



FEMA



Burlington County, NJ Flood Risk Review Meeting

May 28, 2014

RiskMAP
Increasing Resilience Together



Agenda for Today

- **Kick-off and Introductions**
- **Risk MAP Program Overview**
- **Hazard Mitigation Planning Process and Mitigation Actions**
- **Overview of Non-Regulatory Flood Risk Products and Datasets**
- **Coastal Flood Risk Study and Mapping**
- **Flood Risk Communications**
- **USGS**
- **Breakout Group Sessions**

FEMA's Risk MAP Program

- Risk Mapping, Assessment and Planning 2010 - 2014
- Builds on Map Mod digitized Flood Insurance Rate Map (FIRM) successes
- Will deliver quality data that **increase public awareness and lead to action that reduces risk to life and property**
- Regulatory Products: Flood Insurance Study (FIS) and FIRM (Coastal re-mapping)
- New Non-Regulatory Products and Datasets



Mapping



Assessment



Planning



Hazard Mitigation & Your Hazard Mitigation Plan

- Hazard Mitigation is defined as any sustained **action taken to reduce or eliminate long-term risk** to life and property from hazards
- Use new Risk MAP information to help with identifying mitigation actions when updating your Hazard Mitigation Plan

DFIRM Database

- Flood_Hazard_Data
- Political_Boundaries
- Public_Land_Survey_System
- TopoData
- community_Panel_Info
- L_Comm_Info
- L_MT1_LOMC
- L_Pan_Reviz
- L_Pol_FIRM
- L_Riv_Model
- L_Sin_Start
- L_Wtr_Nm
- s_Bfe
- s_DOQ_Index
- s_Firm_Pan
- s_Gen_Struct
- s_Label_Ld
- s_Label_Pt
- s_L_QMR
- s_Perm_Bmk
- s_Quad
- s_Riv_Mrk
- s_Tnsport_Ar

Flood Risk Database

- Community_Panel_Info
- Comm_Info
- MT1_LOMC
- Pan_Reviz
- Pol_FIRM
- Riv_Model
- Sin_Start
- Wtr_Nm
- DOQ_Index
- Firm_Pan
- Gen_Struct
- Label_Ld
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- Riv_Mrk
- Tnsport_Ar

FLOOD INSURANCE STUDY

FLOOD COUNTY, USA AND INCORPORATED AREAS

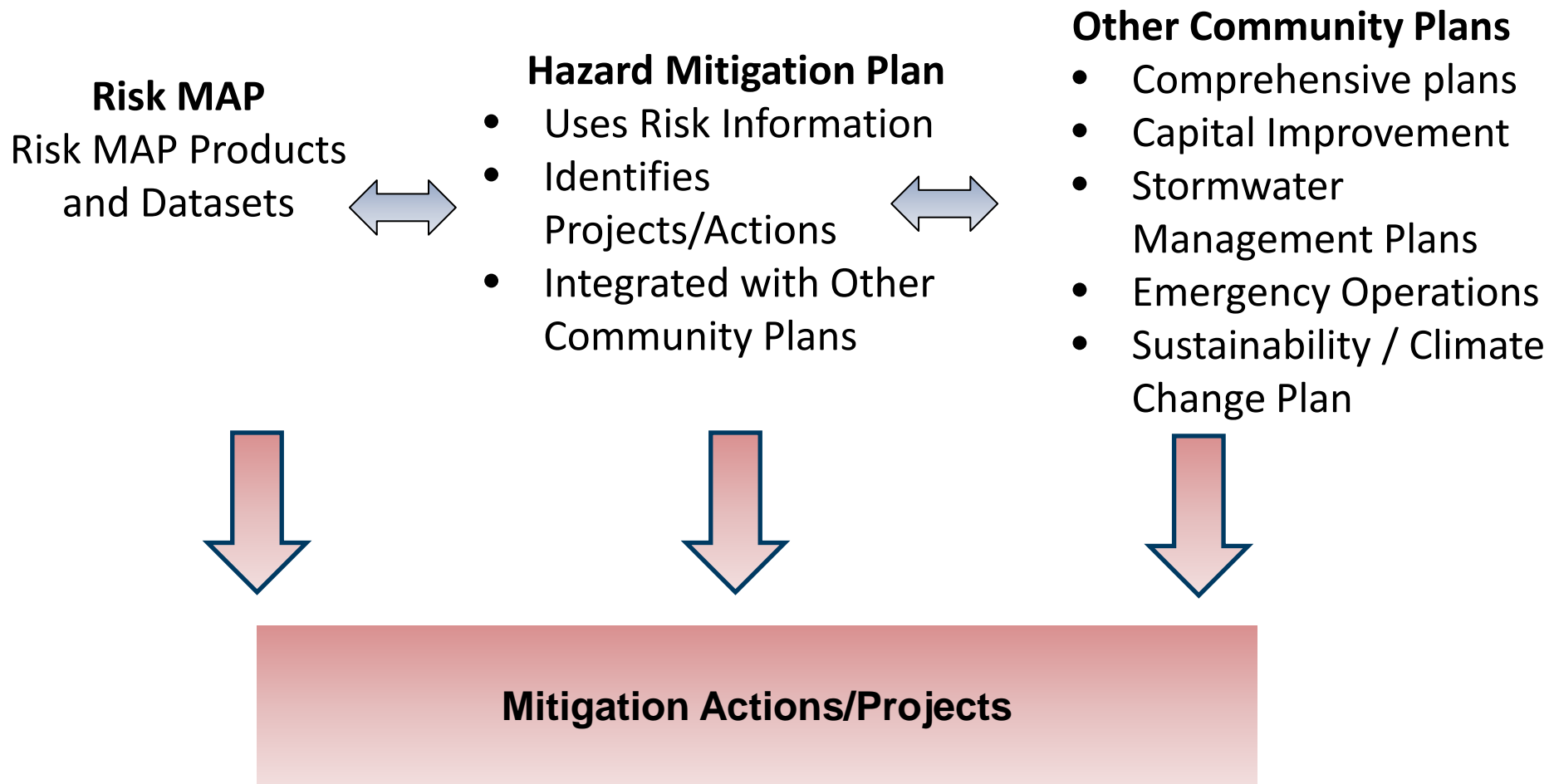
Flood Risk Report

Watershed Risk Map: Watershed USA

Burlington County's Hazard Mitigation Plan

Currently being updated

Local Hazard Mitigation Plans (HMPs)



Mitigation Actions – Types, Examples



STRUCTURE AND INFRASTRUCTURE PROJECTS

Acquisition
Elevation
Retrofits
Drainage

LOCAL PLAN AND REGULATIONS

Zoning
Building Codes
Ordinances
Open Space Plan

COMMUNITY IDENTIFIED PROGRAMS

Firewise
StormReady
NFIP
CRS

NATURAL SYSTEM PROTECTION

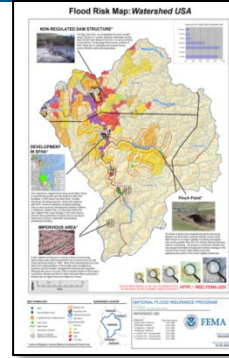
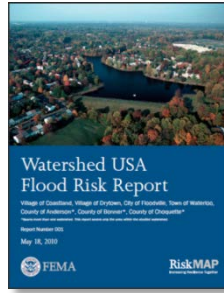
Stream and wetland restoration
Erosion control

What Action Will You Take?

