

IMPACT OF UPDATED FEMA GUIDANCE AND METHODOLOGIES TO COASTAL LOMRS AND CLOMRS

Elena Drei-Horgan, Ph.D, CFM - AECOM

Erin Benford, Coastal Scientist – AECOM

Adam Clinch, PE - AECOM

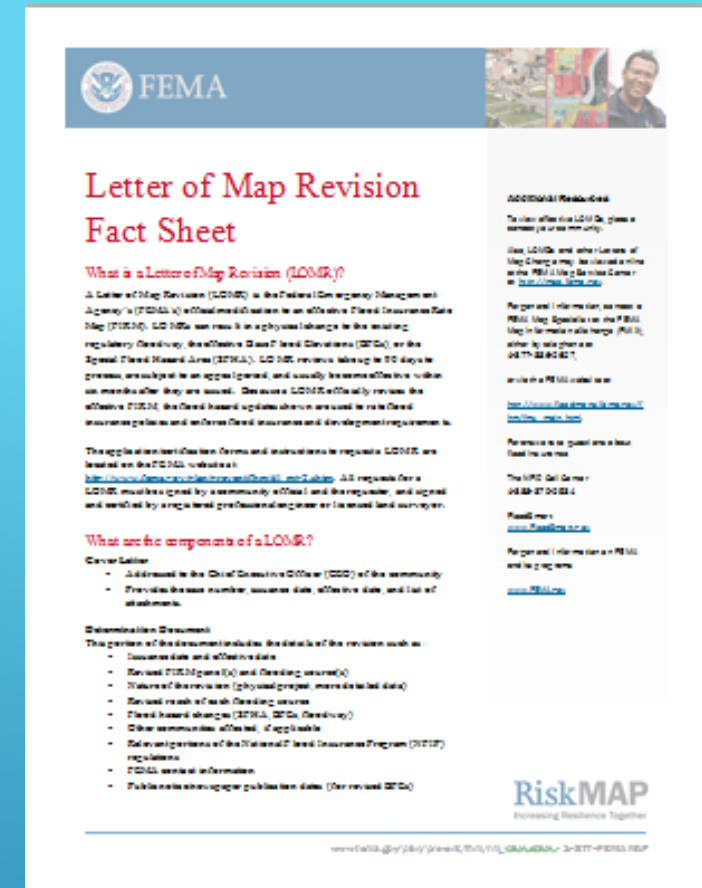


WHAT IS A LOMR?

- ▶ Official modification to an effective Flood Insurance Rate Map (FIRM).
- ▶ Physical change to the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA).

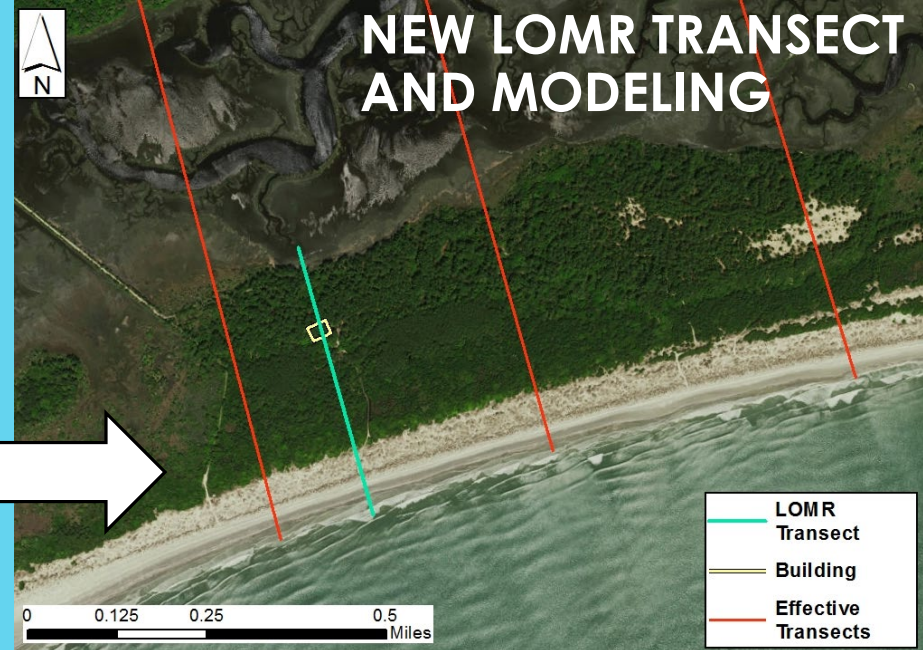
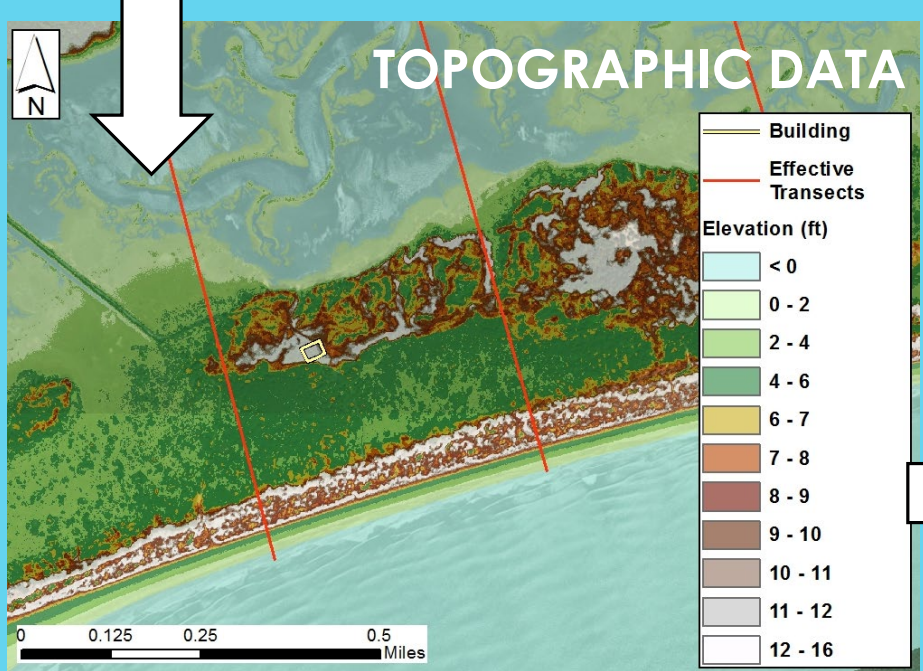
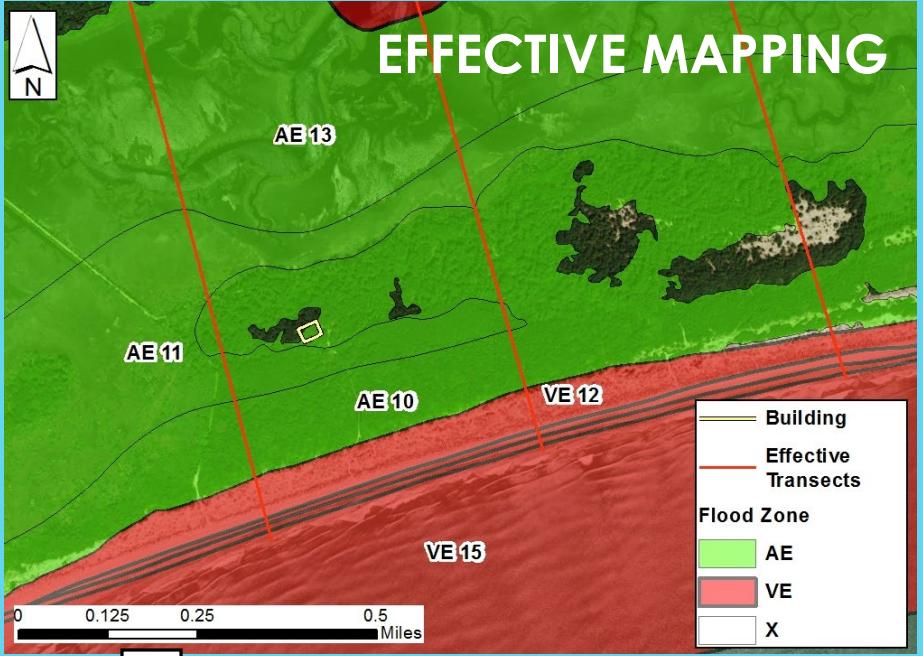
WHAT IS A CLOMR?

