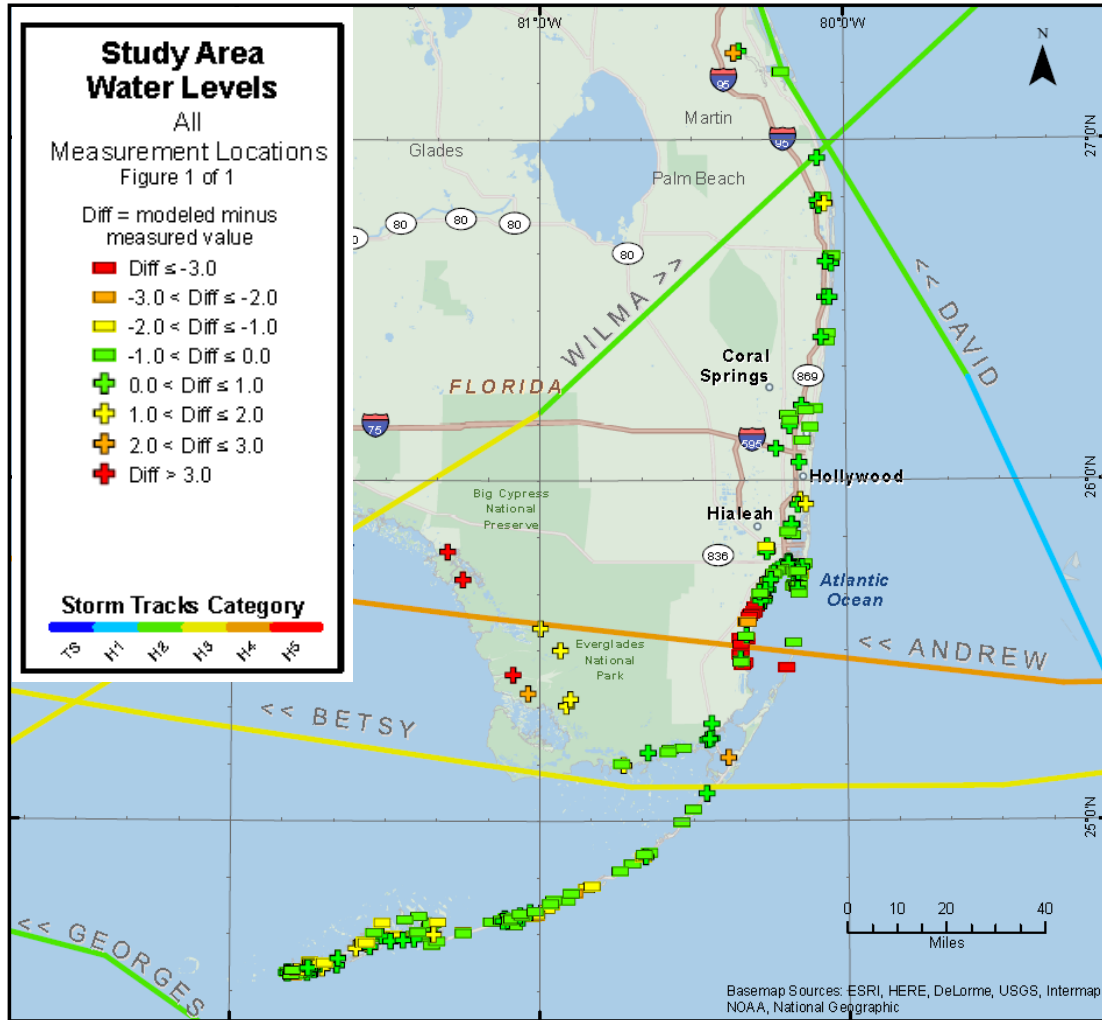
KEY FINDINGS

- FEMA's validation storms are not representative for Palm Beach County
- Hurricane Betsy (1965)
- Hurricane David (1979)
- Hurricane Andrew (1992)
- Hurricane Georges (1998)
- Hurricane Wilma (2005)



KEY FINDINGS (CONT'D)

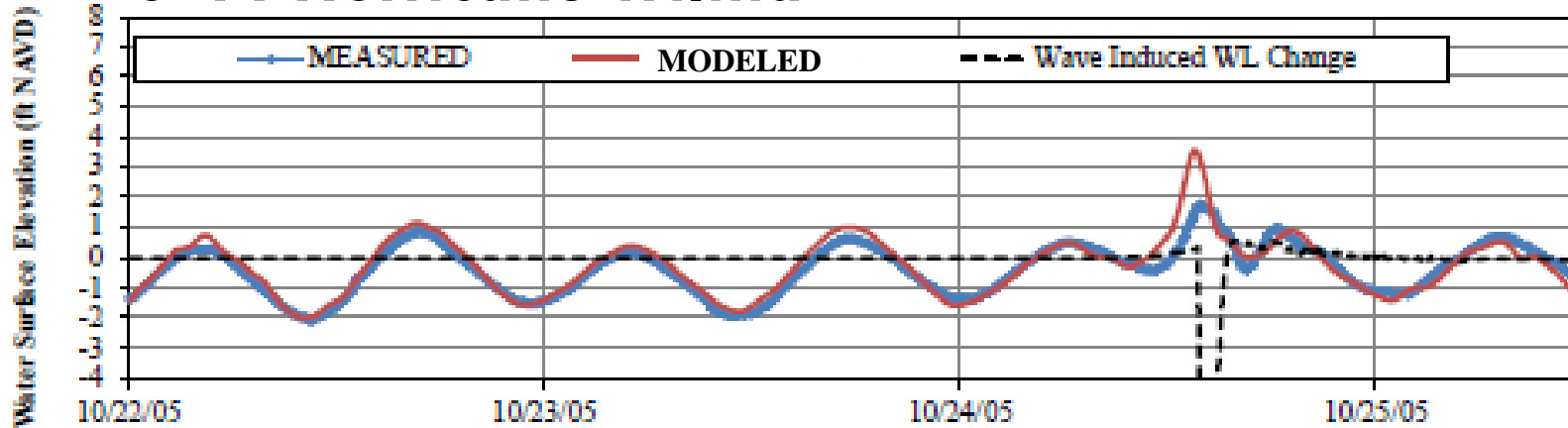
- FEMA's model setup had limited accuracy in simulating storm surge