- What are some **areas of mitigation interest** in your community?
- Can you think of any **additional mitigation projects**?
- **Review draft Areas of Mitigation Interest and provide feedback** to NJDEP and FEMA representatives during the working session



Non-Regulatory Coastal Flood Risk Products and Datasets



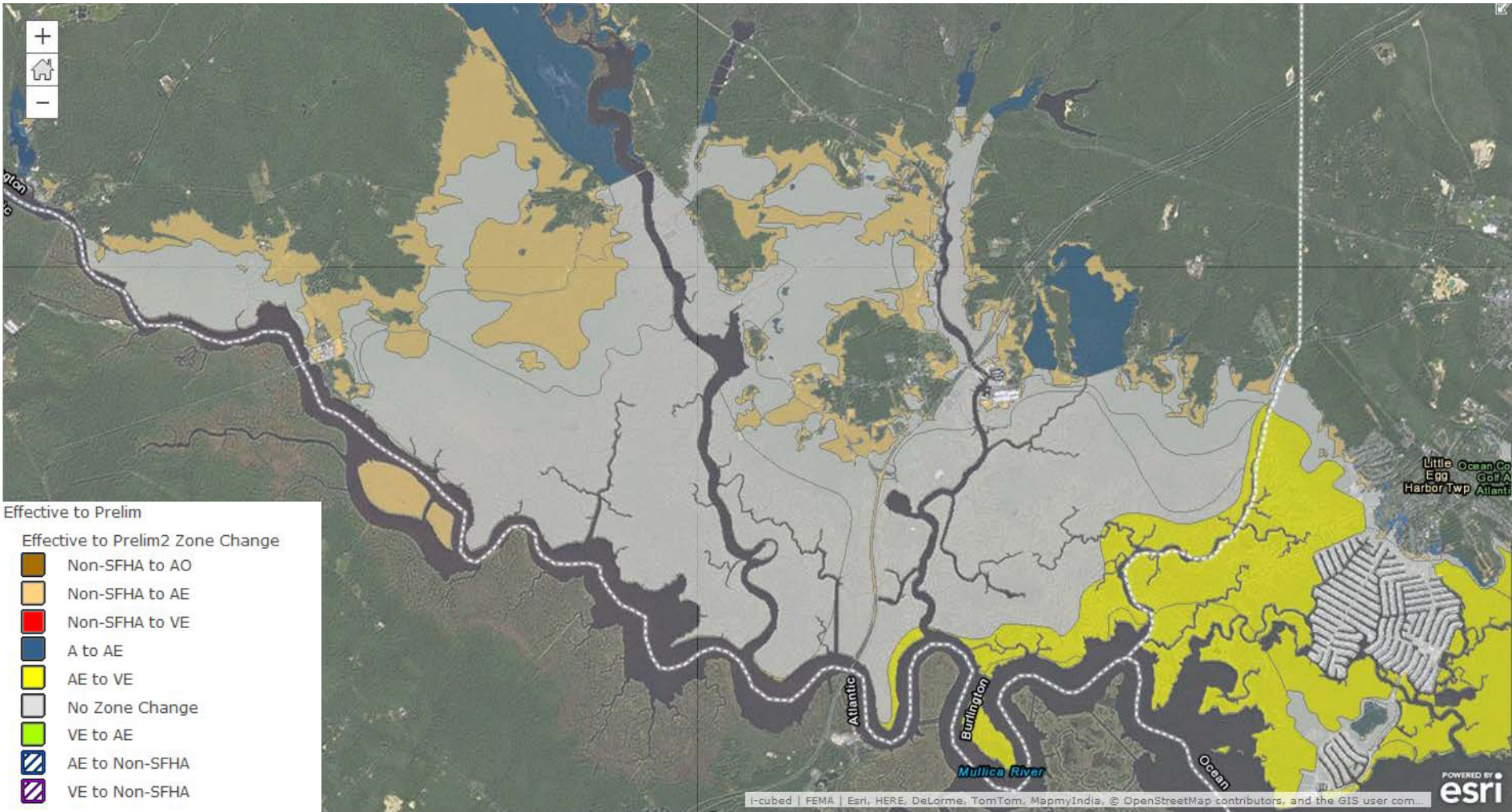
■ Flood Risk Products

- Flood Risk Report, Map, and Database

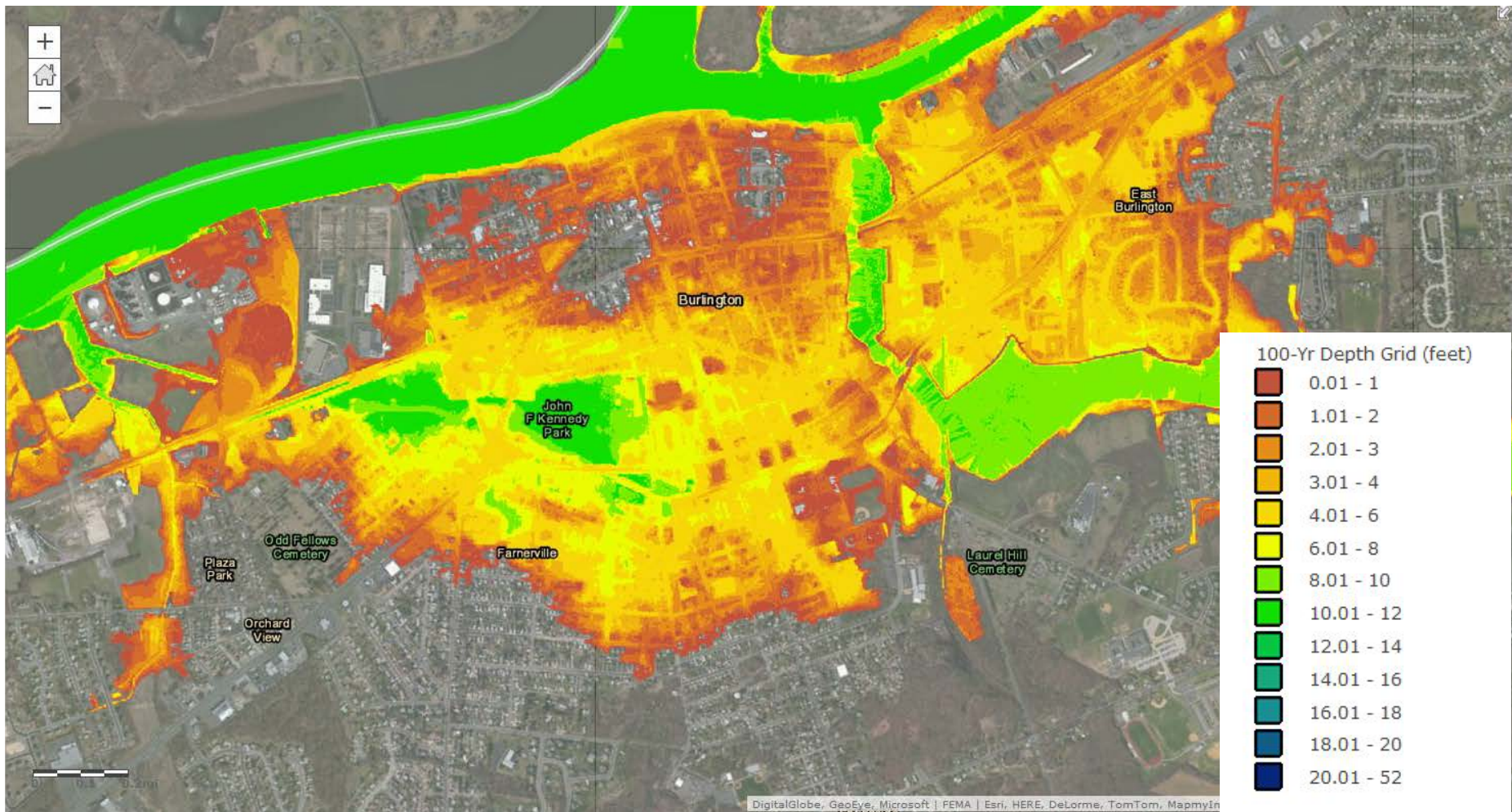
■ Flood Risk Datasets

- Changes Since Last FIRM (CSLF)
- Coastal 1% Depth Grid
- Areas of Mitigation Interest (AOMI)
- Coastal Flood Risk Assessment (refined Hazus analysis)
- Coastal Increased Inundation Areas