- ▶ FEMA's comment on a proposed project that would, upon construction, result in the modification of the existing regulatory floodway, the effective BFEs, or the SFHA.
- ▶ Does not revise an effective FIRM; rather, it indicates whether the project, if completed as proposed, would be eligible for a LOMR.



WHEN C/LOMR?

- ▶ New topographic data
- ▶ Updated modeling
- ▶ Property Changes (i.e. New construction)
- ▶ More detailed analyses



BASIC DATA REQUIREMENTS:

- ▶ Application/certification forms
- ▶ Community acknowledgment (from each impacted community)
- ▶ Hydrologic computations/files*
- ▶ Hydraulic analysis/files*
- ▶ Certified topographic workmap with SFHA and floodway delineations*
- ▶ Annotated FIRM & FIS report
- ▶ Project narrative and site photographs (optional)

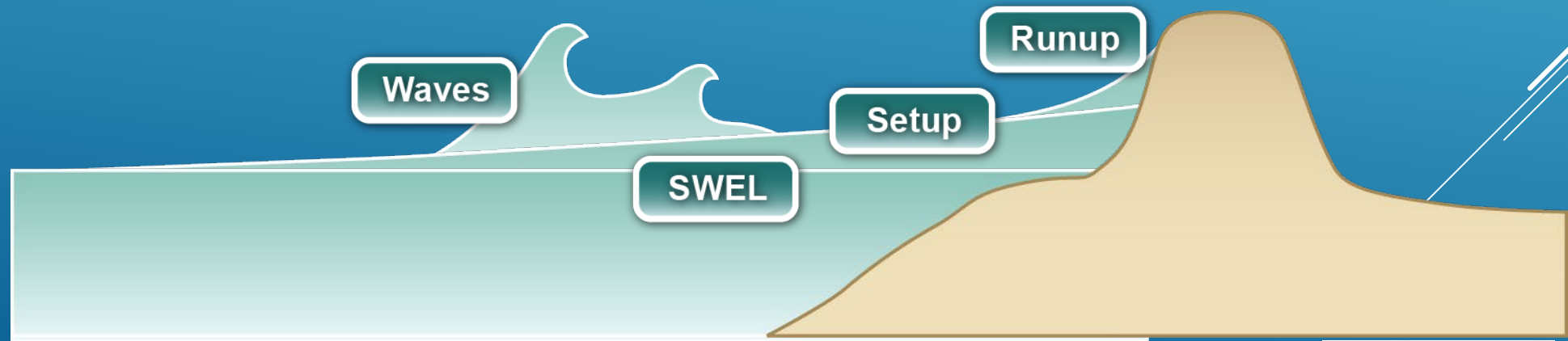
** If applicable*

REGULATORY REQUIREMENTS:

- ▶ Notification to any property owners impacted by increased flood hazards (SFHA, BFE, and/or floodway).
- ▶ Public notice of any floodway change (NFIP, Part 65.7)

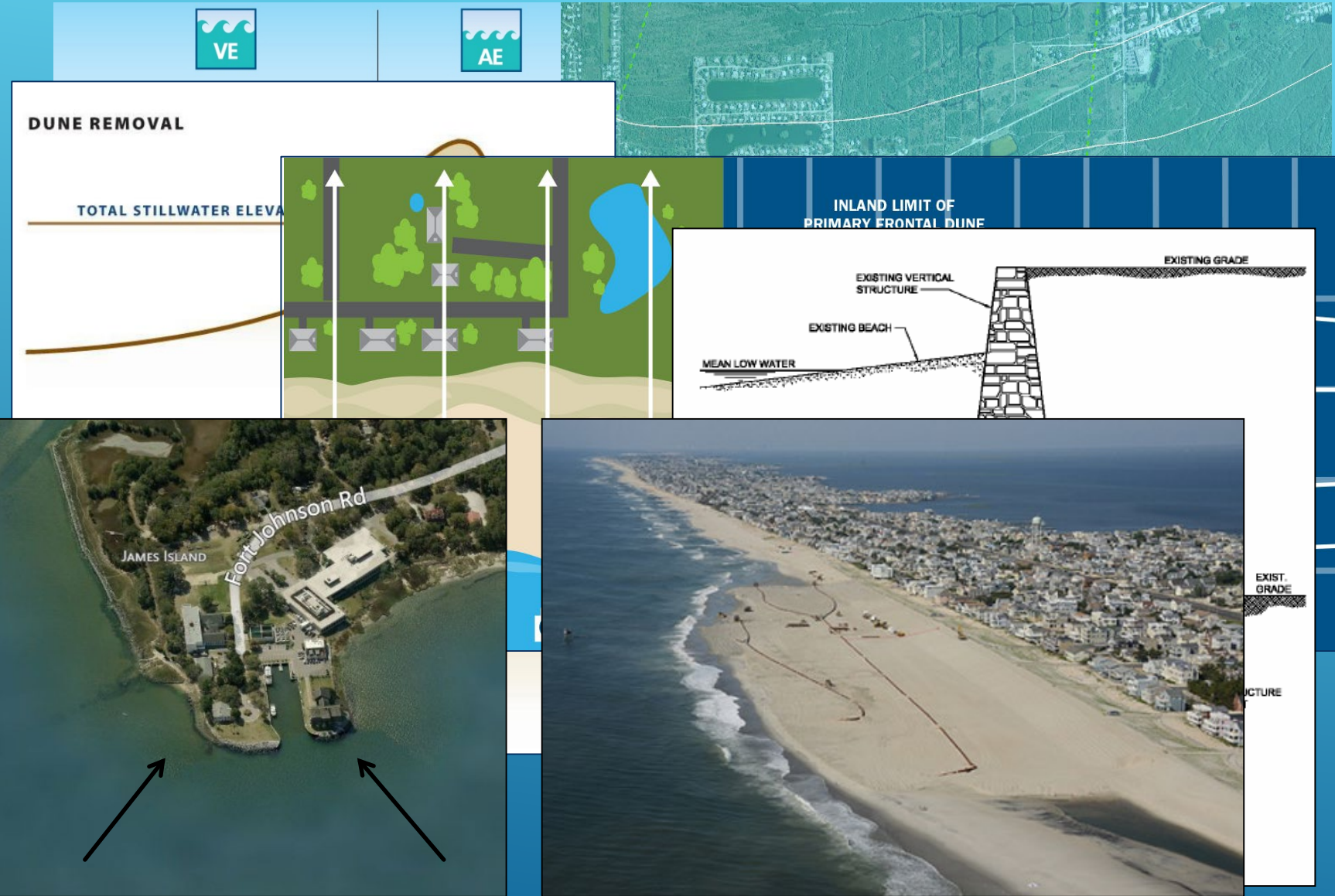
ANALYSIS CONSIDERATIONS: UNDERSTANDING WAVE/SURGE COMPONENTS

1. Storm surge stillwater elevation (SWEL)
2. Amount of wave setup
3. Wave height above storm surge (stillwater + setup) elevation
4. Wave runup above storm surge elevation (where present)



OTHER ANALYSIS CONSIDERATIONS:

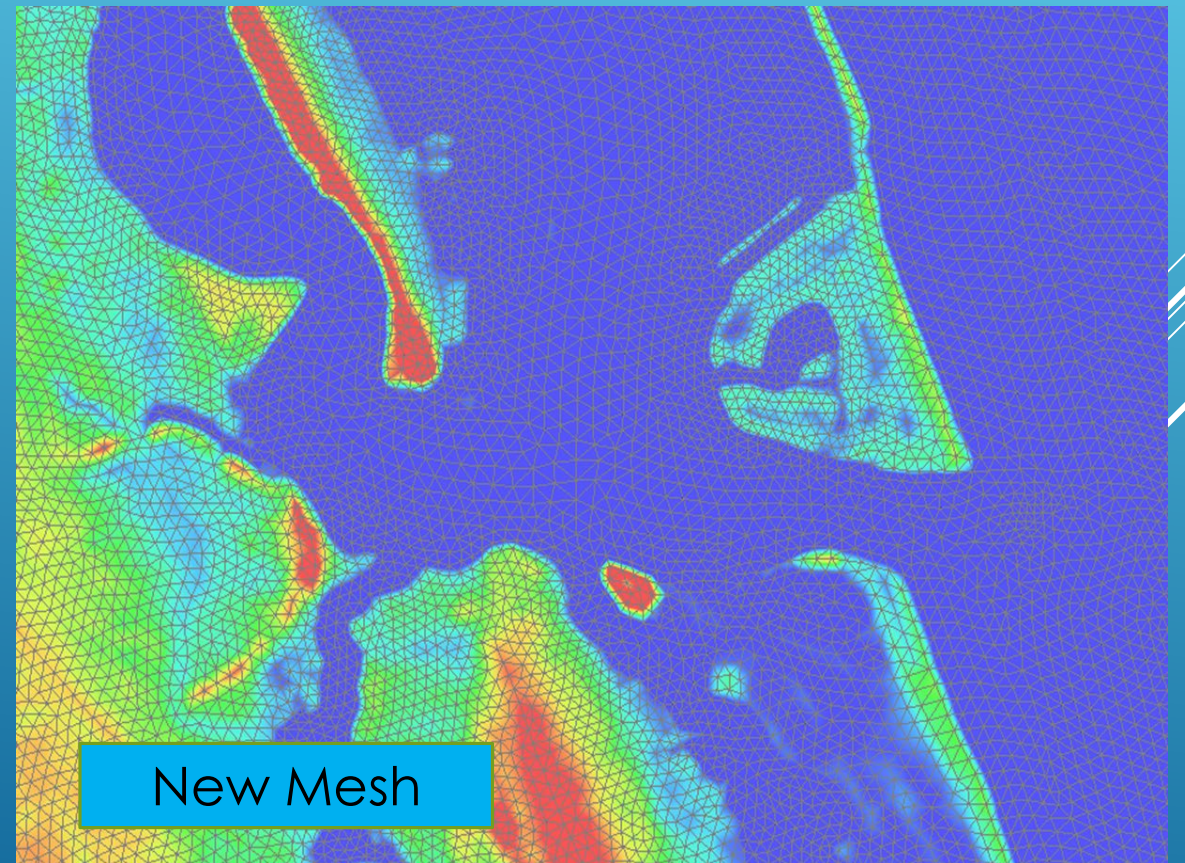
- ▶ Overland Wave Effects
- ▶ Property Location (relative to modeling)
- ▶ Erosion
- ▶ Primary Frontal Dune
- ▶ Structures
- ▶ General Site Conditions
 - ▶ Wave Exposure
 - ▶ Beach Nourishment



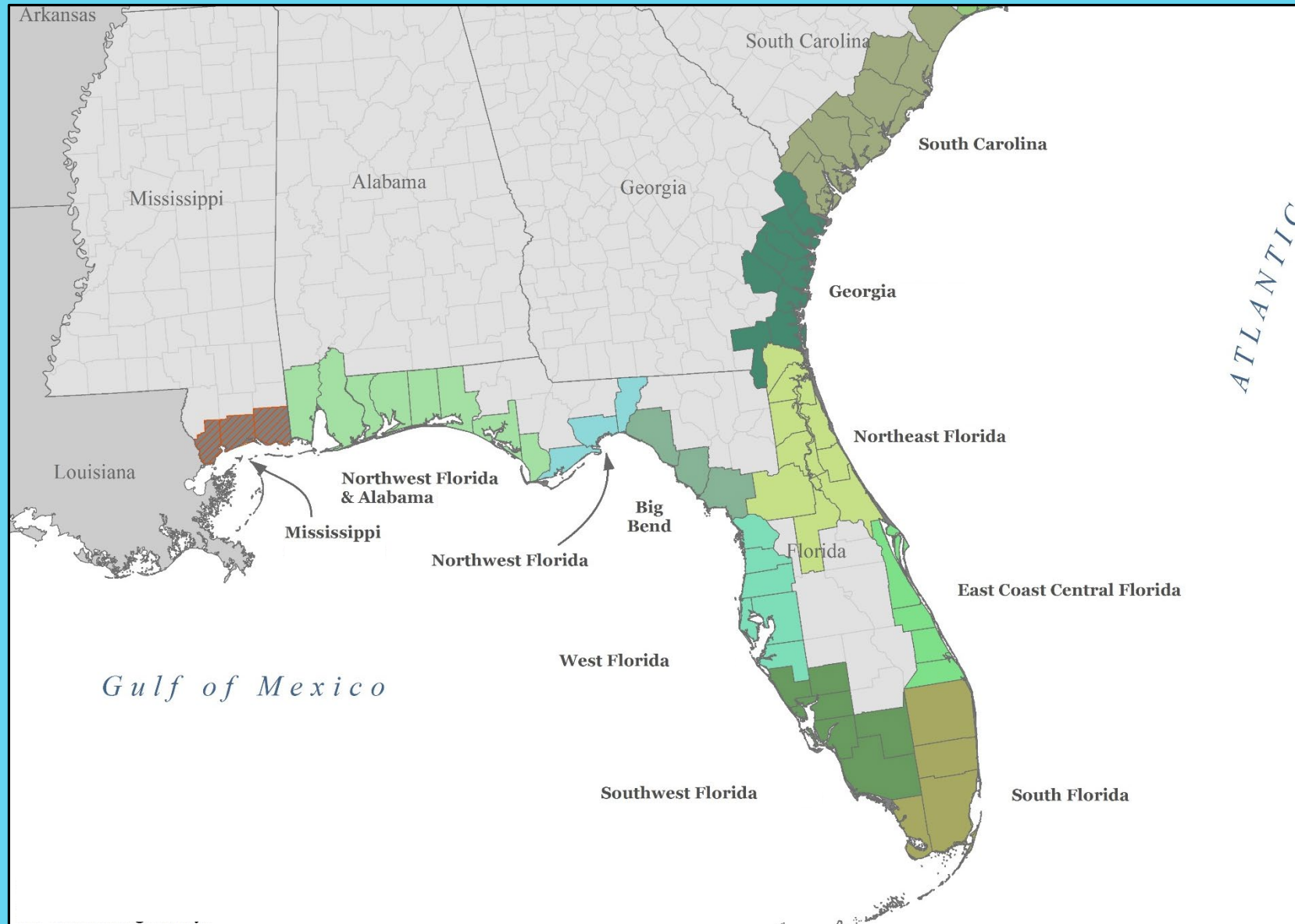
ANALYSIS & CONSIDERATIONS ARE EVOLVING!

207	4/1/2003	Existing standard. Already implemented.	Letter of Map Revision (LOMR)	Working Standard	At a minimum, the analyses and other supporting data provided in support of a revision request must be equivalent to or better than the scientific and technical data employed by FEMA for the preparation of the effective analyses.
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* FEMA Policy Standards for Flood Risk Analysis and Mapping (#FP 204-078-1)



UPDATED FLOOD STUDIES = UPDATED METHODOLOGIES




OLD FIS VS NEW FIS

- ▶ *SURGE or SLOSH model (30 – 40+ years old)*
- ▶ Climate data (1970's)
- ▶ Old/Coarse Topographic data, often from quad maps (30 – 40+ years old)
- ▶ Wave Setup calculated by equation (if included)
- ▶ Inland SWEL reduction (sometimes)
- ▶ Erosion measured above SWEL
- ▶ Runup factored above SWEL (depending on the type of runup)
- ▶ Less modeling transects
- ▶ No LiMWA mapped

- ▶ *ADCIRC + SWAN modeling of hundreds of storms run on super computer*
- ▶ Newer climate data from recent storms
- ▶ New higher-definition LiDAR topo
- ▶ Wave Setup included within 2D modeling
- ▶ Inland SWEL reduction/increase more accurately accounted for from 2D modeling
- ▶ Erosion measured above SWEL + Setup
- ▶ Runup factored above SWEL + Setup
- ▶ More modeling transects
- ▶ LiMWA mapped