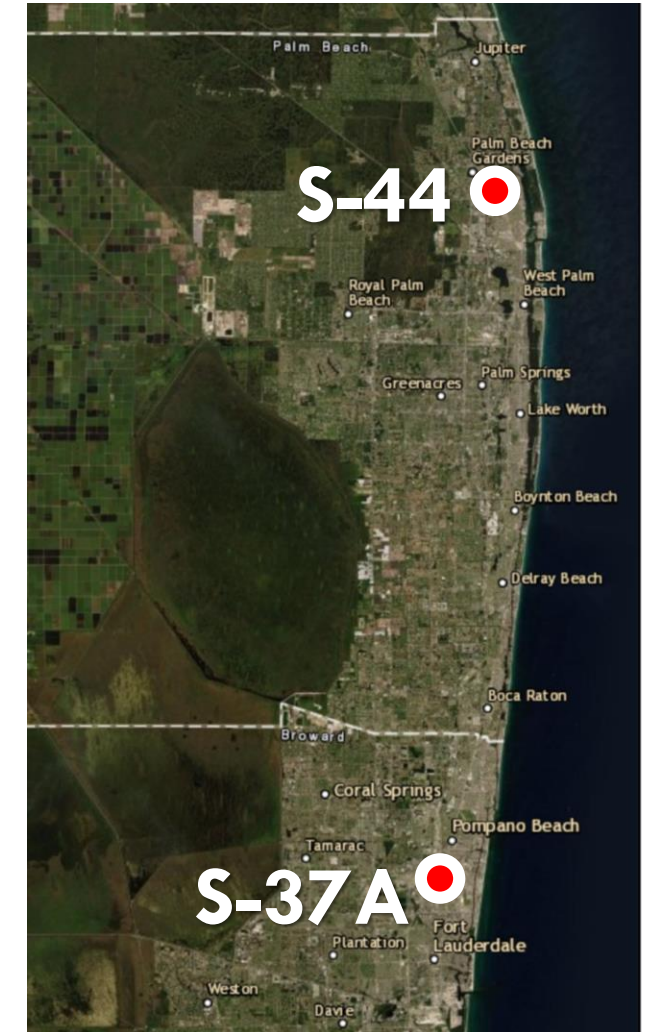
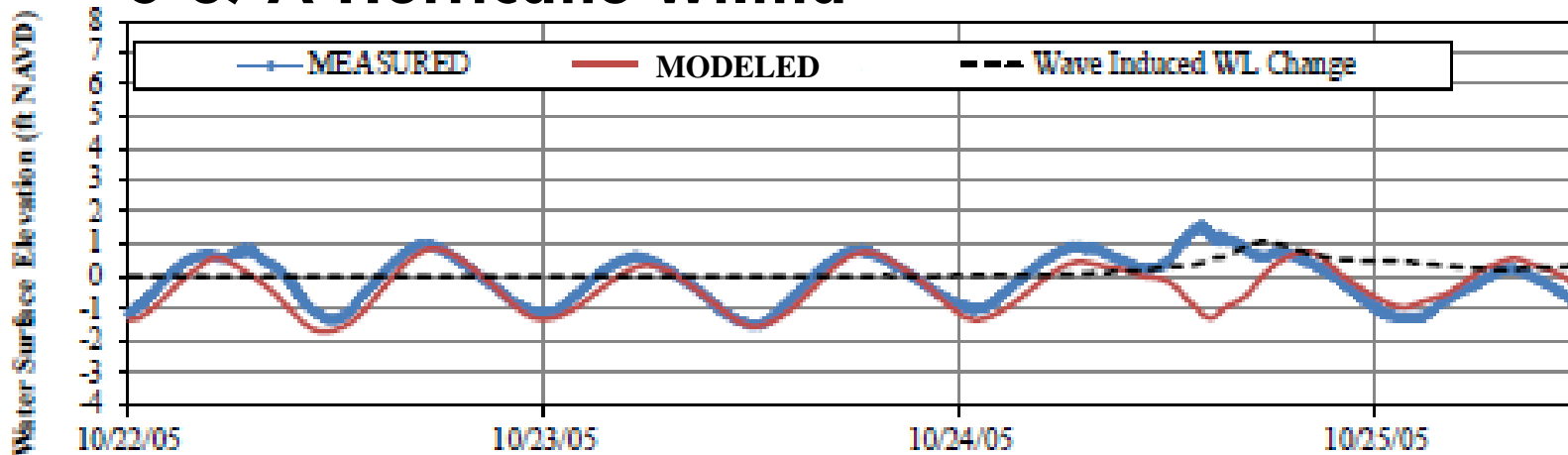
KEY FINDINGS (CONT'D)

- FEMA's model setup had limited accuracy in simulating storm surge (cont'd)

S-44 Hurricane Wilma

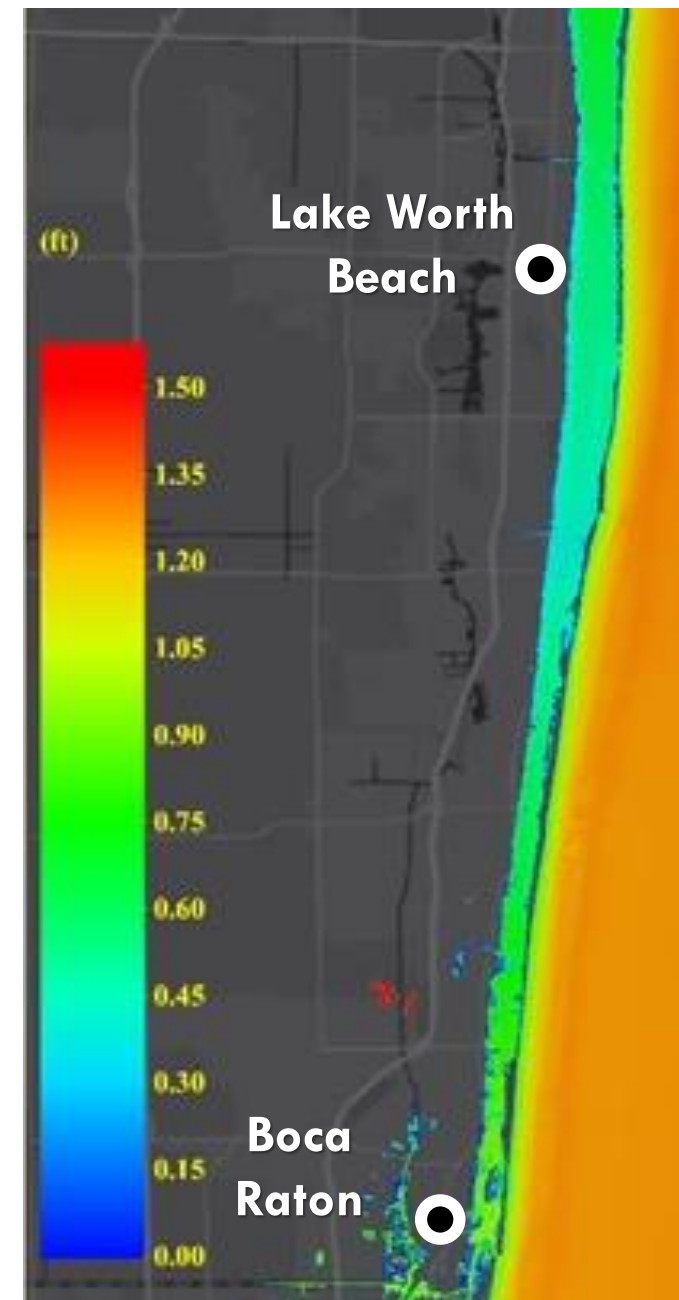
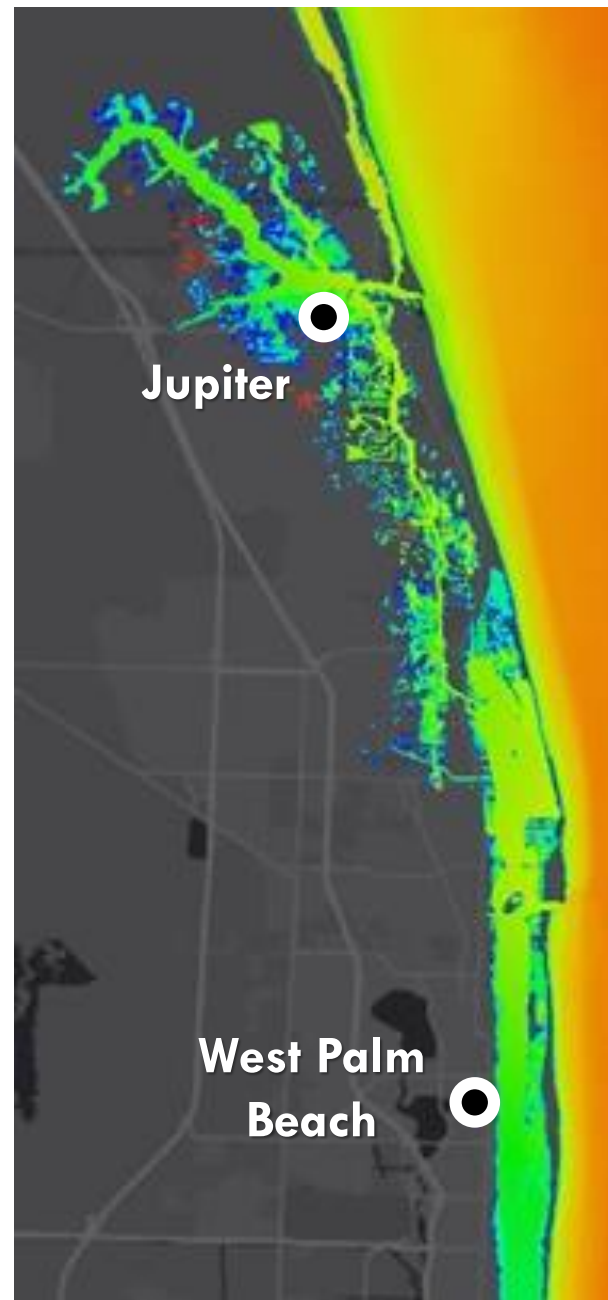