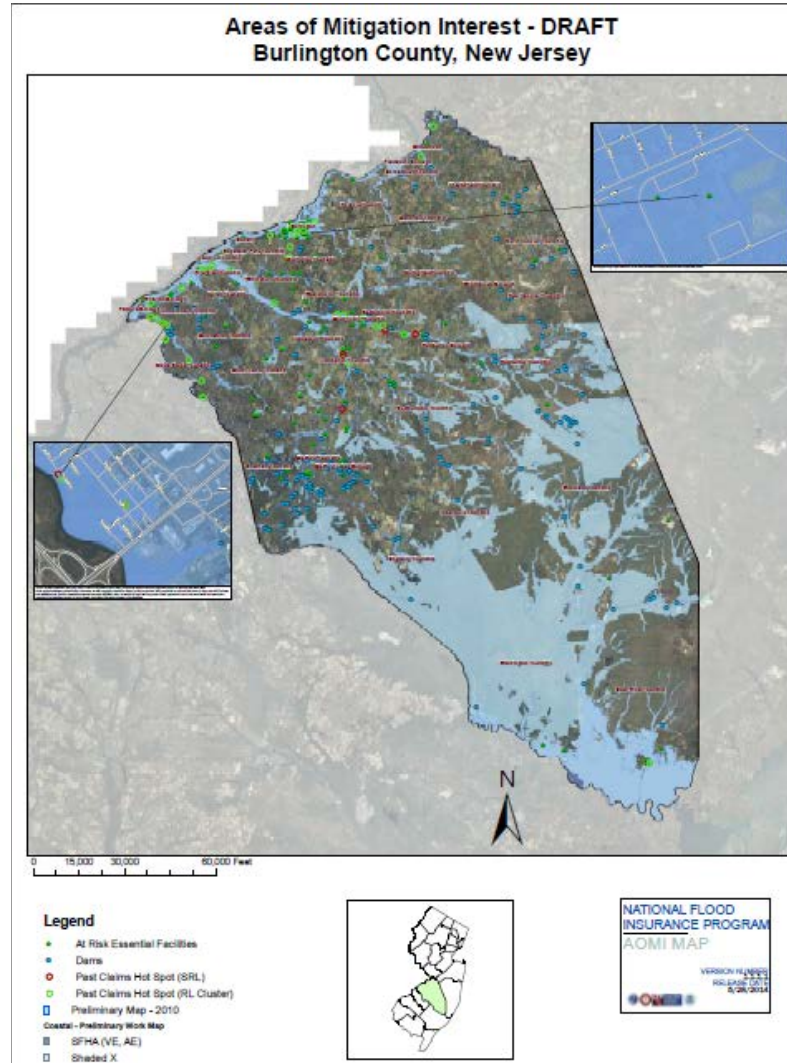
Changes Since Last FIRM – Identifying Actions



Depth Grids – Identifying Actions

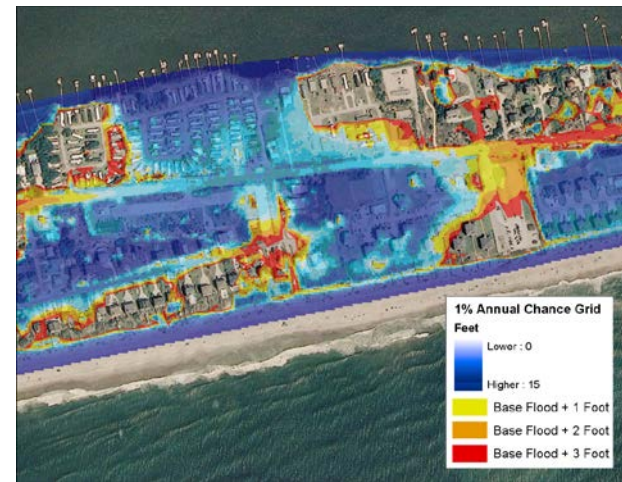
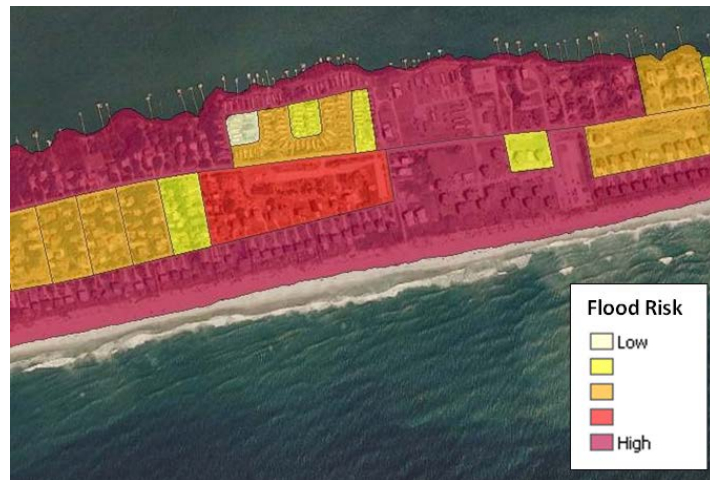


Areas of Mitigation Interest – Identifying Actions



Non-Regulatory Coastal Flood Risk Products and Datasets

- **To be provided in the near future:**
 - Coastal Flood Risk Assessments
 - Coastal Increased Inundation Areas
 - Risk MAP report, map, database



Draft Flood Risk Tools

- Region2coastal.com

The screenshot shows the website's navigation bar with links for Home, Hurricane Sandy, Coastal Flood Study, Coastal Mapping Basics, FAQs, Additional Resources, and Contacts. The 'Coastal Flood Study' menu is open, listing options such as 'Coastal Flood Study Overview', 'View Best Available Flood Hazard Data', 'What is My BFE? Address Lookup Tool (Formerly What is My ABFE?)', 'Flood Risk Tools', 'Understanding Vertical Datums', and 'Presentations'. The 'Flood Risk Tools Communities' section is highlighted, featuring a hand cursor icon. Below the menu, the text describes the updated Flood Insurance Study (FIS) and provides additional tools for understanding flood risk. A 'Draft USA Risk Report' is also visible, along with a map of the United States showing flood risk areas.

Flood Risk Tools Communities

Besides the updated Flood Insurance Study (FIS) and the coastal flood study update, the New Jersey Department of Environmental Protection, is also providing communities with additional tools they can use to better understand and plan for flood risk.

What are Flood Risk Tools and How Can They be Used?