OLD FIS VS NEW FIS




FLOOD INSURANCE STUDY

MONROE COUNTY, FLORIDA AND INCORPORATED AREAS

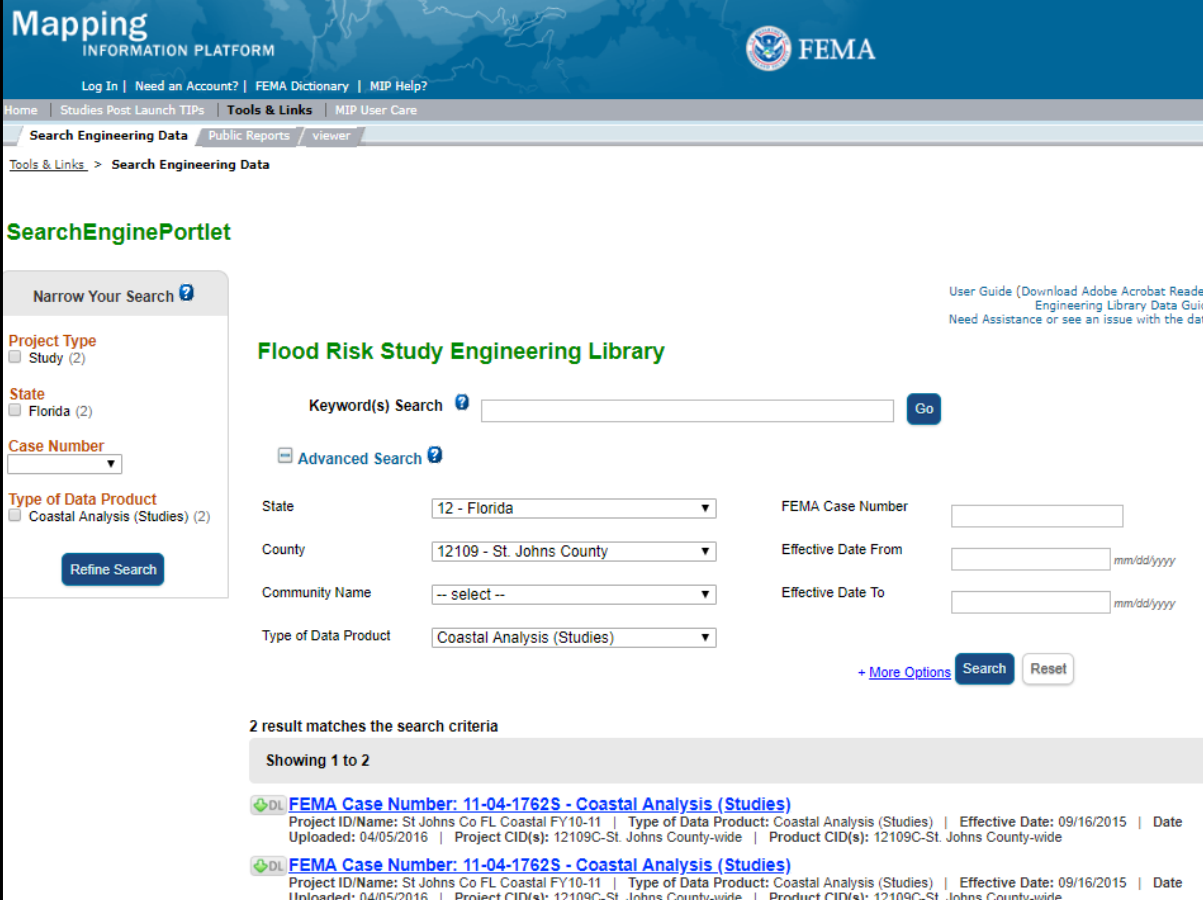
COMMUNITY NAME	COMMUNITY NUMBER
ISLAMORADA, VILLAGE OF	120424
KEY COLONY BEACH, CITY OF	120421
KEY WEST, CITY OF	120168
LAYTON, CITY OF	120169
MARATHON, CITY OF	120681
MONROE COUNTY (UNINCORPORATED AREAS)	125129



REVISOR:
FEBRUARY 18, 2005



Federal Emergency Management Agency
FLOOD INSURANCE STUDY NUMBER
12087CV000A



Mapping INFORMATION PLATFORM

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Search Engineering Data | Public Reports | Viewer

Tools & Links > Search Engineering Data

SearchEnginePortlet

Narrow Your Search ?

Project Type
 Study (2)

State
 Florida (2)

Case Number
[Dropdown]

Type of Data Product
 Coastal Analysis (Studies) (2)

Refine Search

User Guide (Download Adobe Acrobat Reader) | Engineering Library Data Guide | Need Assistance or see an issue with the data

Flood Risk Study Engineering Library

Keyword(s) Search [Input] **Go**

Advanced Search ?

State: 12 - Florida | FEMA Case Number: [Input]

County: 12109 - St. Johns County | Effective Date From: [Input] mm/dd/yyyy



Community Name: -- select -- | Effective Date To: [Input] mm/dd/yyyy

Type of Data Product: Coastal Analysis (Studies)

+ More Options **Search** **Reset**

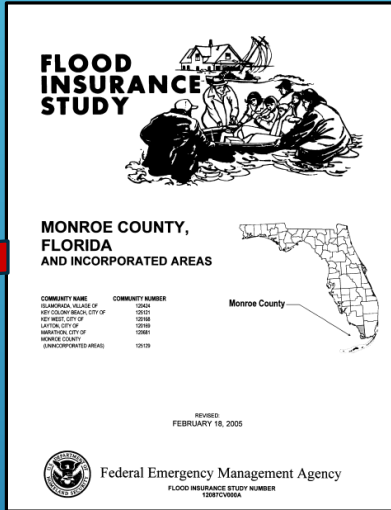
2 result matches the search criteria

Showing 1 to 2

-  [FEMA Case Number: 11-04-1762S - Coastal Analysis \(Studies\)](#)
Project ID/Name: St Johns Co FL Coastal FY10-11 | Type of Data Product: Coastal Analysis (Studies) | Effective Date: 09/16/2015 | Date Uploaded: 04/05/2016 | Project CID(s): 12109C-St. Johns County-wide | Product CID(s): 12109C-St. Johns County-wide
-  [FEMA Case Number: 11-04-1762S - Coastal Analysis \(Studies\)](#)
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Wave Setup

OLD FIS VS NEW FIS



- ▶ 1 static value applied across entire transect extent for all transects
- ▶ Some old modeling sets reduce setup in inland areas (no longer technically justified)
- ▶ LOMR cases could apply:
 - ▶ Static value directly from Effective FIS
 - ▶ Calculate new setup value using the Direct Integration Method

- ▶ Wave setup is implicit in SWEL

Table 3. Transect Data cont.

Flooding Source	Stillwater Elevation (NAVD88)				Zone	BFE (NAVD88)
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance		
Gulf of Mexico						
Transect 65	4.76	7.83	10.34 ¹	11.22	VE	11-16
					AE	10

¹ Wave setup of 1.4 feet included landward to the dune crest.

