RiskMAP
Increasing Resilience Together

Monroe County
Flood Risk Review Meeting

November 28, 2017

FEMA

Agenda

- The value of updated flood maps for your community
- Review updated flood-risk data and important next steps in the Risk MAP process
- Increasing mitigation opportunities in your community
- Working session to review maps

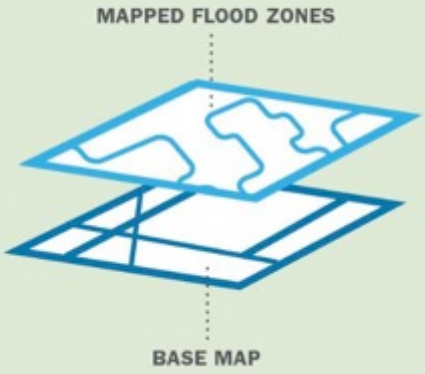
Monroe County

The Value of Updated Flood Maps for your Community

Why Are We Here?

A new coastal flood hazard analysis is complete for your community and Draft Coastal Workmaps are ready for review.

Workmaps



Study Report

Flood Maps Impact Important Decisions

To Identify and Assess the Flood Risk

To Establish Rates for Flood Insurance

To Determine Local Land Use

To Inform Engineers and Developers

To Equip Emergency Managers

Why Update your Flood Maps?

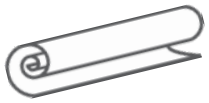
MONROE COUNTY: SNAPSHOT

COMMUNITY	POPULATION	NFIP POLICIES	NFIP CLAIMS	NFIP PREMIUMS	CAV/CAC* DATES	HAZARD MITIGATION PLAN
CITY OF ROCHESTER	210,745	56	41	$2,168	CAV: 2/27/2013 CAC: 10/2/2012	Approved Pending Adoption
TOWN OF GREECE	96,674	165	103	$4,083.5	CAV: 4/17/2012 CAC: N/A	Approved Pending Adoption
TOWN OF HAMLIN	9,112	74	31	$3,180.84	CAV: 10/2/2012 CAC: N/A	Approved Pending Adoption
TOWN OF IRONDEQUOIT	51,337	64	32	$889.13	CAV: 3/26/2008 CAC: N/A	Approved Pending Adoption
TOWN OF PARMA	15,823	96	17	$2,715.18	CAV: 7/7/2009 CAC: N/A	Approved Pending Adoption
TOWN OF PENFIELD	36,895	55	43	$10,365.26	CAV: 11/16/2009 CAC: N/A	Approved Pending Adoption
TOWN OF WEBSTER	43,750	63	36	$2,664.78	CAV: 8/27/2013 CAC: 1/5/2017	Approved Pending Adoption

*COMMUNITY ASSISTANCE VISITS (CAV)/ COMMUNITY ASSISTANCE CONTACTS (CAC)