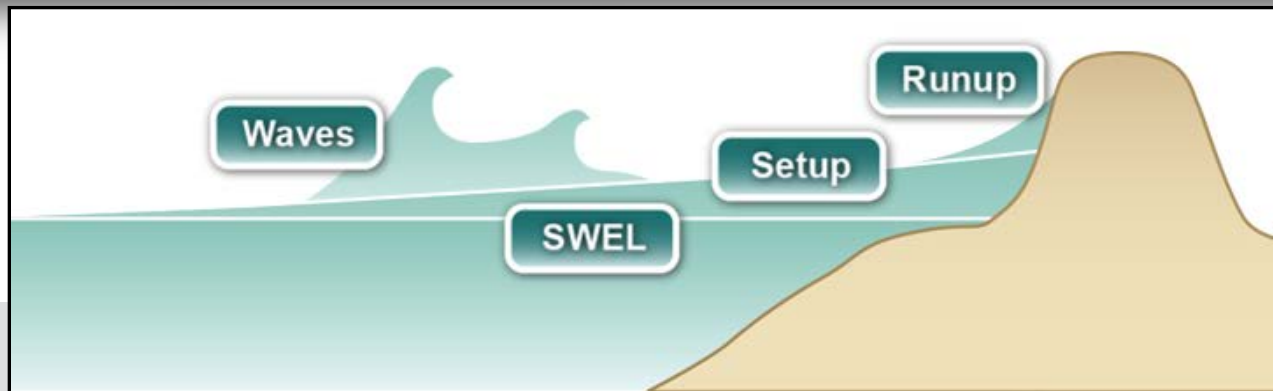
Flood risk tools can help community officials in planning efforts to reduce (or “mitigate”) flood risk, communicate with the public, and create a dialogue with neighboring communities about ways to reduce future flood risk. There are different types of flood risk tools (also referred to as Risk MAP non-regulatory products), including GIS datasets and maps as well as supporting reports. Each is described on the [Flood Risk Tools Descriptions page](#). These tools are not directly tied to regulatory development and insurance requirements of the National Flood Insurance Program like the FIRM and FIS report are but are nonetheless important resources to support community planning efforts.

When will the Flood Risk Tools be Released?

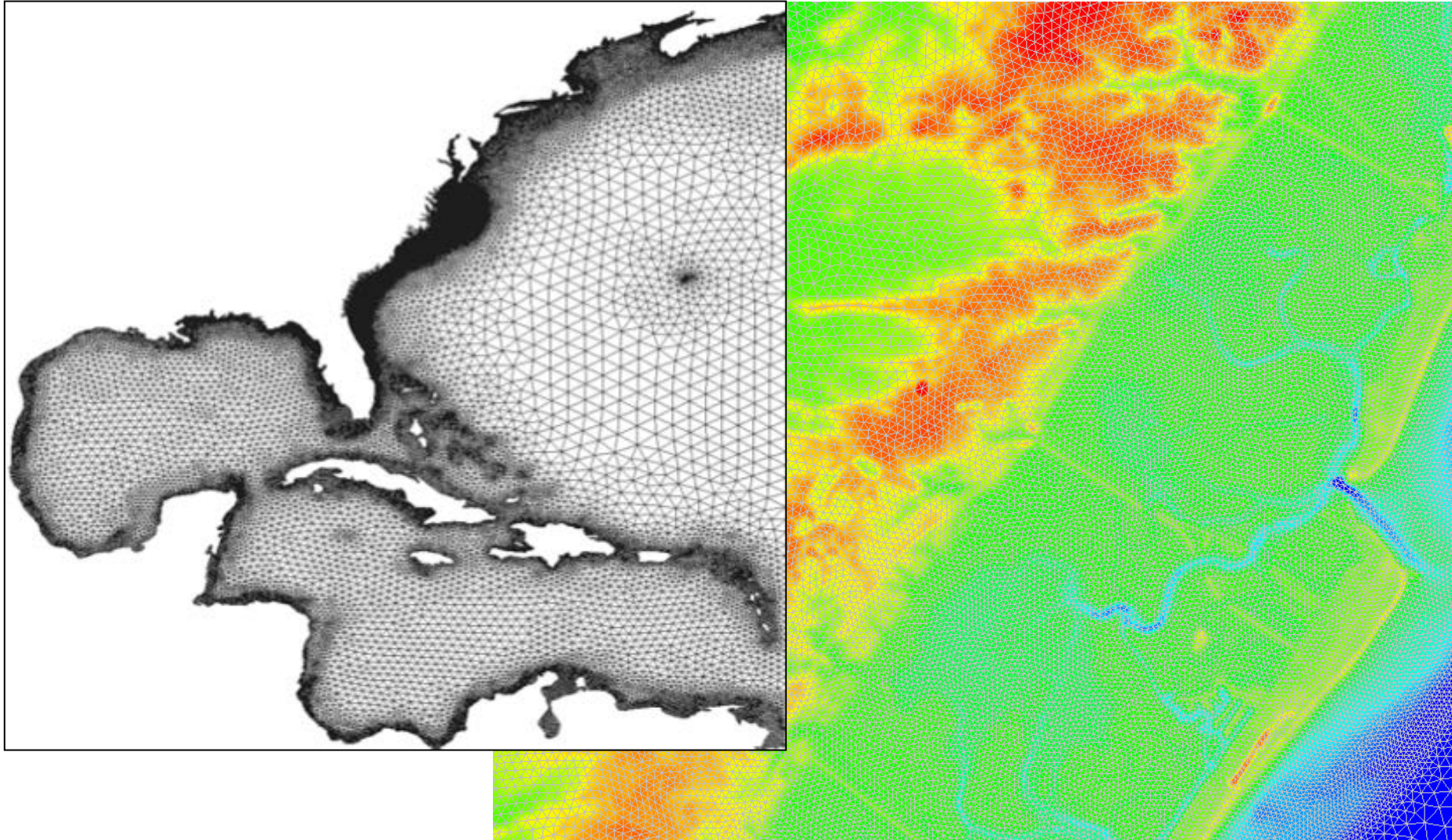
The flood risk tools are in the process of being released on a rolling basis by county. **Draft** versions of certain tools will initially be released at the time of [Flood Risk Review](#) and [Flood Resilience](#) meetings for each community. Final versions of the tools will be released at the time of the [CCO meeting](#). (See graphic below).