S-37A Hurricane Wilma



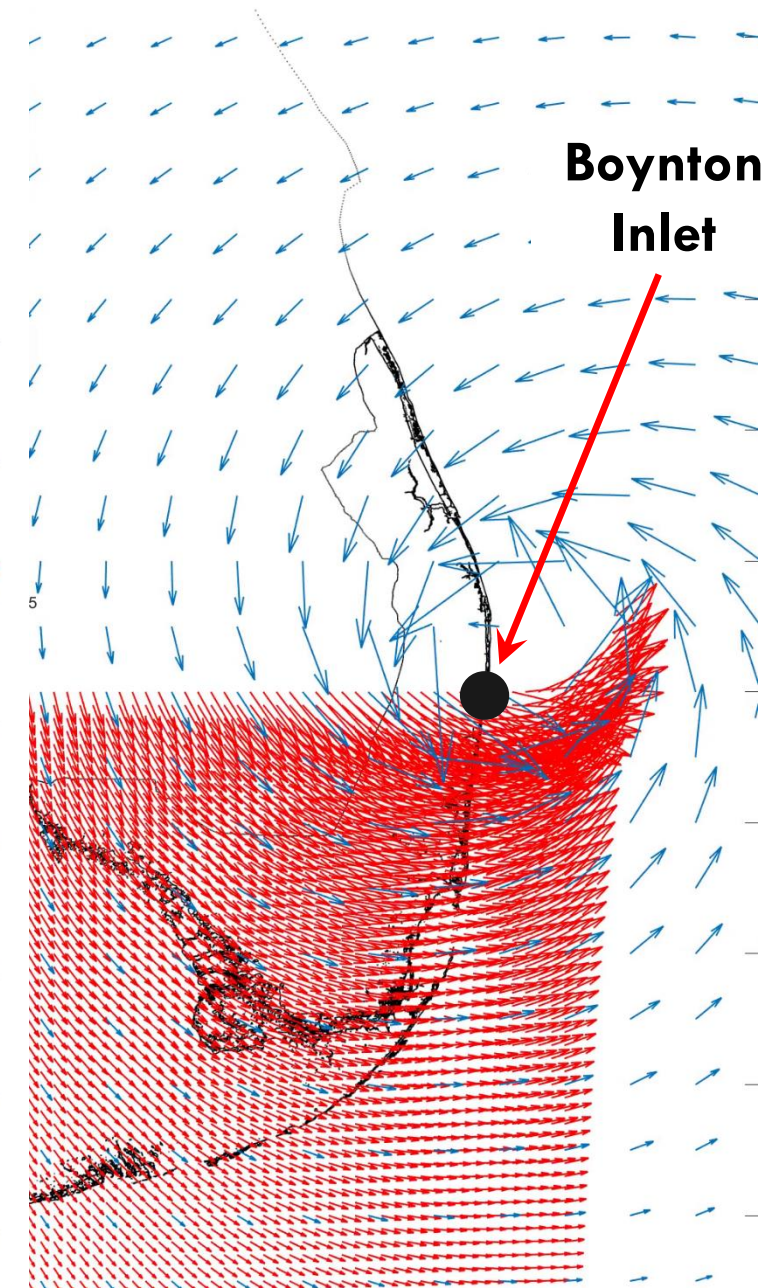
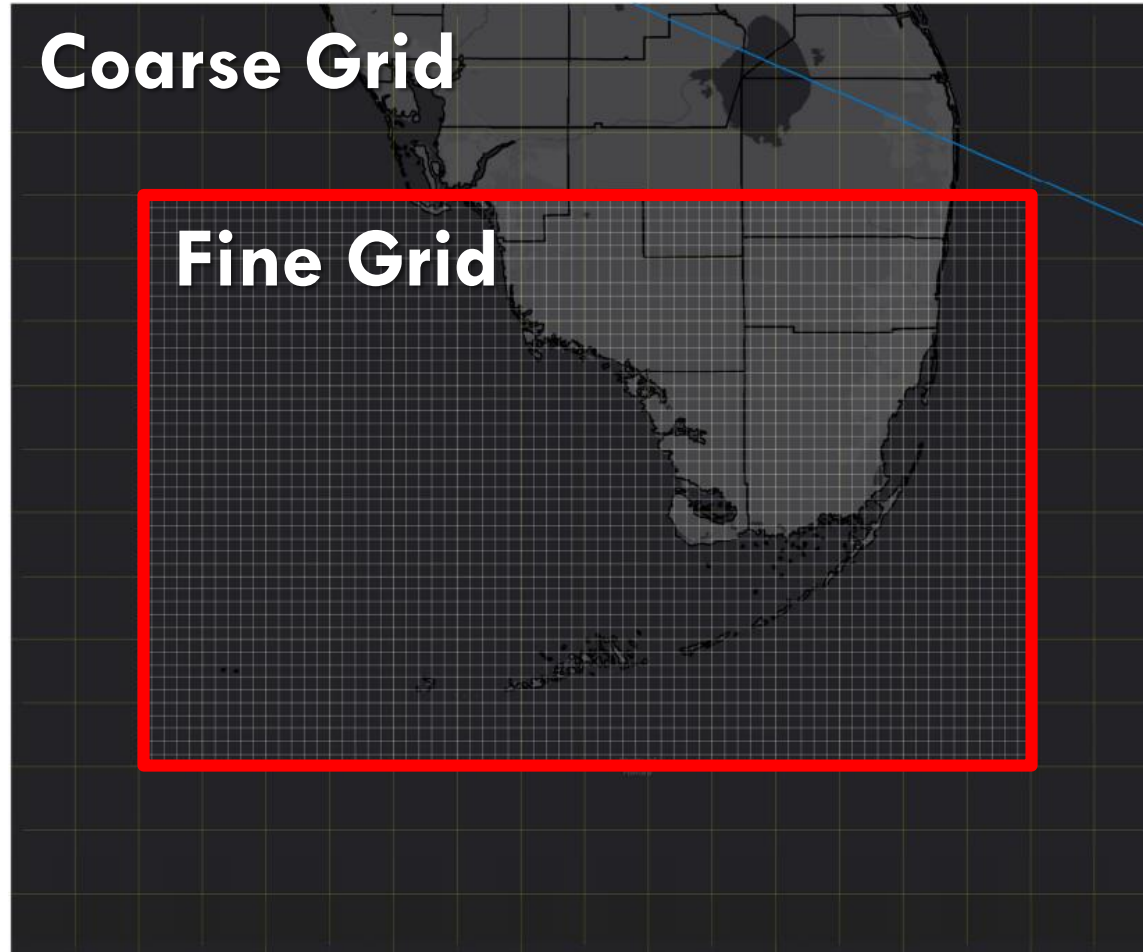
KEY FINDINGS (CONT'D)