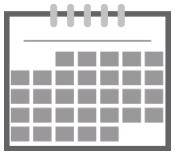
Your Role

Local Officials, Floodplain Administrators and Staff



Provide technical review of preliminary data

Submit questions and comments to FEMA

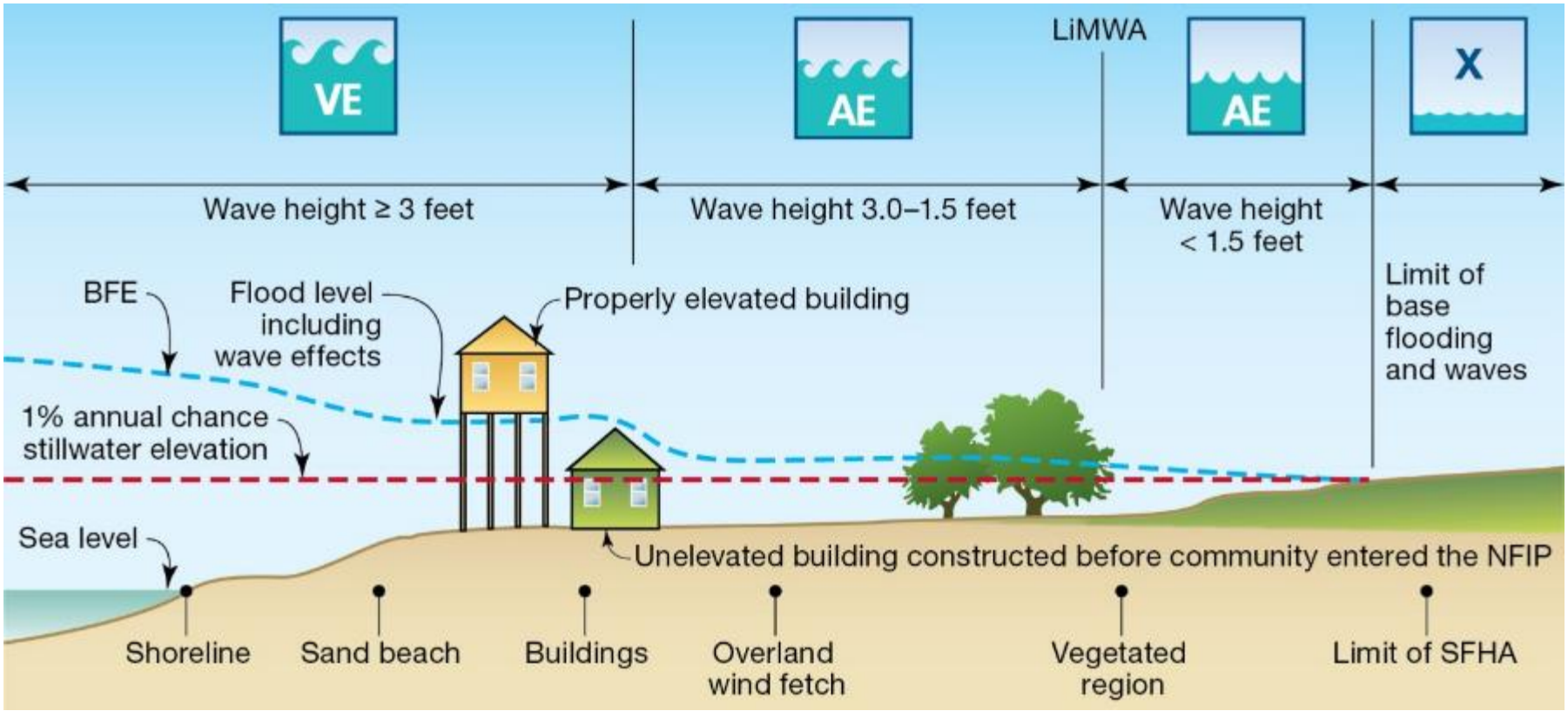