Effective vs. New Coastal Study

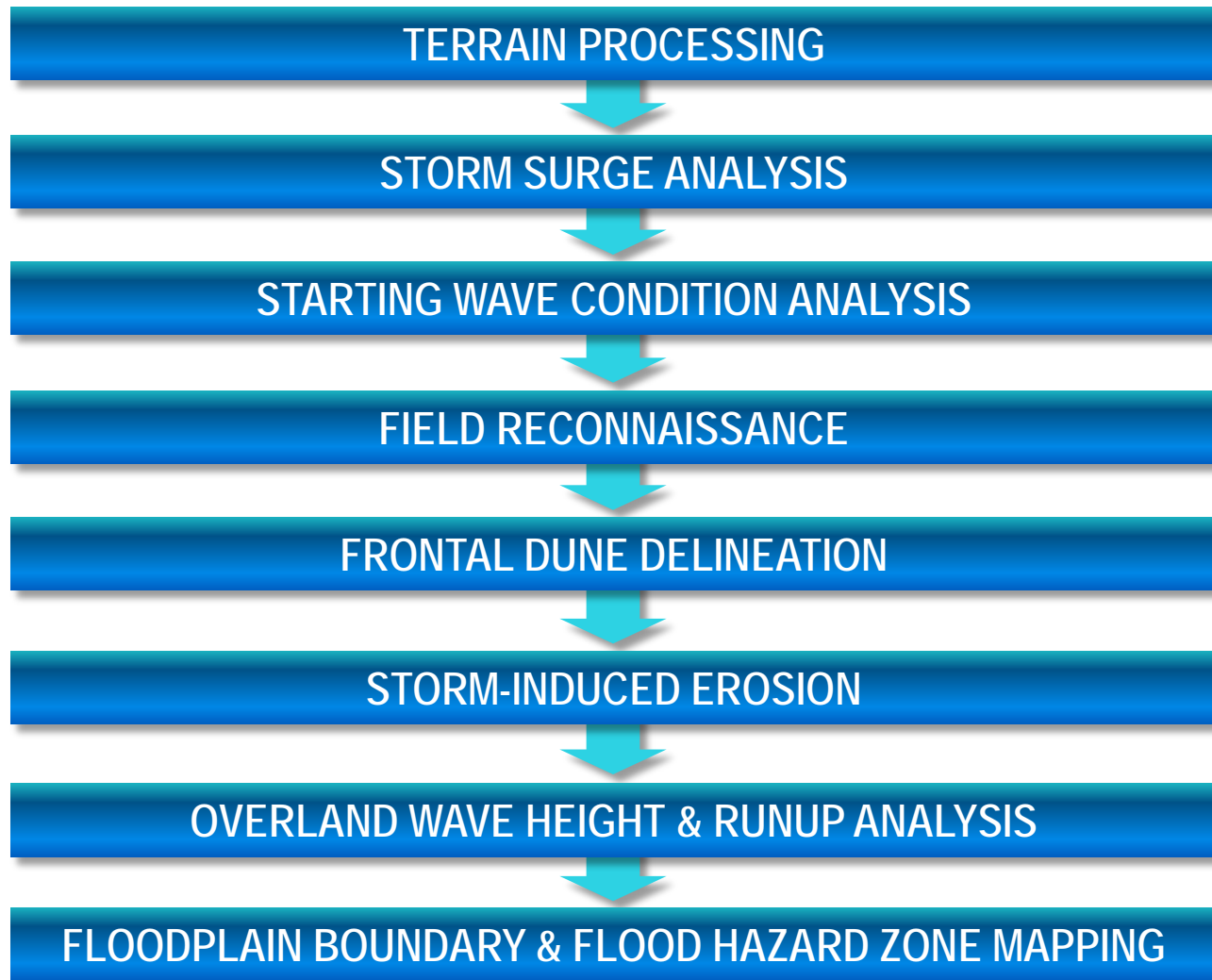
Coastal Study Component	Effective Study (USACE – 1984)	New Study (2013)
Topographic data	1990	2011
SWELs	1984	2012 FEMA Region III / USACE – Delaware River 2012 FEMA Region II – Atlantic Ocean
Modeled transects	No	7
Wave setup	No	Yes
Wave runup	No	Yes
LiMWA	No	Yes



New Storm Surge Model



Coastal Study Process



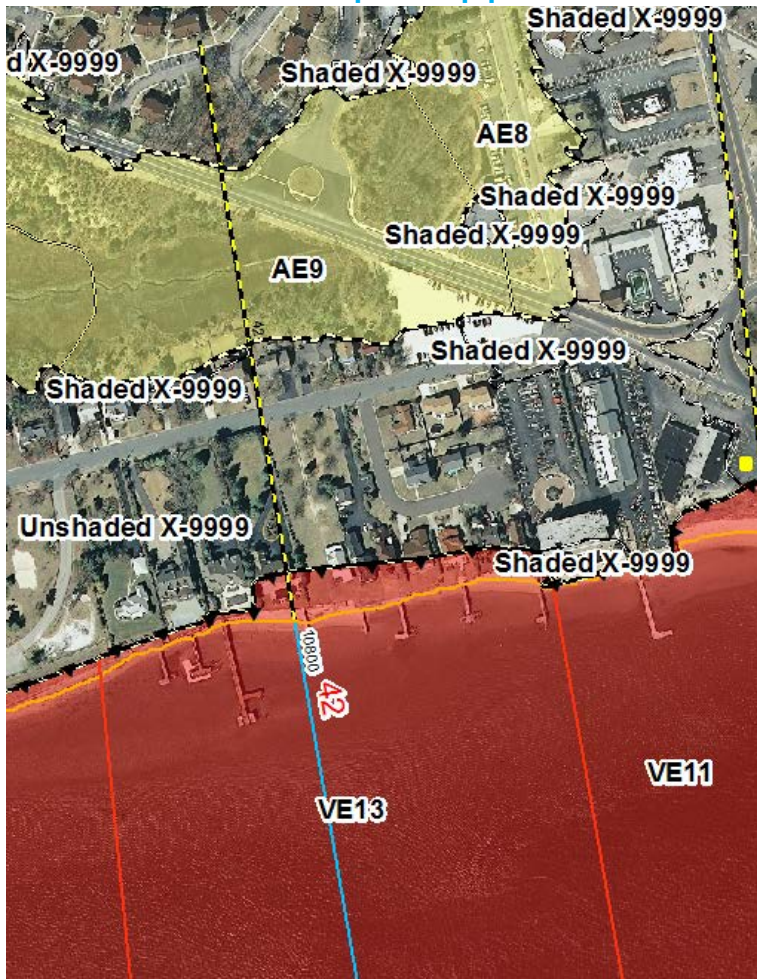
Wave Runup

- Runup modeled for beaches, bluffs, cliffs and coastal structures
- Calculate top 2% of runup elevations (vs. previous studies using mean runup)
- Methods:
Runup 2.0, TAW, CSHORE

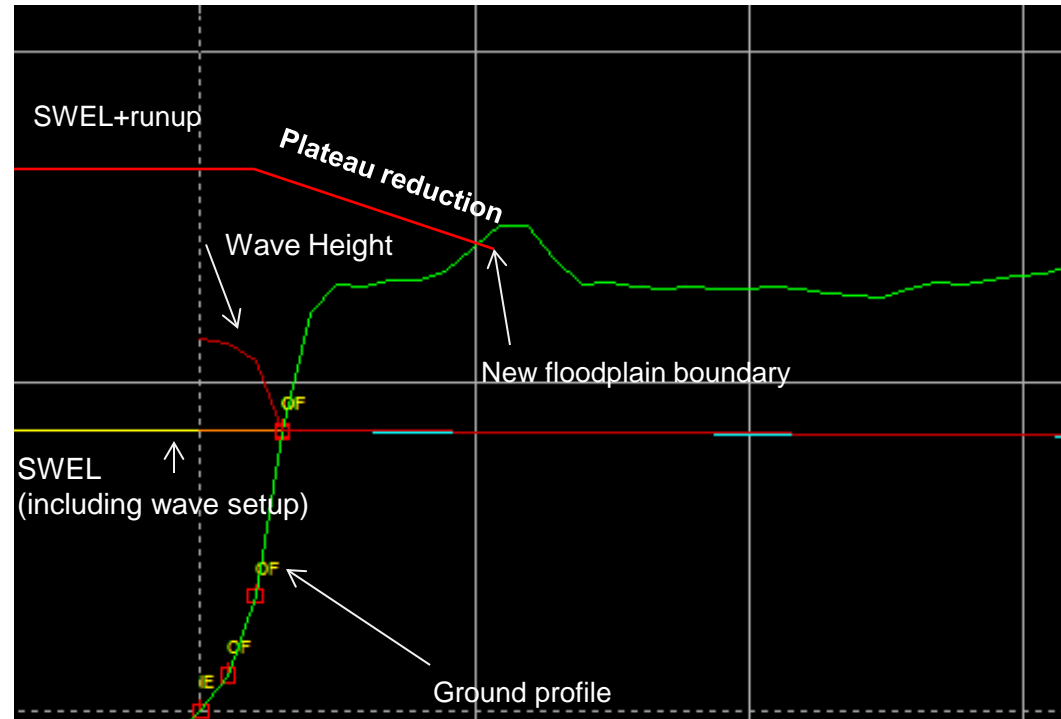


Wave Runup

How is runup mapped?