- FEMA's 1% annual chance stillwater elevations (SWEL) offshore of Palm Beach County appear high due to combined effects of model validation and inclusion of west coast storms



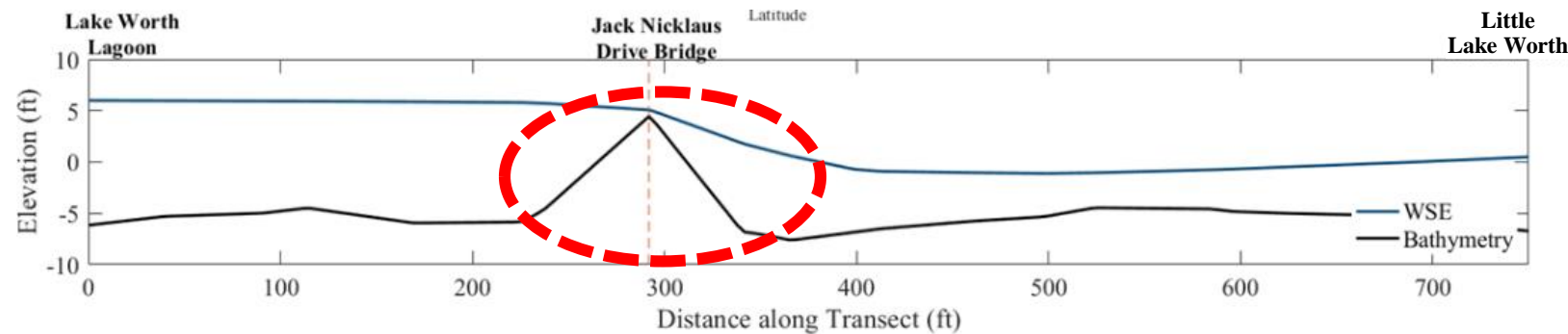
KEY FINDINGS (CONT'D)

- FEMA's results appear to have been impacted by model grids



KEY FINDINGS (CONT'D)

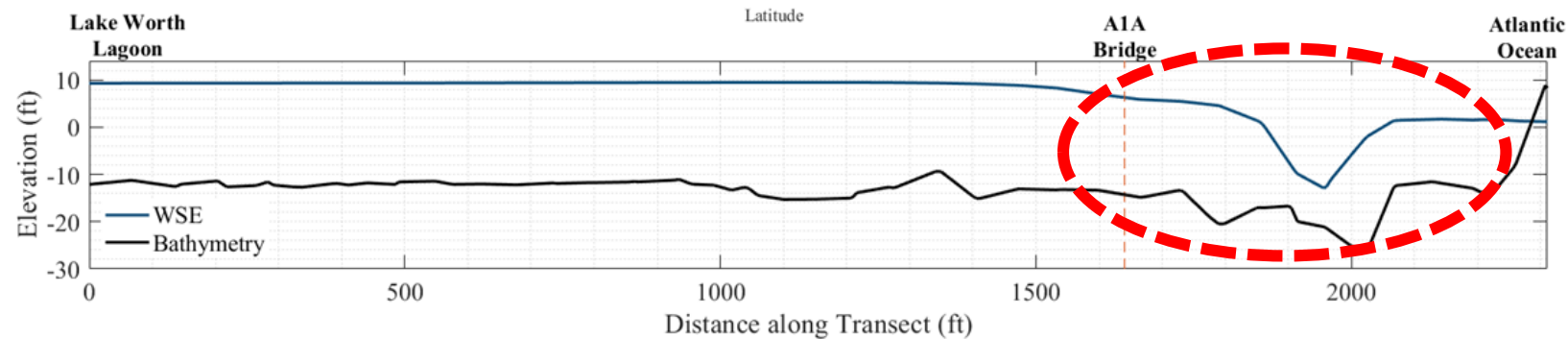
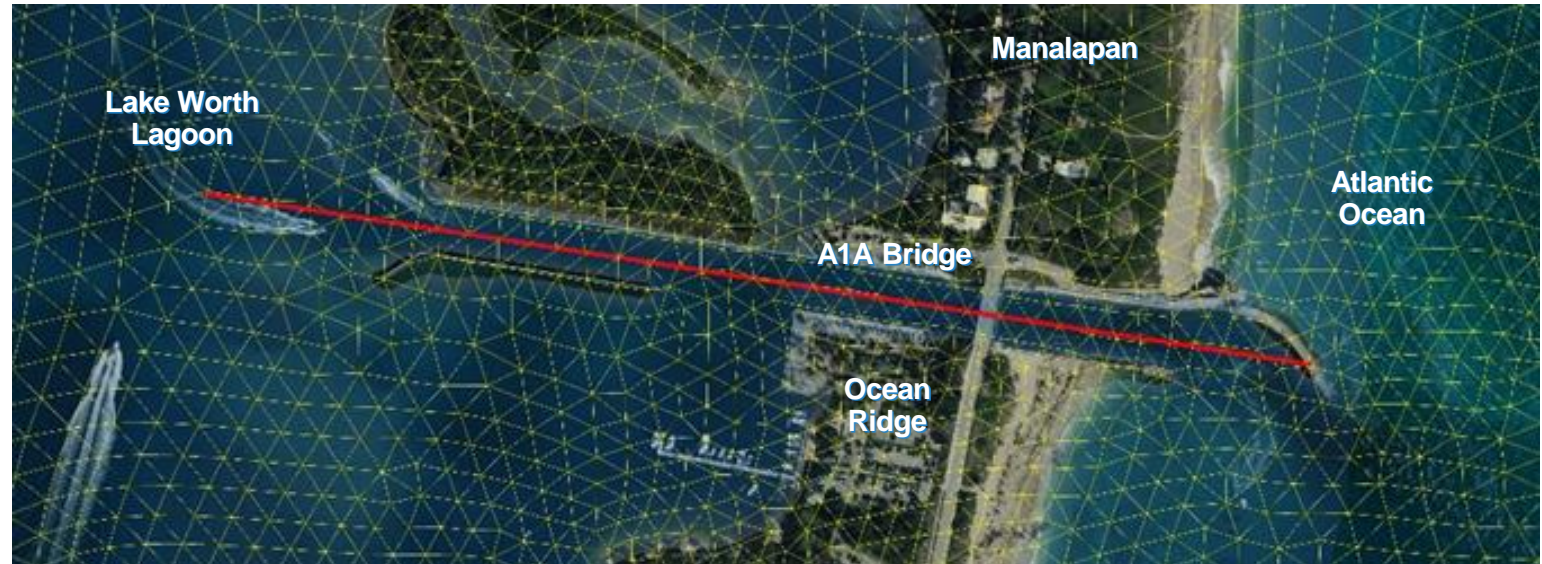
- FEMA's model indicated a channel bottom elevation of +4 feet NAVD88 at **Jack Nicklaus Drive (A1A) Bridge**, which would render the 75+ foot wide channel unnavigable to boat traffic