Share new flood risk info with property owners and stakeholders

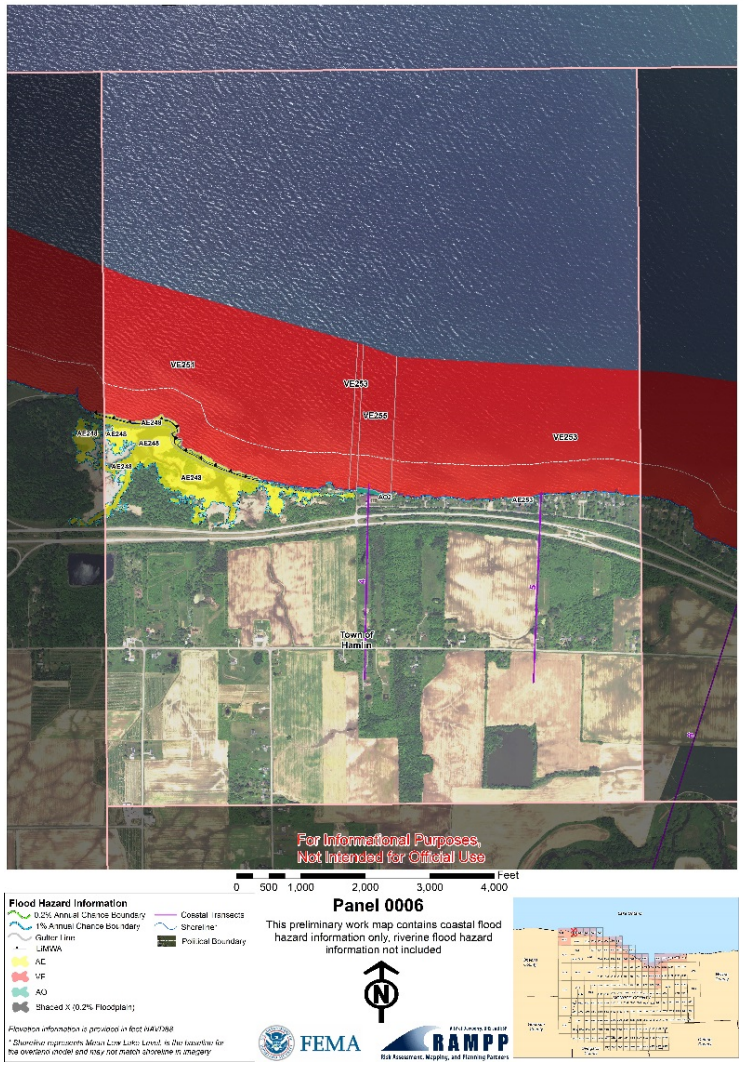
Identify mitigation needs and priorities

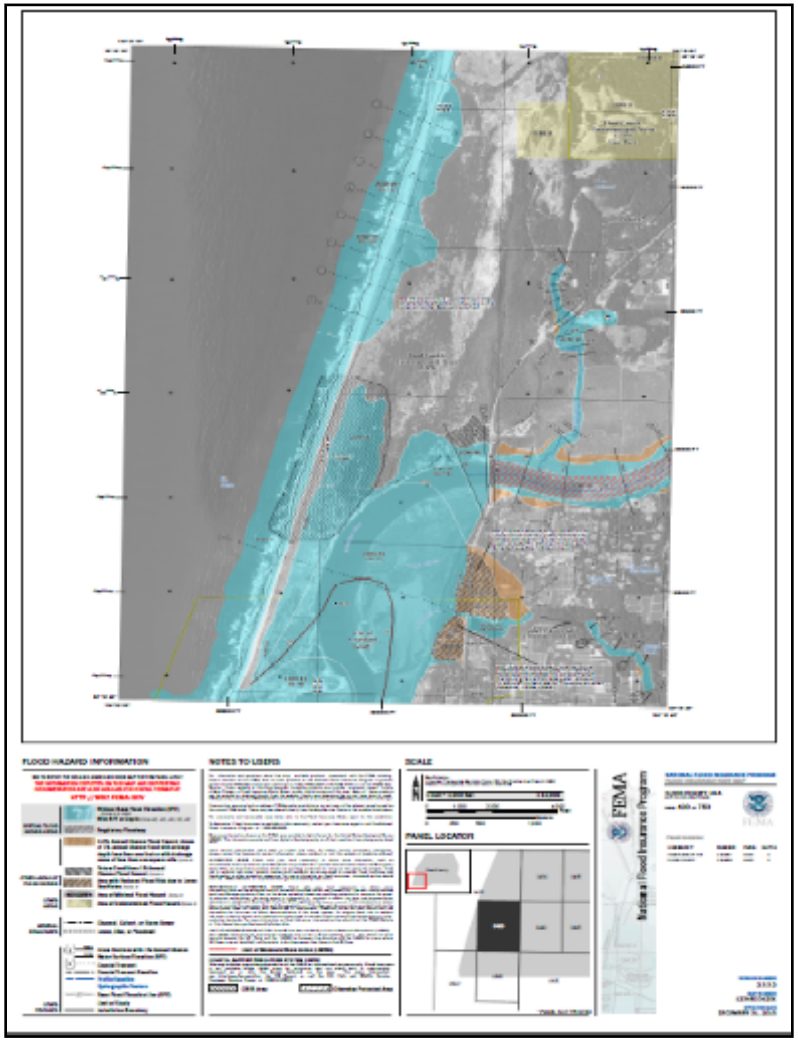
Update local plans, codes, and ordinances