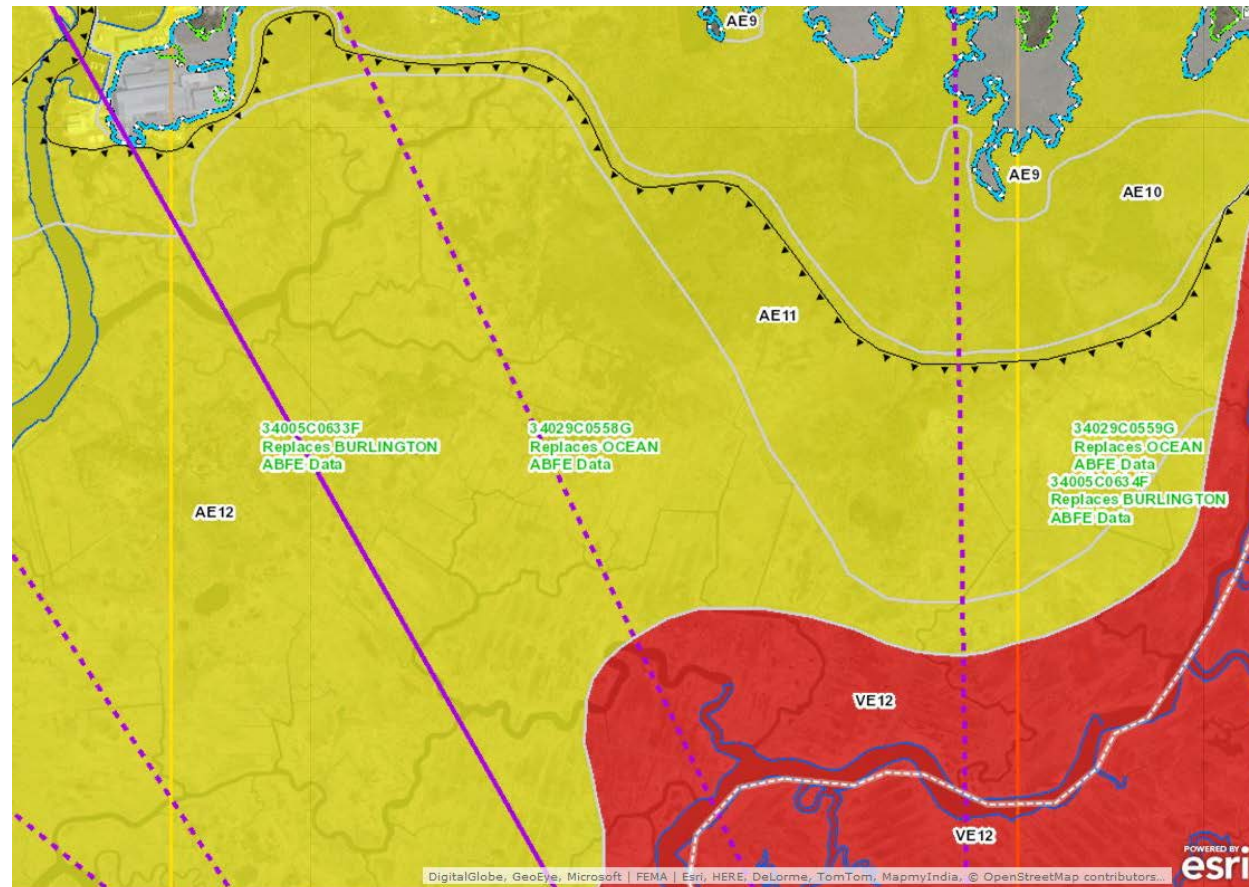


Profile view of Transect



LiMWA on the Map

- **LiMWA sits inside of a Zone AE**
- **LiMWA can cross Zone AE lines**
- **Triangles point to higher waves**
 - Indicates where wave height exceeds 1.5ft
- **Also referred to as Coastal A Zone**



Preliminary Work Map vs. Preliminary FIS/FIRM

Burlington County, NJ Preliminary Work Map



Flood Hazard Information

- 0.2% Annual Chance Boundary
- 1% Annual Chance Boundary
- 500-Year Flood Line
- 100-Year Flood Line
- 50-Year Flood Line
- 25-Year Flood Line
- 10-Year Flood Line
- 5-Year Flood Line
- 2-Year Flood Line
- 1-Year Flood Line
- Shaded X (0.2% Floodplain)
- Published Transacts
- Alleging Transacts
- Proposed Transacts
- Police Boundary
- AE
- AE1
- AE2
- AE3
- AE4
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- AE100

Panel 0112
This preliminary work map contains coastal flood hazard information only. Inverine flood hazard information not included.

FEMA
U.S. Department of Homeland Security

RAMPP
Risk Assessment, Mapping, and Planning Platform

Sample Preliminary FIRM & FIS

NOTES TO USERS

This map is a preliminary Flood Hazard Information (FHI) map for the Township of North Park, New Jersey. It is intended for informational purposes only and should not be used for official purposes. The map shows the results of a preliminary Flood Hazard Information (FHI) study conducted by the Township of North Park, New Jersey. The map is based on the best available data and is subject to change. The map is not a guarantee of accuracy and is not intended to be used for official purposes. The map is provided for informational purposes only. The map is not a guarantee of accuracy and is not intended to be used for official purposes. The map is provided for informational purposes only.

LEGEND

SPECIAL DESIGNATED SUBJECT TO BANQUET

0.2% Annual Chance Flood

1% Annual Chance Flood

500-Year Flood

100-Year Flood

50-Year Flood

25-Year Flood

10-Year Flood

5-Year Flood

2-Year Flood

1-Year Flood

Shaded X (0.2% Floodplain)

Published Transacts

Alleging Transacts

Proposed Transacts

Police Boundary

AE

AE1

AE2

AE3

AE4

AE5

AE6

AE7

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AE9

AE10

AE11

AE12

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FLOOD INSURANCE STUDY

FLOOD COUNTY, USA AND INCORPORATED AREAS

Flood County

AUGUST 18, 1998

Federal Emergency Management Agency

FEMA

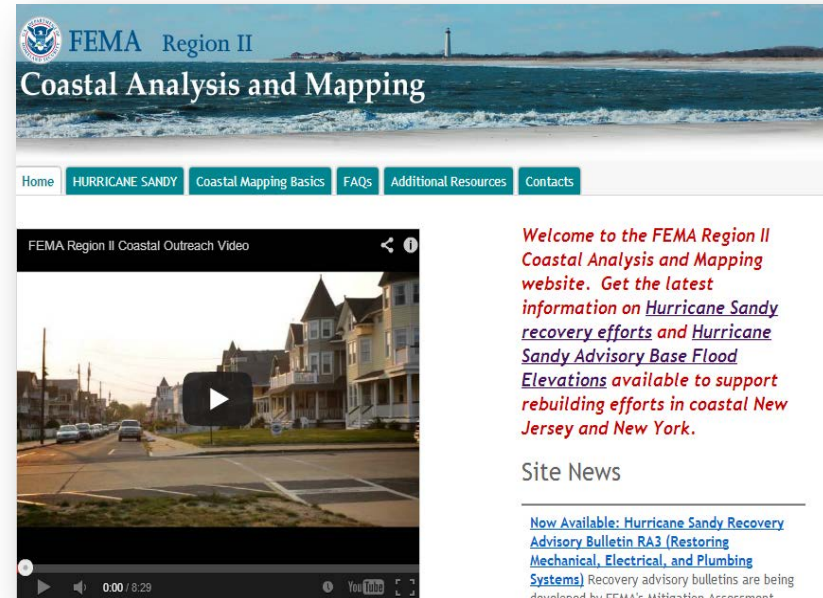
Risk Communications

- **Federal/State/Local goals:**
 - Creating safer communities reducing risk to lives and property
 - Effectively communicate risk and increase public awareness, leading citizens to make informed decisions regarding risk