WSE = Water Surface Elevation
Bathymetry = elevation of underwater terrain

KEY FINDINGS (CONT'D)

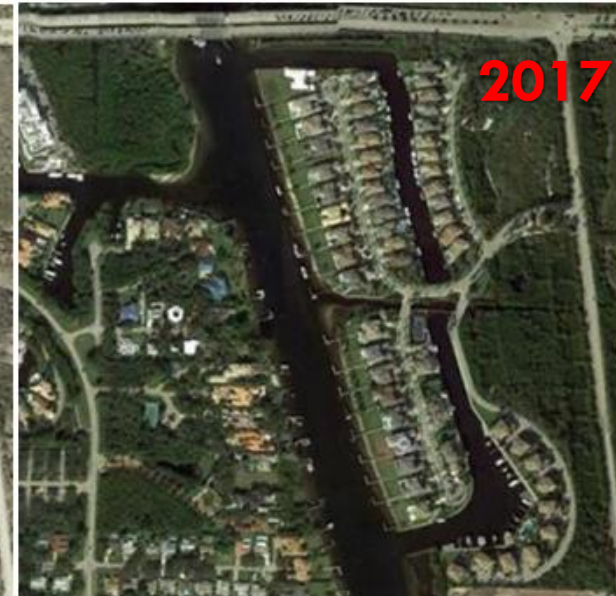
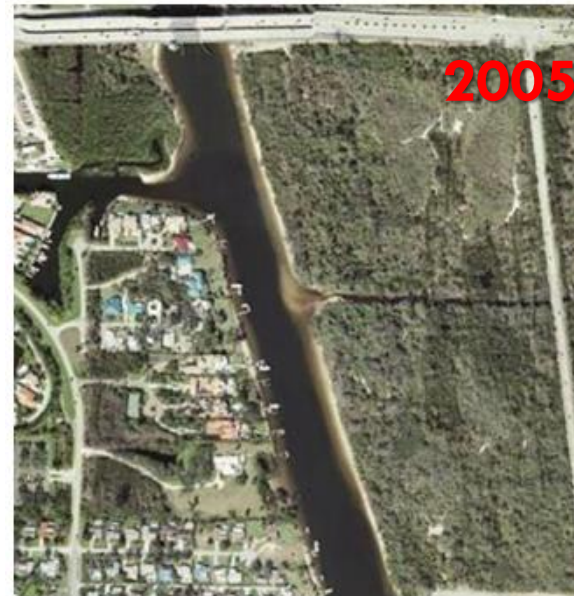
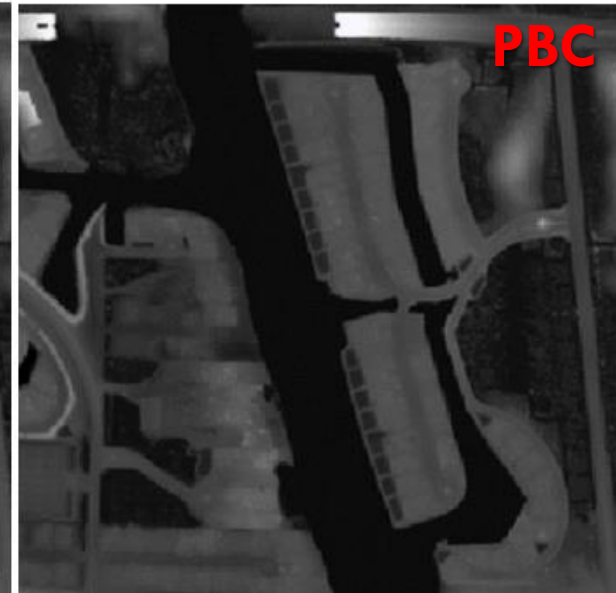
- FEMA's model did not allow water to flow out through the **Boynton Inlet** creating unrealistic water surface elevations in the inlet and **Lake Worth Lagoon**



WSE = Water Surface Elevation
Bathymetry = elevation of underwater terrain

KEY FINDINGS (CONT'D)

- The County's LiDAR-based ground elevation data acquired in 2016-2017 was not able to be used by FEMA
- Differences were observed between the County's elevation data and FEMA's elevation data within the Special Flood Hazard Area (SFHA):
 - 78% of area: within survey tolerance (± 0.5 feet)
 - 15% of area: County elevations are above FEMA elevations (≥ 0.5 feet)
 - 7% of area: County elevations are below FEMA elevations (≥ 0.5 feet)



KEY FINDINGS (CONT'D)