Detailed Coastal Mapping

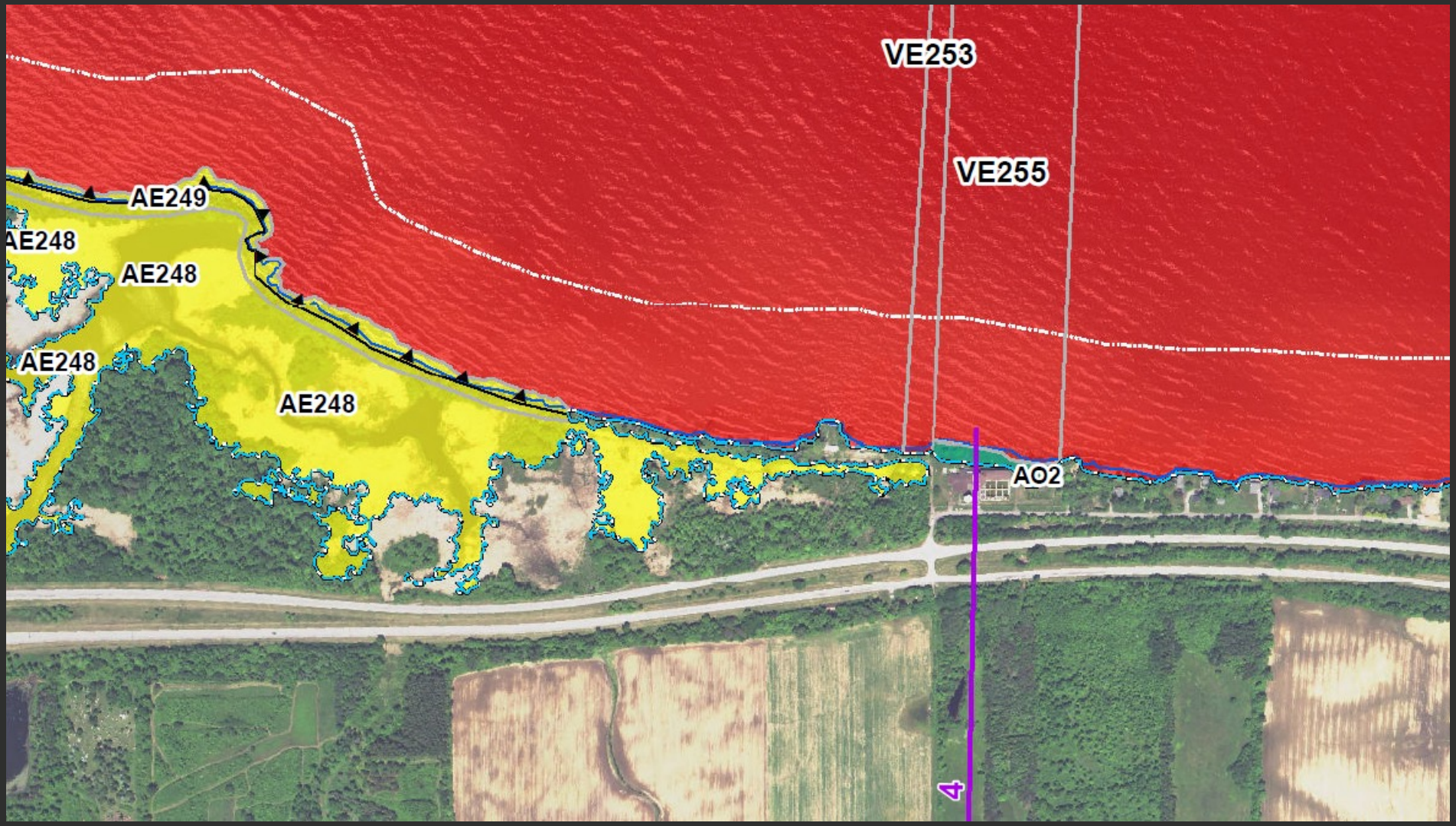


Coastal Work Map vs. FIS/FIRM





WORK MAPS WILL NOT AFFECT FLOOD INSURANCE REQUIREMENTS OR COSTS



Modeling the Special Flood Hazard Area (SFHA)