- **Key factors contributing to successful achievement of these goals are:**
 - Community engagement and exchange of flood risk information
 - Effective collaboration through partnerships
 - Strategic communications plan development

Risk Communications - Resources

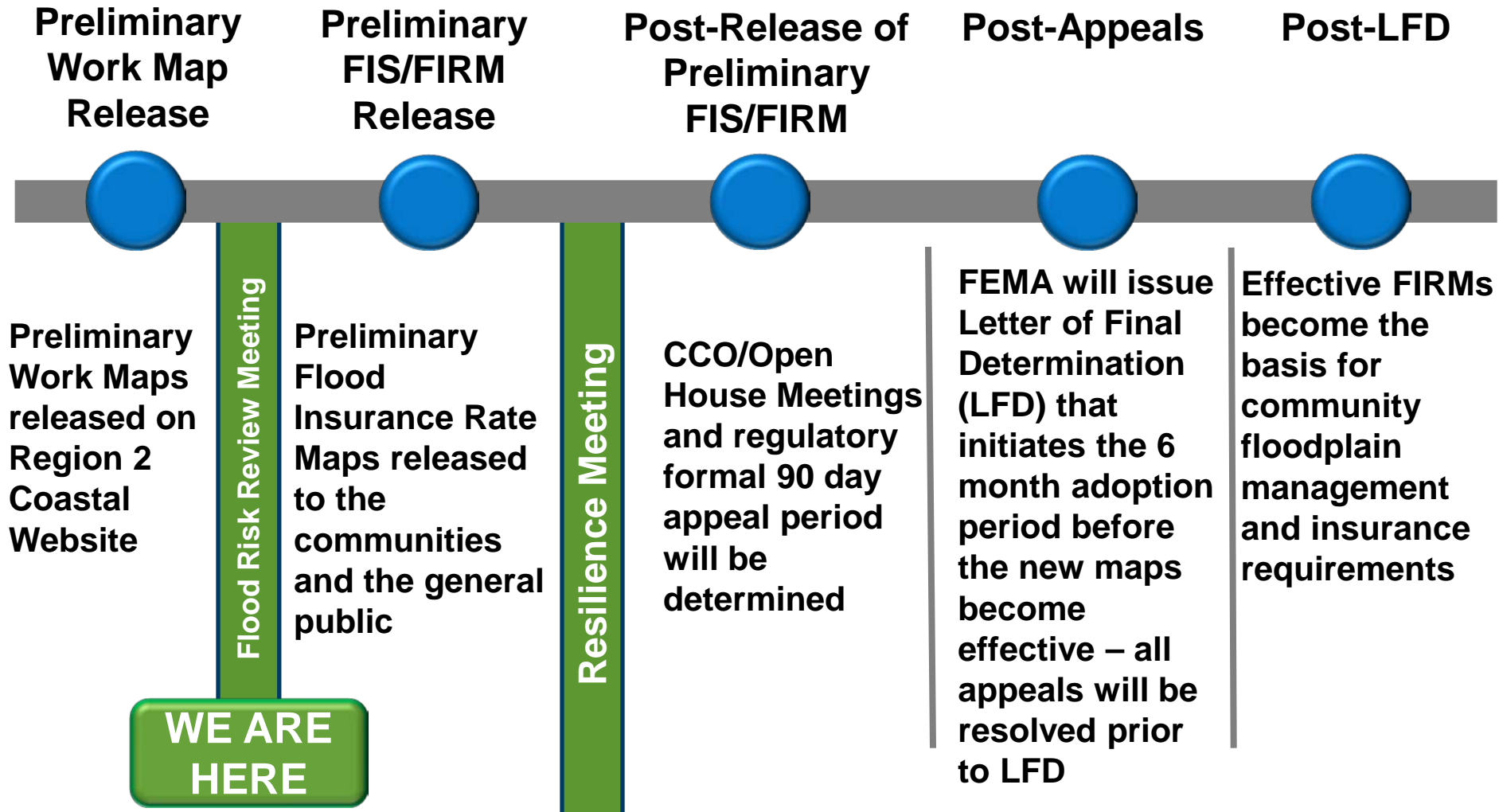
- Visit our Website:
www.region2coastal.com
- Outreach factsheets
- Frequently Asked Questions
- Coastal Risk Educational Videos
- Updated Flood Hazard Data (Preliminary Work Maps)
- Non-Regulatory Products and Datasets



Timeline for Burlington County – Past

- **NJ/NYC Coastal Flood Risk Study – started in 2009**
- **Meetings with local officials:**
 - Introduction to Risk MAP: Nov, 2010
 - Risk MAP Project Status Update: Apr, 2013
 - Discovery Meeting: May, 2013
- **Post-Sandy:**
 - Preliminary Work Maps – March, 2014
 - Webinar with local officials

Timeline for Burlington County – Future



Conclusion: Community Resilience

Risk Changes Over Time



FEMA Provides Best Available Data



Community Officials Adopt Higher Standards



Property Owners Build to Higher Standards



More Resilient Communities Created



Together, we all can create stronger and safer communities

US Army Corps of Engineers (USACE)

■ Relevant Projects and Studies

- Flood Control and Coastal Emergencies (FCCE)
Repair/Restore of Constructed Projects
- Authorized/Unconstructed Projects
- Ongoing Studies
- Project Performance Evaluation & Comprehensive Study

■ Other On-going Initiatives

- Participation in the Hurricane Sandy Rebuilding Taskforce
- Continued collaboration w/State and Federal partners on various risk reduction and resiliency building initiatives, workshops, and guidance

US Geological Survey (USGS)

The Nation's science agency – response to Hurricane Sandy

The USGS studies the effects of hurricanes, tropical storms and flooding in general to better understand potential impacts on communities and to protect the environment, human life and property.

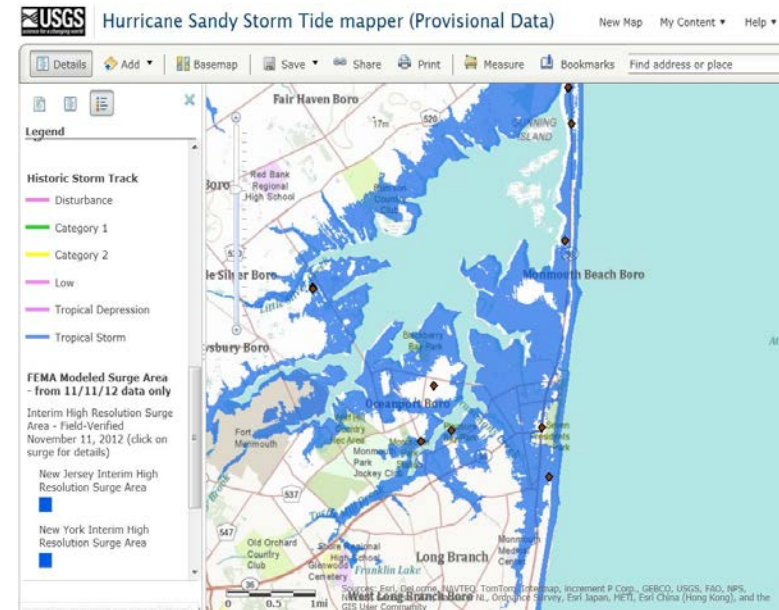
The current storm-surge sensor deployment program began in 2005 after Hurricane Katrina.