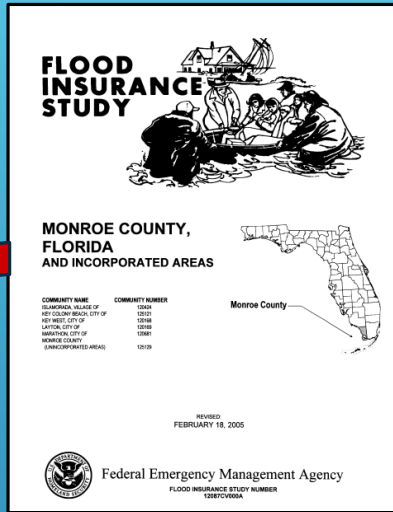
² Stillwaters have been interpolated based on distance from PROBs evaluation points

~~3~~ 1.4 feet:1400 feet reduction slope ← **Not currently accepted**

⁴ Higher than the 1.4 feet:1400 feet reduction slope, at a point closer to the Gulf shoreline

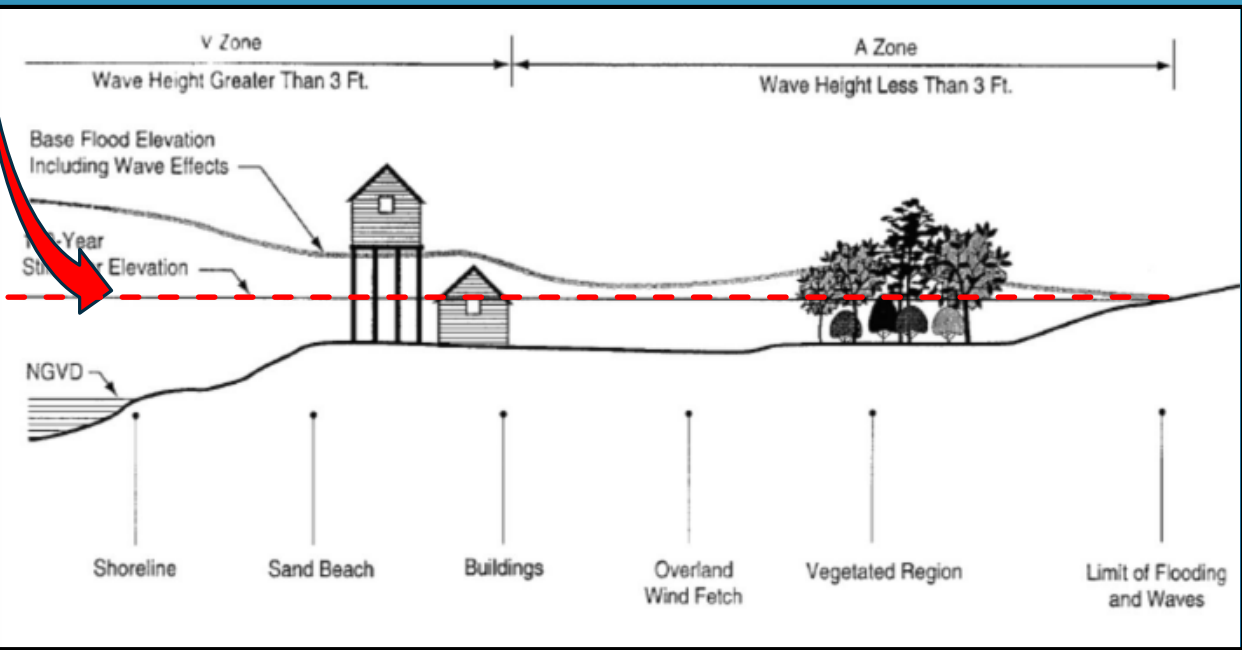
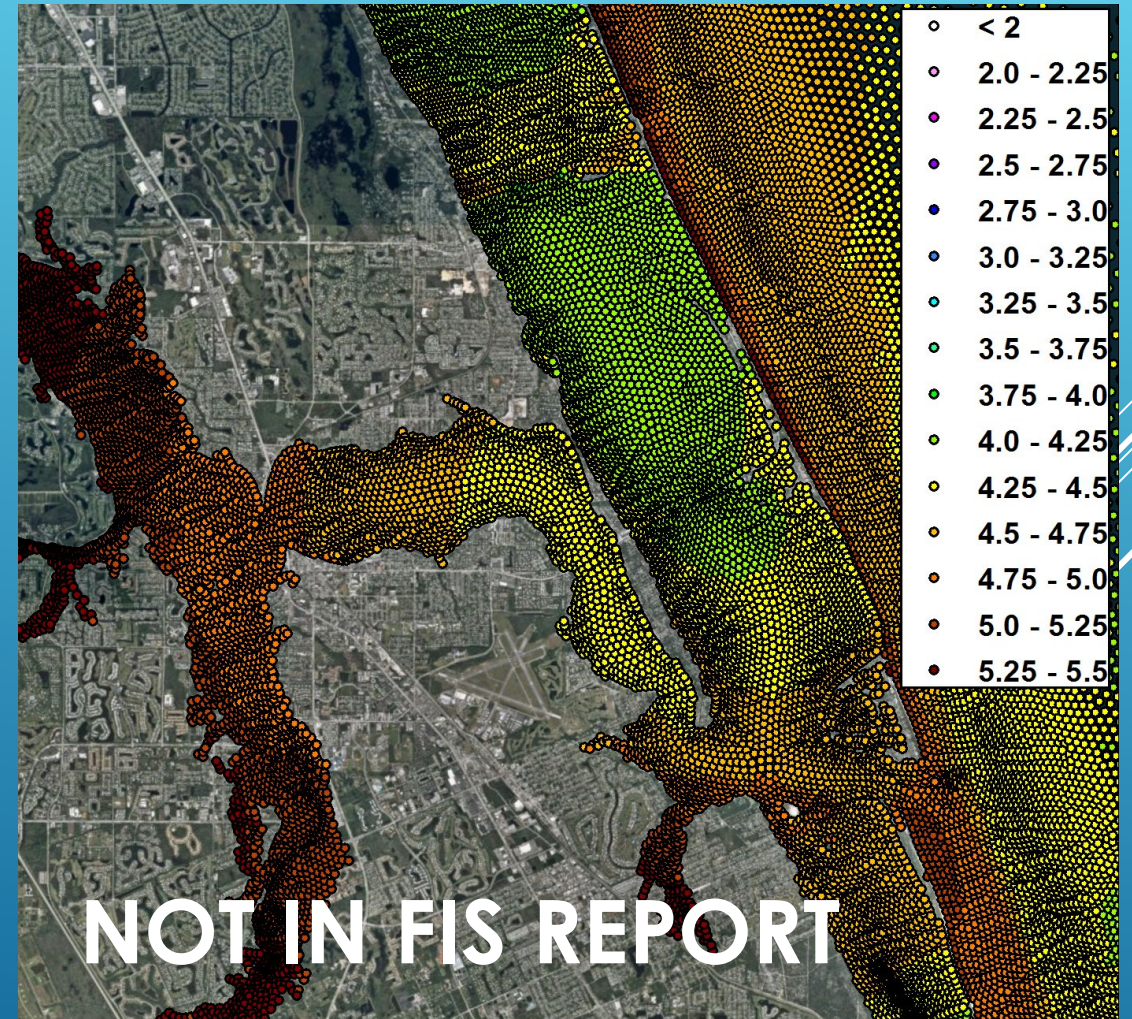
SWEL

OLD FIS VS NEW FIS



▶ 1 static value (often from the open coast) extends inland across the entire transect

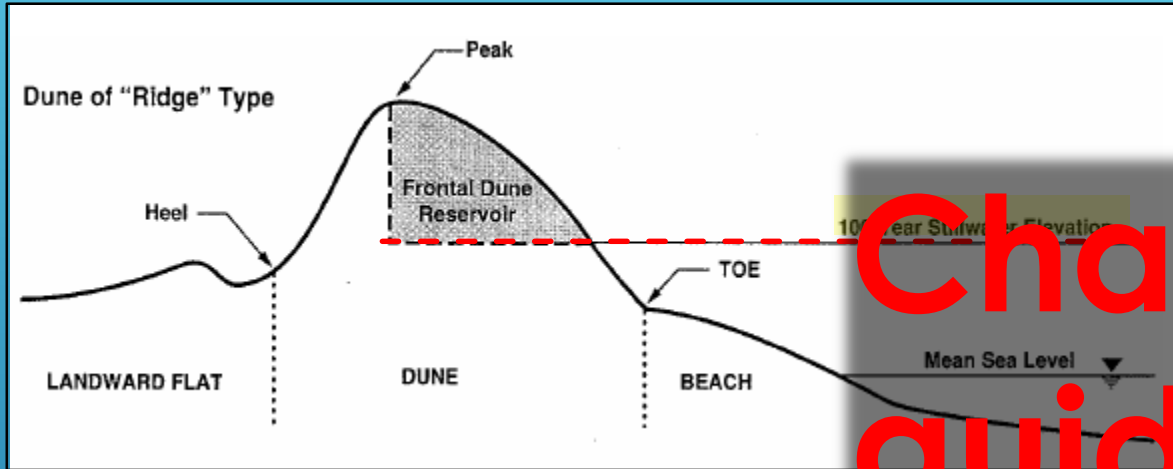
▶ SWEL varies everywhere!