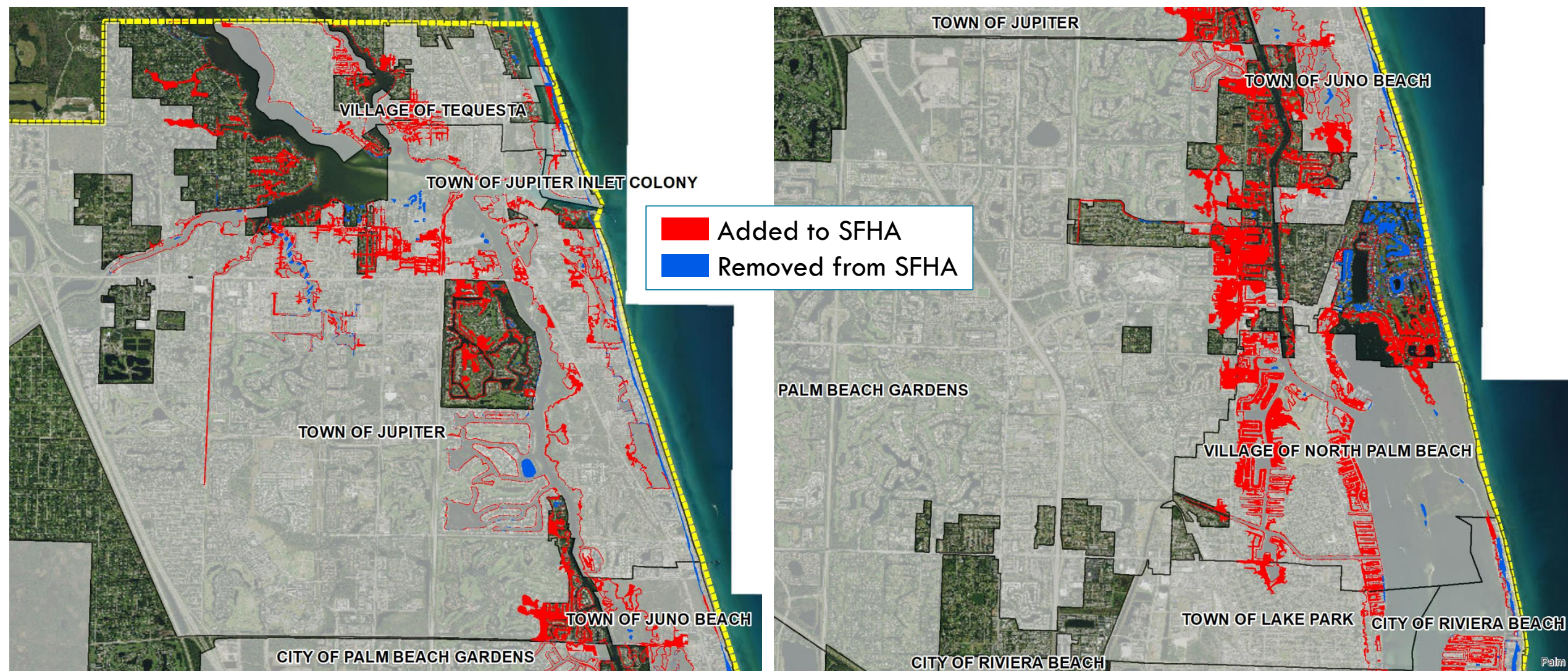


- Special Flood Hazard Area (SFHA) net increase of ~1,900 acres (as compared to 2017 FIRMs)
- Properties with mortgages within SFHA are required to have flood insurance
- Higher flood insurance premiums can be expected for affected properties

■ Added to SFHA
■ Removed from SFHA

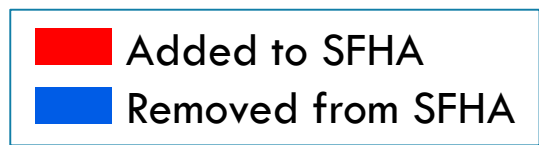
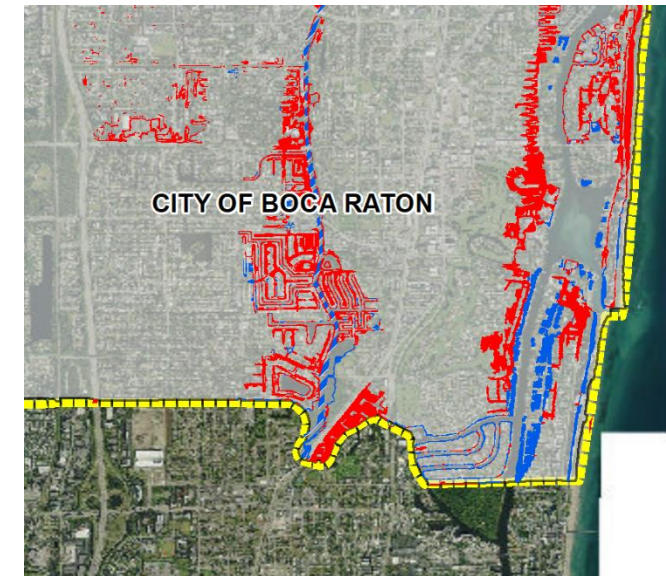
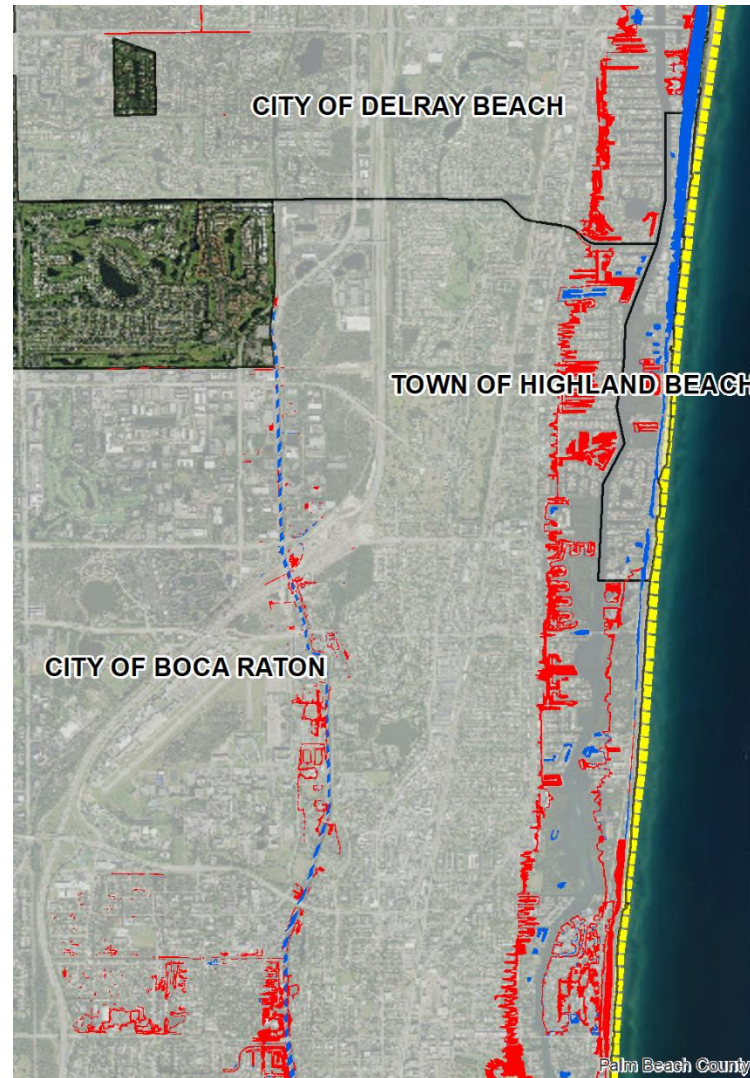
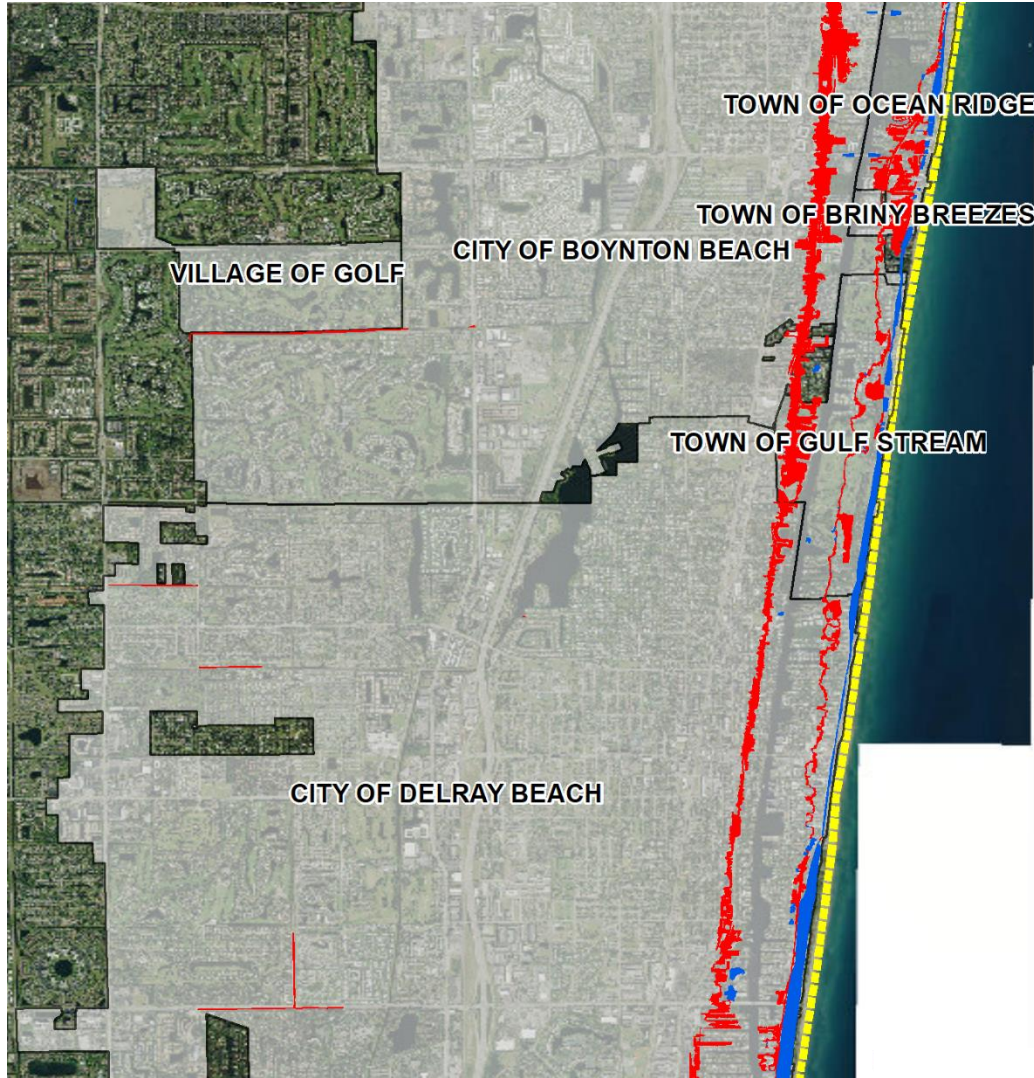
KEY FINDINGS (CONT'D)