Storm mapper provisional data delivery



Rapid deployment gages

Storm tide sensors



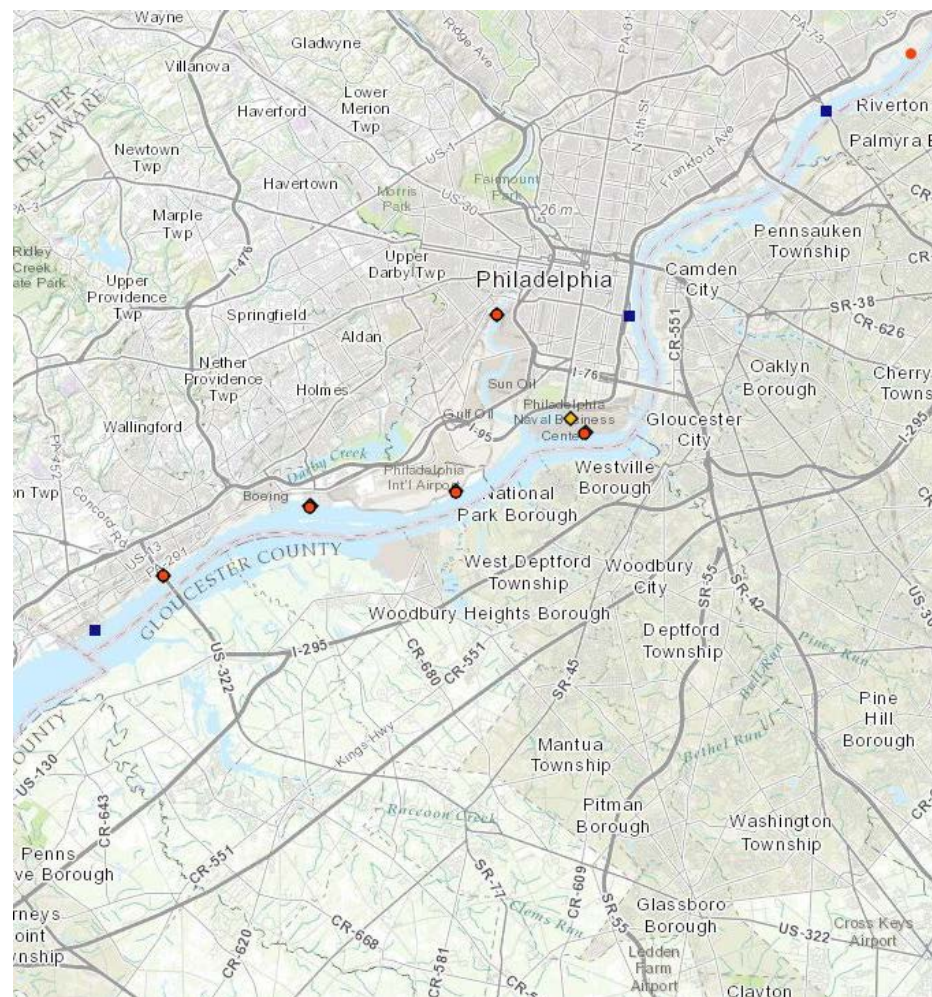
USGS Data Collection

- The USGS deployed 230 storm surge sensors along the East Coast. (148 - surge, 9 - wave, 65 BP, and 8 - RDGs)
- The USGS recovered 228 sensors (only lost 2 surge sensors)
- The USGS identified over 900 individual high-water-mark sites and surveyed about 615 of those sites.
- The USGS flagged and surveyed about 170 HWM sites along the coast of New Jersey.
- The data collected by the USGS during and after Hurricane Sandy was used to verify the extent of flooding along the east coast.

<http://water.usgs.gov/floods/events/2012/sandy/sandymapper.html>

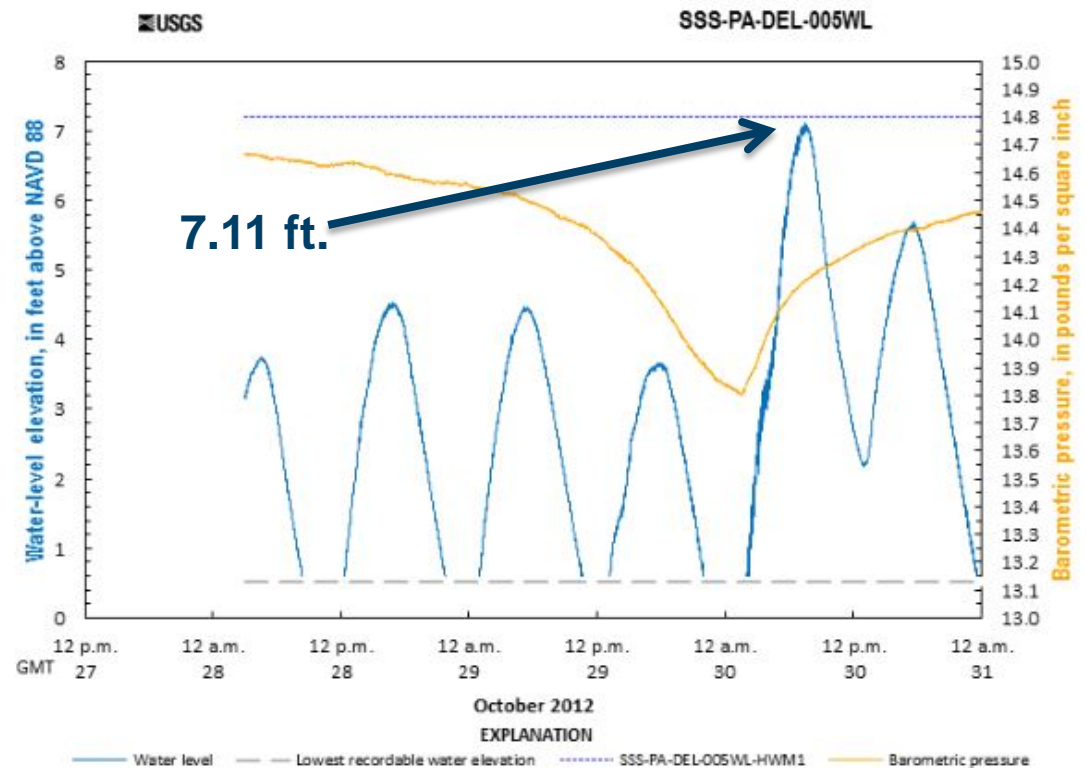
USGS Sensors in the Delaware River and Bay

- The New Jersey and Pennsylvania Water Science Centers deployed about 12 sensors from Delaware Bay up to the Philadelphia area
- Peaks on the Maurice and Cohansey Rivers in NJ were about 6.3 and 6.5 ft
- Peaks near Marcus Hook (Chester) and Phila, PA were about 7.0 to 7.2 ft



USGS Storm Tide Sensor Data

Delaware River at Philadelphia, PA (across from Gloucester Co. N J)



<http://water.usgs.gov/floods/events/2012/sandy/sandymapper.html>

Breakout Groups

- **Modeling / Engineering**
- **Depth Grids & Changes Since Last FIRM**
- **Areas of Mitigation Interest & Hazard Mitigation Planning and Actions**
- **State**
- **USGS & USACE**

Please don't forget to turn in your evaluation sheets!



FEMA