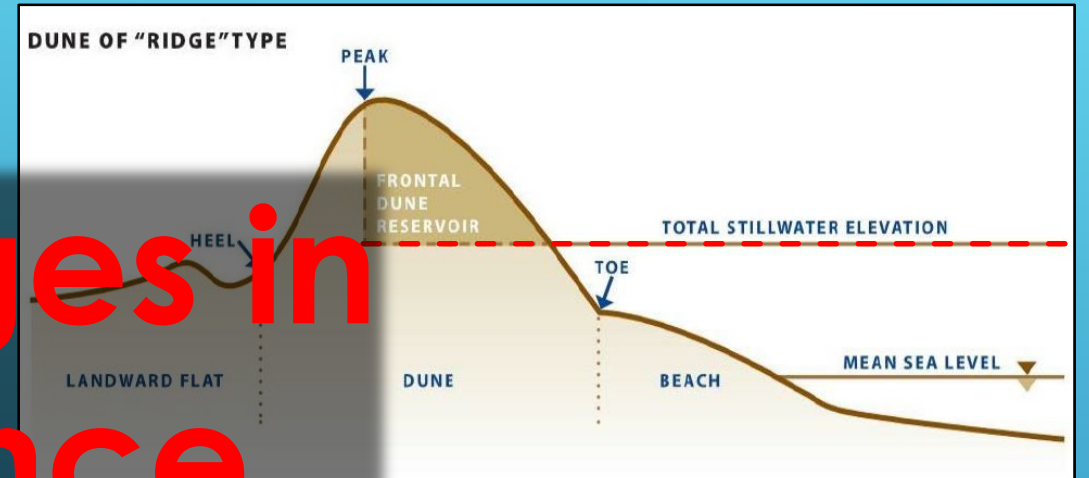
Erosion

OLD FIS VS NEW FIS

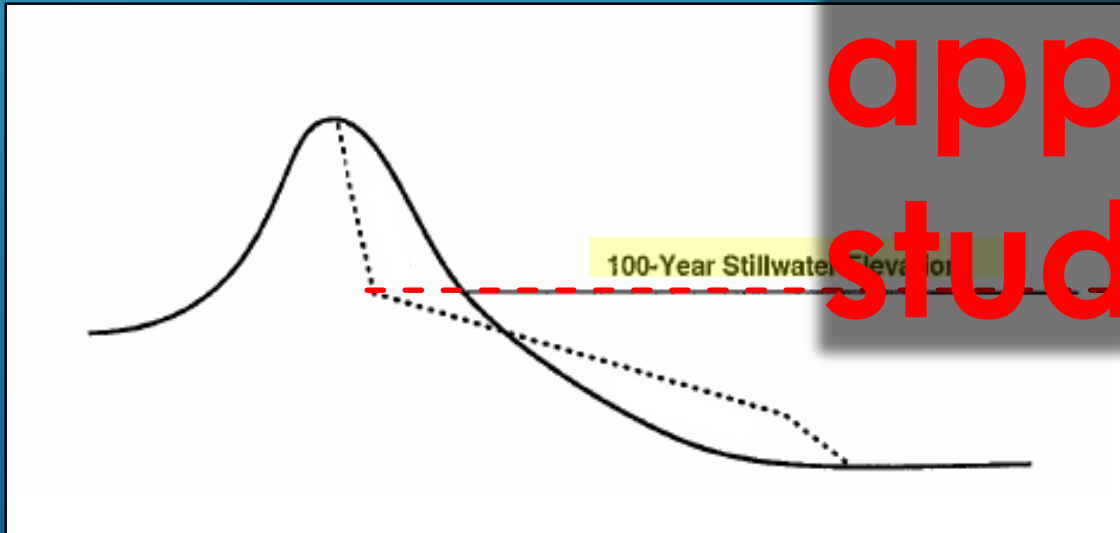
Dune reservoir is relative to... **SWEL**



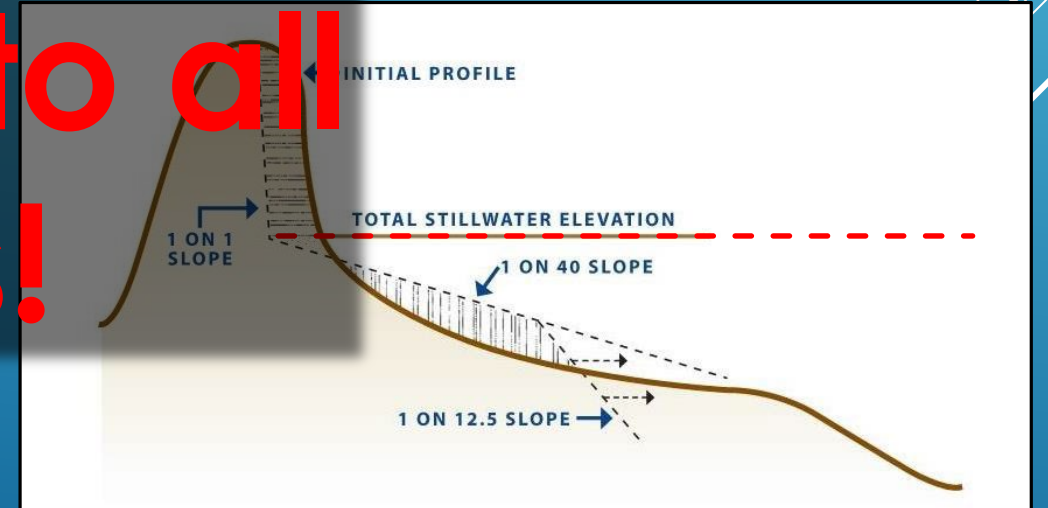
Dune reservoir is relative to... **SWEL + Setup**



Dune retreat geometry is relative to... **SWEL**



Dune retreat geometry is relative to... **SWEL + Setup**



Changes in guidance apply to all studies!