SPECIAL FLOOD HAZARD AREA CHANGES SINCE LAST FIRM (1 OF 3)



KEY FINDINGS (CONT'D)

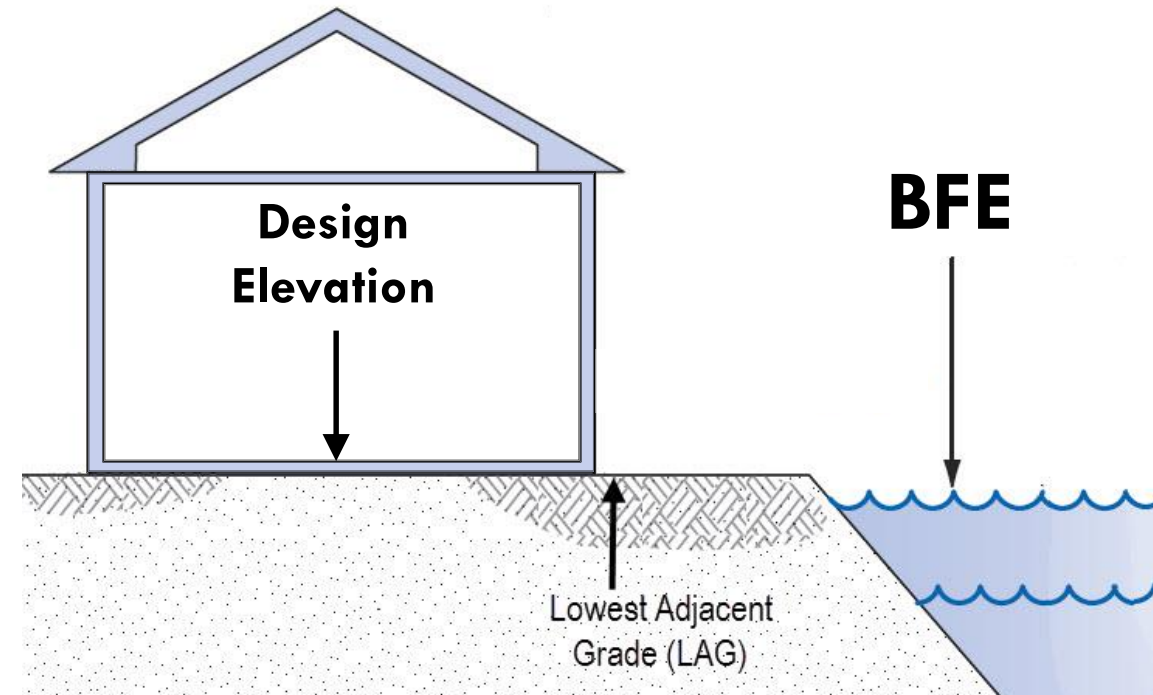
SPECIAL FLOOD HAZARD AREA CHANGES SINCE LAST FIRM (3 OF 3)



KEY FINDINGS (CONT'D)

BASE FLOOD ELEVATIONS (1 OF 3)

- FEMA defines **Base Flood Elevations (BFEs)** within the SFHA
- **BFEs** are elevations to which surface water is expected to rise to or exceed during the base flood (aka 1% annual chance flood or 100-year flood)
- The **design elevation** is the elevation that all new and substantially improved buildings must be elevated to in order to lower the risk of flood damage
- **Design elevations** are typically higher than **BFEs**
- Higher **BFEs** may prevent property owners from making improvements to existing structures



KEY FINDINGS (CONT'D)

BASE FLOOD ELEVATIONS (2 OF 3)