Wave Runup

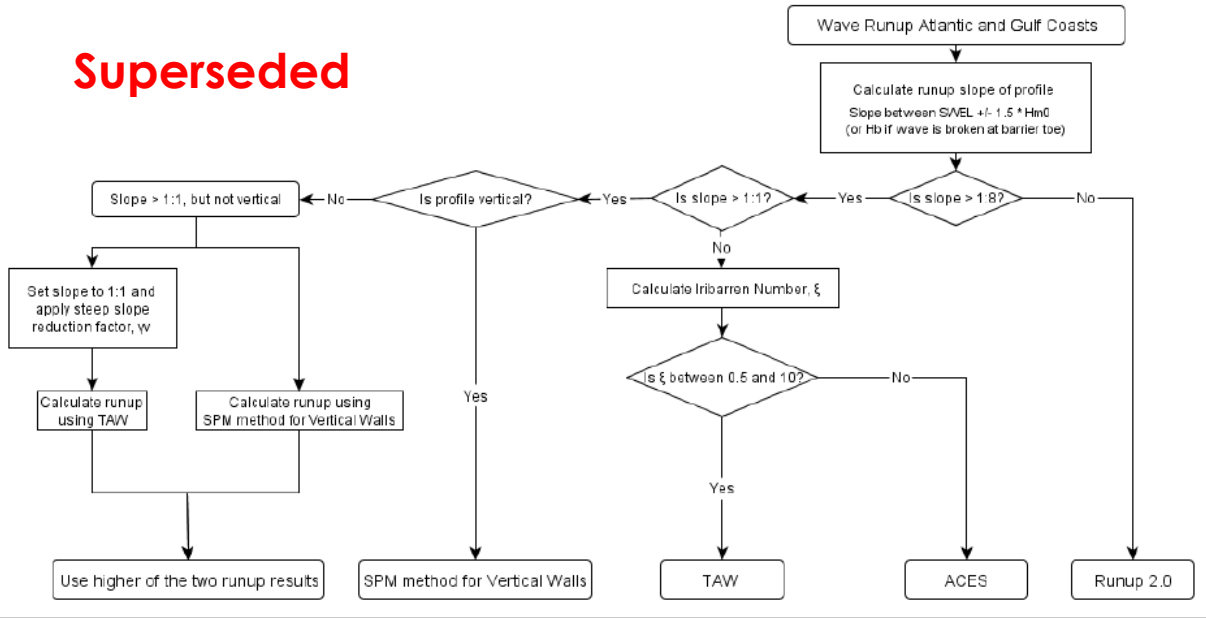
OLD FIS VS NEW FIS

- ▶ Most studies used Runup2.0
- ▶ Runup modeled relative to SWEL

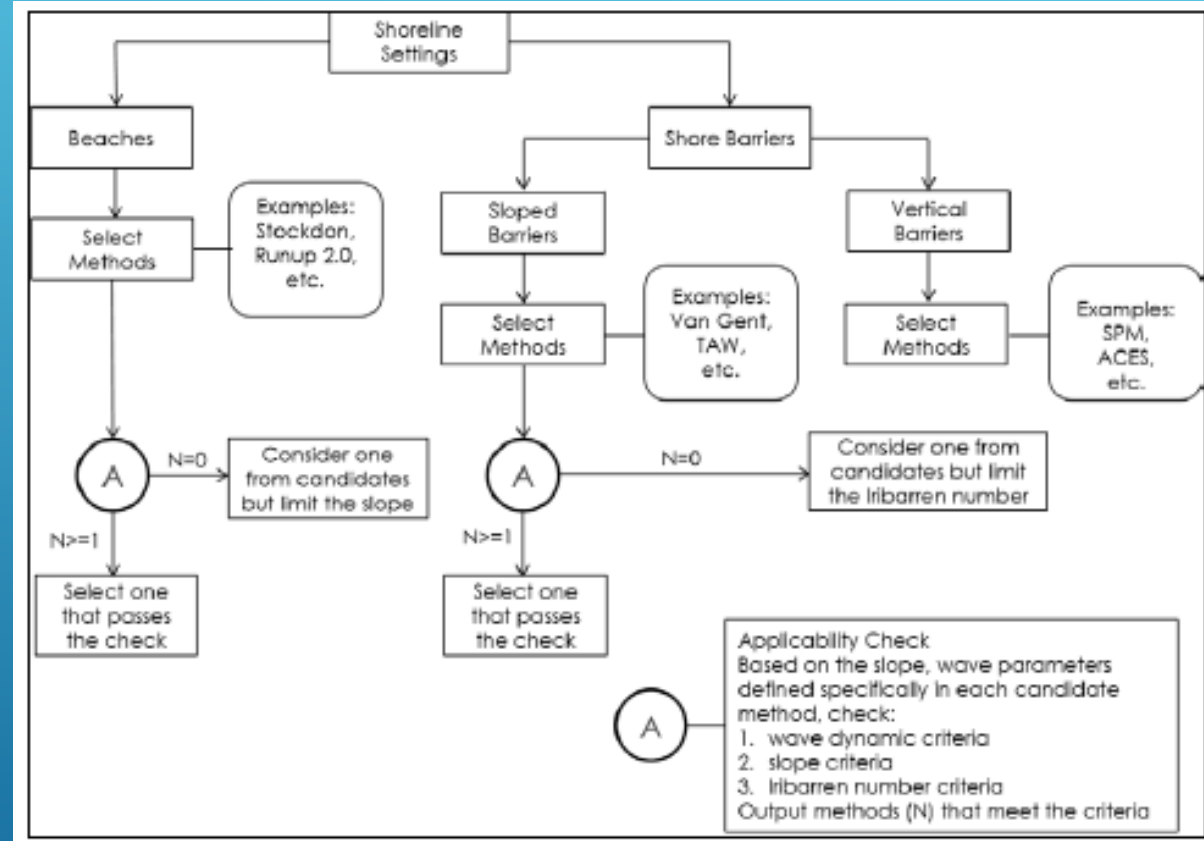
- ▶ Newer studies tend to use larger selection of runup methods (Runup2.0, TAW, SPM Vertical structure, CSHORE)
- ▶ Runup modeled relative to SWEL + Setup
- ▶ New runup guidance supersedes old runup guidance

Attachment: Wave Runup Methods for Studies on the Atlantic Ocean and Gulf of Mexico Coasts

Superseded



- 2013 Operating Guidance 10-13



- 2018 Runup and Overtopping Guidance



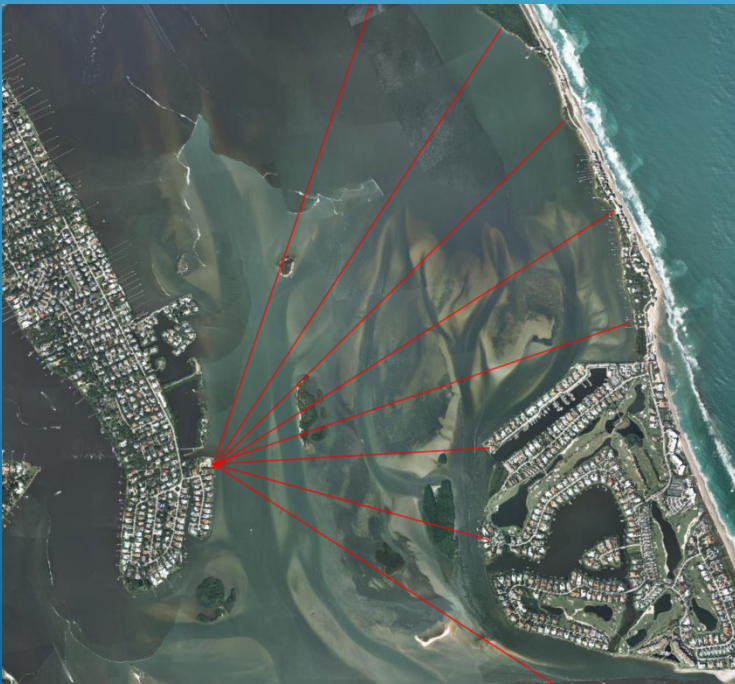
Starting Wave Conditions

OLD FIS VS NEW FIS

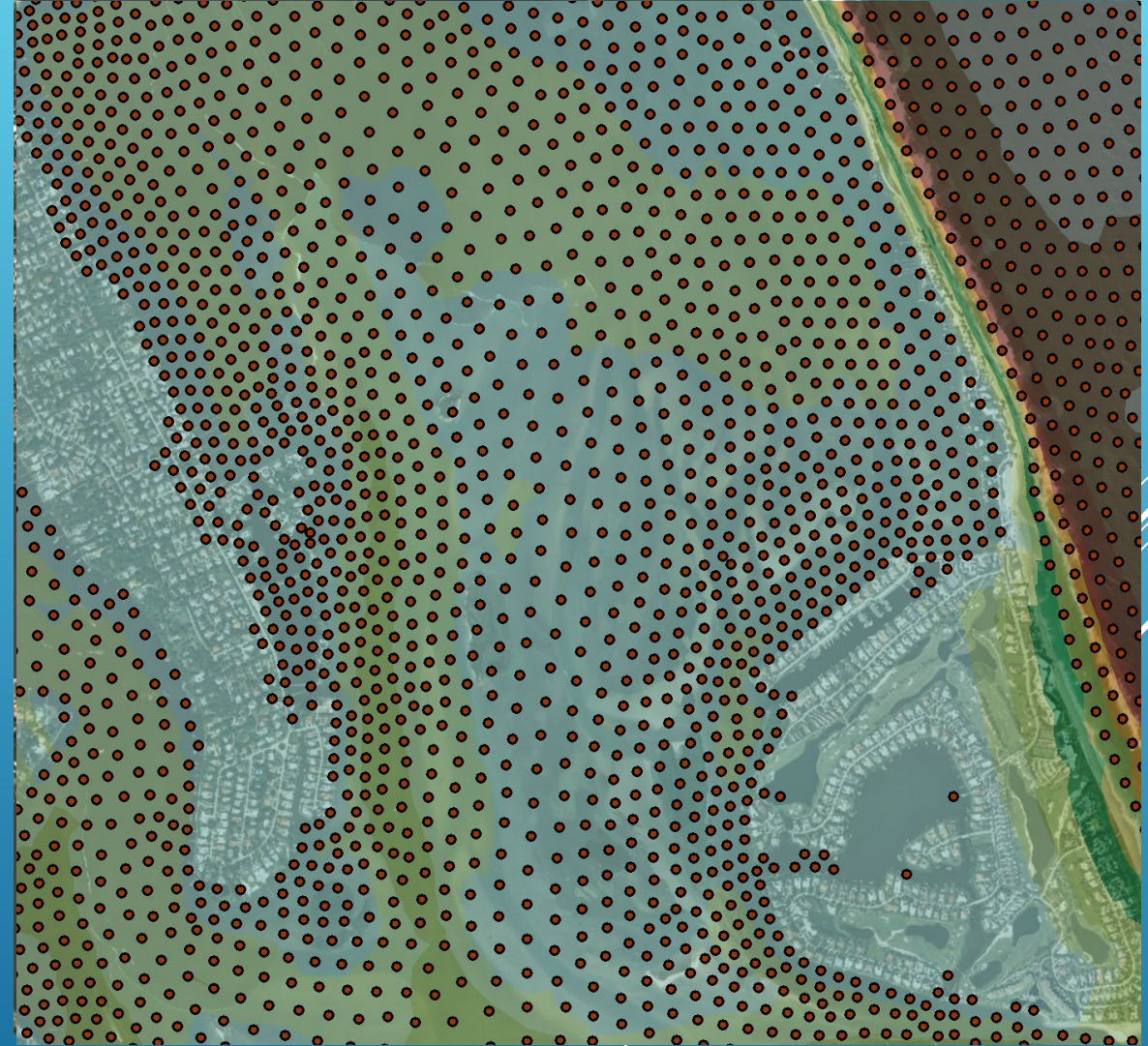
- ▶ 1 fetch length could be input into CHAMP (for use in WHAFIS)
- ▶ ACES fetch-limited wave calculations

CHAMP Input:

Fetch Length (mile):

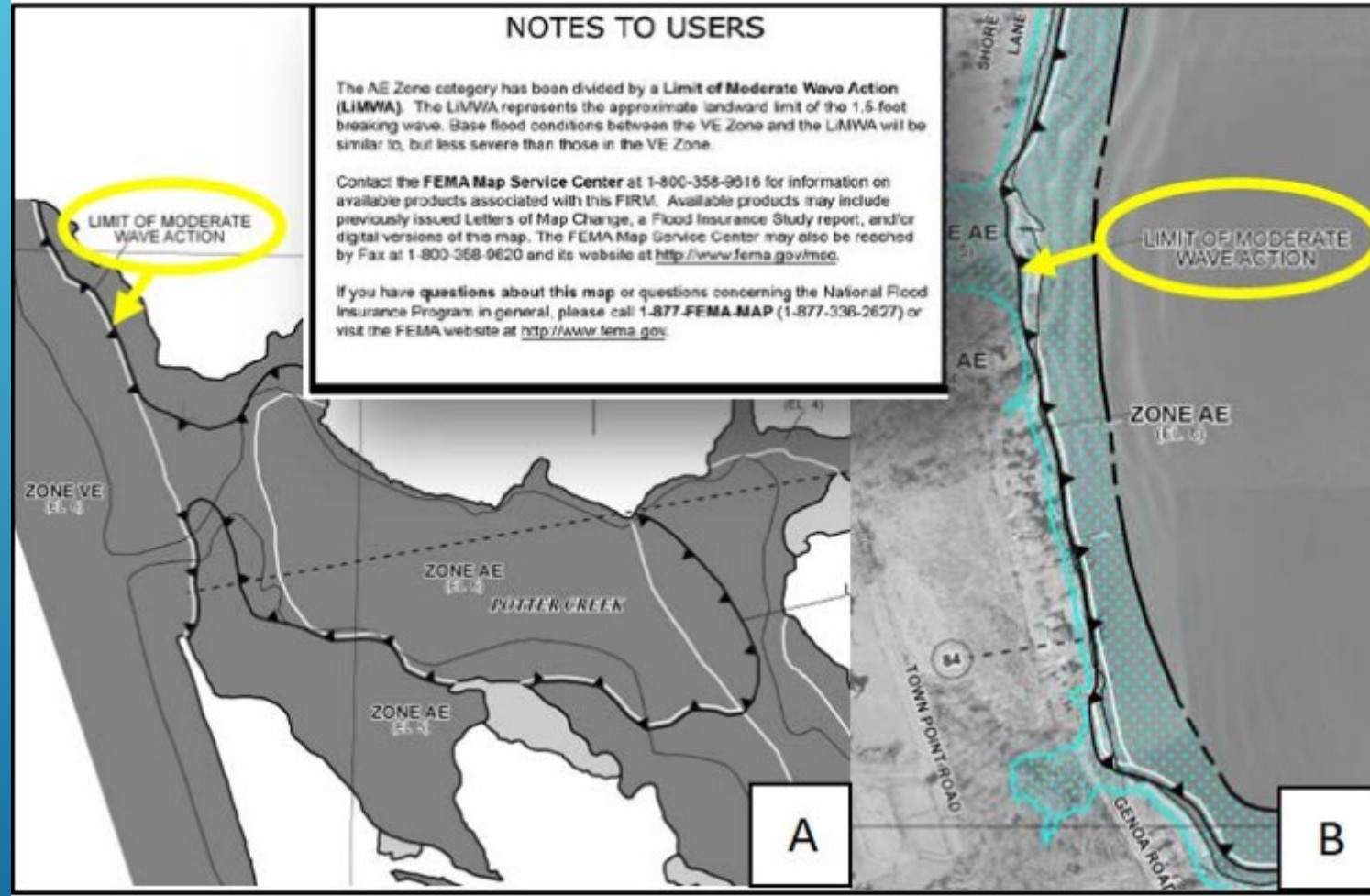


- 2013 Operating Guidance 10-13

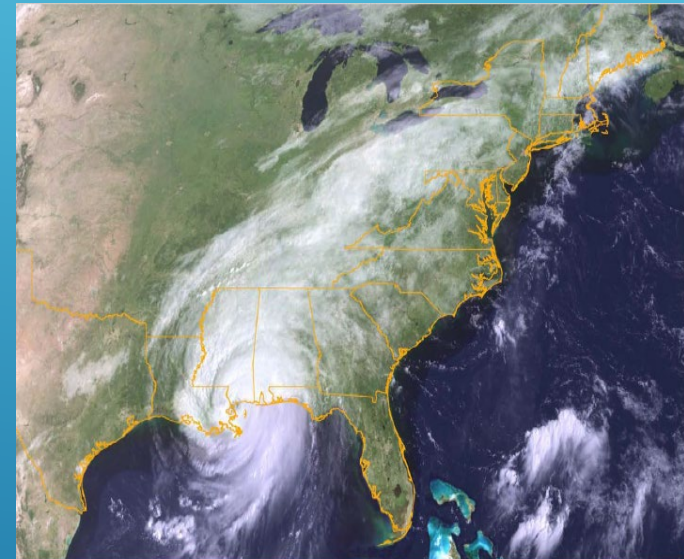


- 2018 Runup and Overtopping Guidance

OLD FIS VS NEW FIS



OLD GUIDANCE VS NEW GUIDANCE



Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update

Final Draft

February 2007



- 2007 Guidelines contained almost all relevant information for a study
- Can still be referenced for background information, but methodologies may be superseded

Guidance for Flood Risk Analysis and Mapping

Coastal General Study Considerations

Guidance for Flood Risk Analysis and Mapping

Coastal Water Levels

Guidance for Flood Risk Analysis and Mapping

Determination of Wave Characteristics

- New guidelines documents are broken down by subject
- Methods must be taken from new guidance documents
- FEMA updates these documents on a scheduled cycle – please check for new versions!
- <https://www.fema.gov/media-library/assets/documents/34953>

IN CONCLUSION:

- ▶ *New flood maps are based on:*
 - ▶ *More technical data and methodology:*
 - ▶ *LOMRs should be conducted with 'as good, or better' methodologies*
 - ▶ *Impacts several aspects of the modeling and analysis*
 - ▶ *Updated guidance:*
 - ▶ *Old guidance may not necessarily be superseded, but LOMR's are expected to follow new guidance, regardless of the age of the effective study*

QUESTIONS?