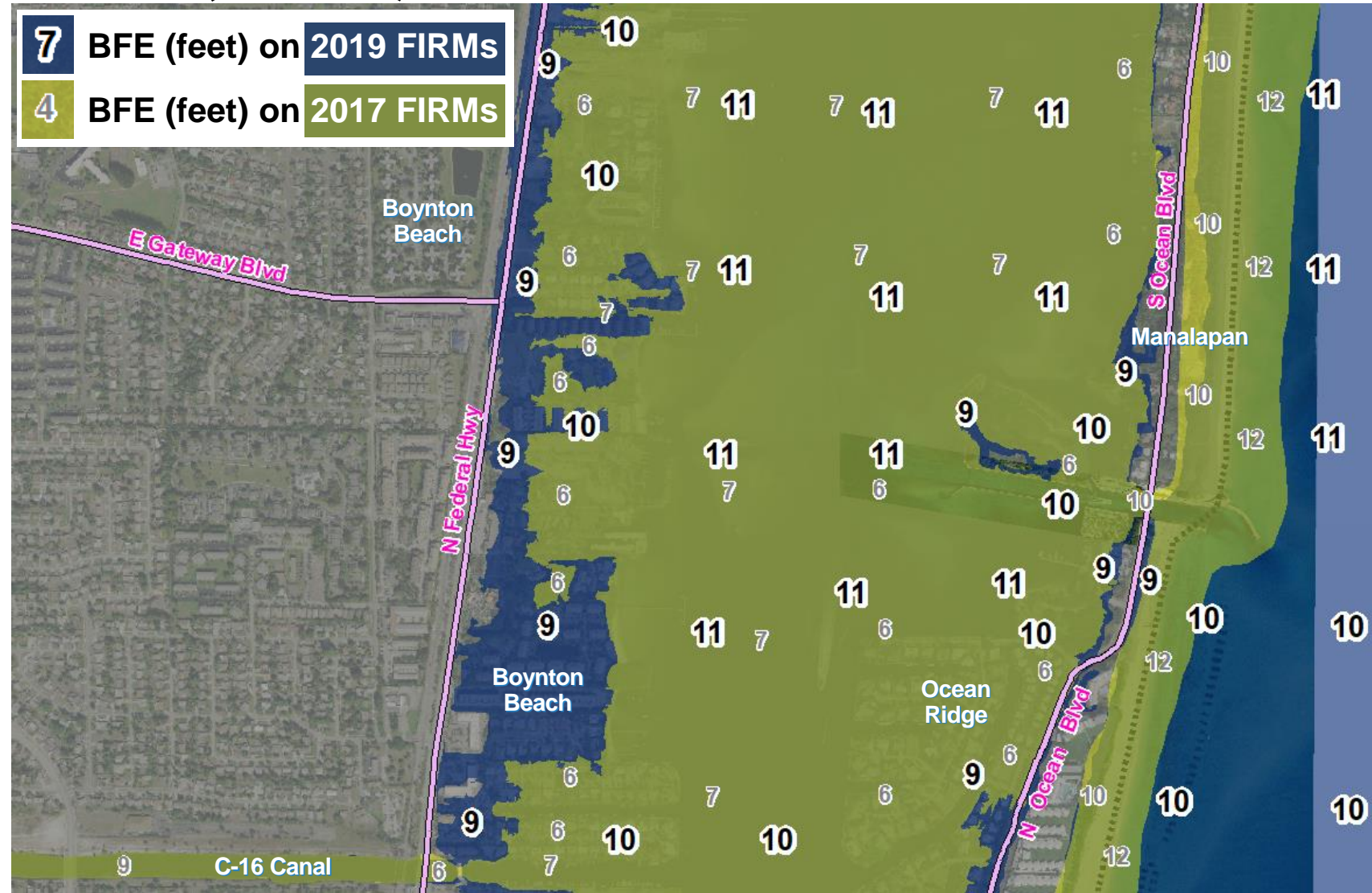
- While BFEs decreased or remained the same in some areas of the County, many areas have higher BFEs as compared to the 2017 FIRM



KEY FINDINGS (CONT'D)

BASE FLOOD ELEVATIONS (3 OF 3)

- While BFEs decreased or remained the same in some areas of the County, many areas have higher BFEs as compared to the 2017 FIRMs



PROCESS AND APPEALS

■ Preliminary Maps Issued – December 20, 2019

■ Consultation Coordination Officer Meeting and Public Open Houses – February 4-5, 2020

■ TBD (late 2020 or early 2021)

■ Begins after 2nd notice published in local newspaper

■ Duration TBD based on appeal(s)

■ Letter of Final Determination

■ Maps and new building requirements are effective; **Communities must adopt FIRMs into floodplain ordinances**

**WE ARE
HERE**



**Preliminary
Phase**

Meetings

**Publish
Federal
Register Notice**

**90-day Appeal
and Comment
Period**

**Resolve
Appeals and
Finalize Maps**

**6-month
Compliance
Period**

PROCESS AND APPEALS (CONT'D)

- Any community or individual property owner can **appeal** proposed changes to flood hazard information or **comment** on preliminary FIRMs and FIS reports
- An appeal must be based on **data and documentation** showing the proposed flood hazard information shown on the preliminary FIRM or in the FIS report is **scientifically or technically incorrect**
- **Appellants need to demonstrate** better methodologies, assumptions or data exists and **provide alternative analyses** that incorporate those methodologies, assumptions, or data if appropriate
- The **results must show an overall change in the flood hazard information** shown on the preliminary FIRM and/or in the FIS report

ACTIVITIES OF OTHER AFFECTED COUNTIES

- **Broward County** – updated topography data and additional modeling information provided to FEMA and additional modeling requested; FEMA declined to do additional modeling and referred Broward County to the appeal process; appeal not expected
- **Miami-Dade County** – many concerns with draft work maps identified; preliminary FIRMs expected to be published in January 2021
- **Monroe County** – sent questions and requested additional information and analyses to FEMA in May 2020; FEMA responded in June 2020 that they would not be revising the study; County Commission voted in June 2020 to prepare an appeal; 90-day appeal period may start as early as Fall 2020

COMPLETED AND FUTURE COORDINATION

- **Water Resources Task Force** briefing – July 23, 2020 **COMPLETED**
- **League of Cities Environmental Committee** briefing – Sep. 2, 2020 **COMPLETED**
- **County Leadership** briefing – Sep. 9, 2020 **COMPLETED**
- **Board of County Commissioners** workshop – Sep. 22, 2020 **TODAY**
- **Stakeholder Coordination** – TBD
- **FEMA Coordination** – TBD



DIRECTION REQUESTED

Staff Recommendation

- Continue to coordinate with local stakeholders and other affected Counties
- Initiate coordination with and transmit consultant's review and evaluation deliverables to FEMA
- Provide future BCC briefing on results of FEMA coordination and potential forward paths related to a formal appeal

REVIEW AND EVALUATION OF FEMA'S COASTAL FLOOD RISK STUDY

DISCUSSION



BCC Workshop
September 22, 2020

Baird.
Innovation Engineered.