VE, AE, and AO Zones are "100-year floodplain" with a **1-percent-annual-chance of flood**

- Insurance is **required** if you have a federally backed mortgage or received federal disaster assistance
- Informs building code standards

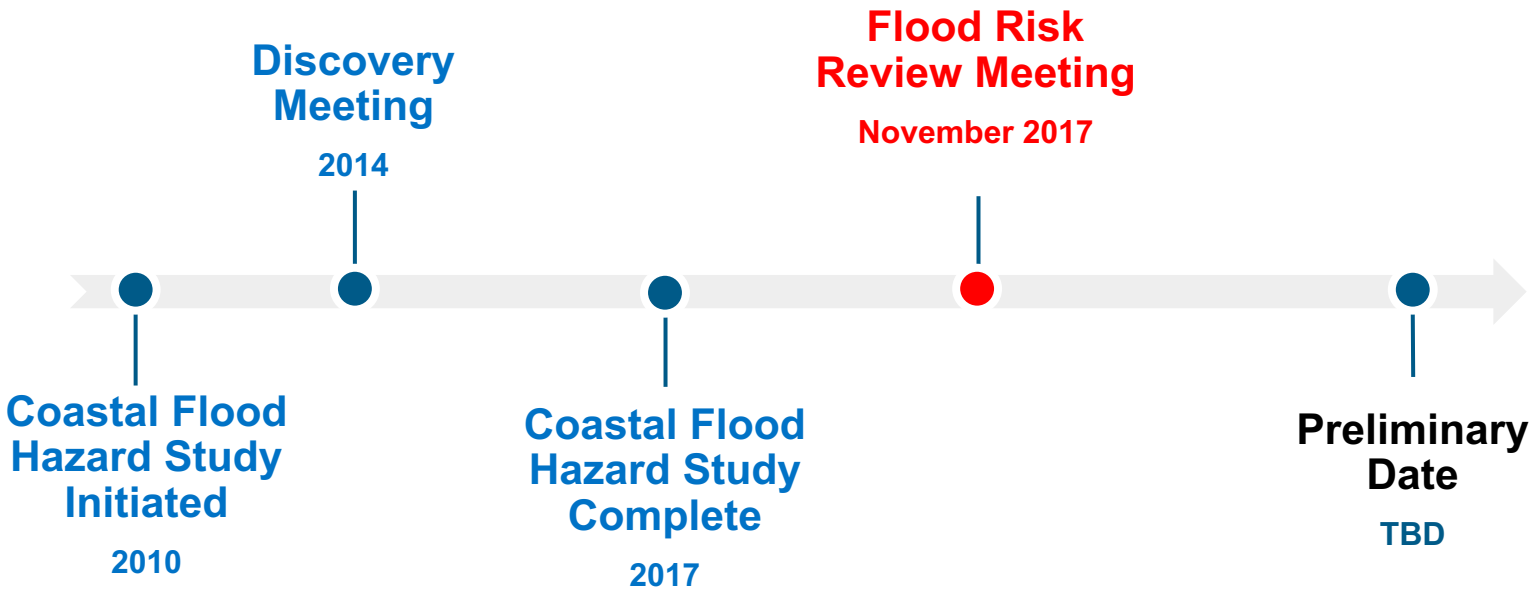
Monroe County

The Risk MAP Process and Scope

Discovery Report 2016

- A few studies are outdated. Base Flood Elevations do not reflect dredging, depth or higher ground added around water bodies.
- Flooding and erosion of Lake Ontario are major concerns, affected by changes in precipitation.
- Lake flooding has damaged homes along the shore and costs of property damage have run into the millions.

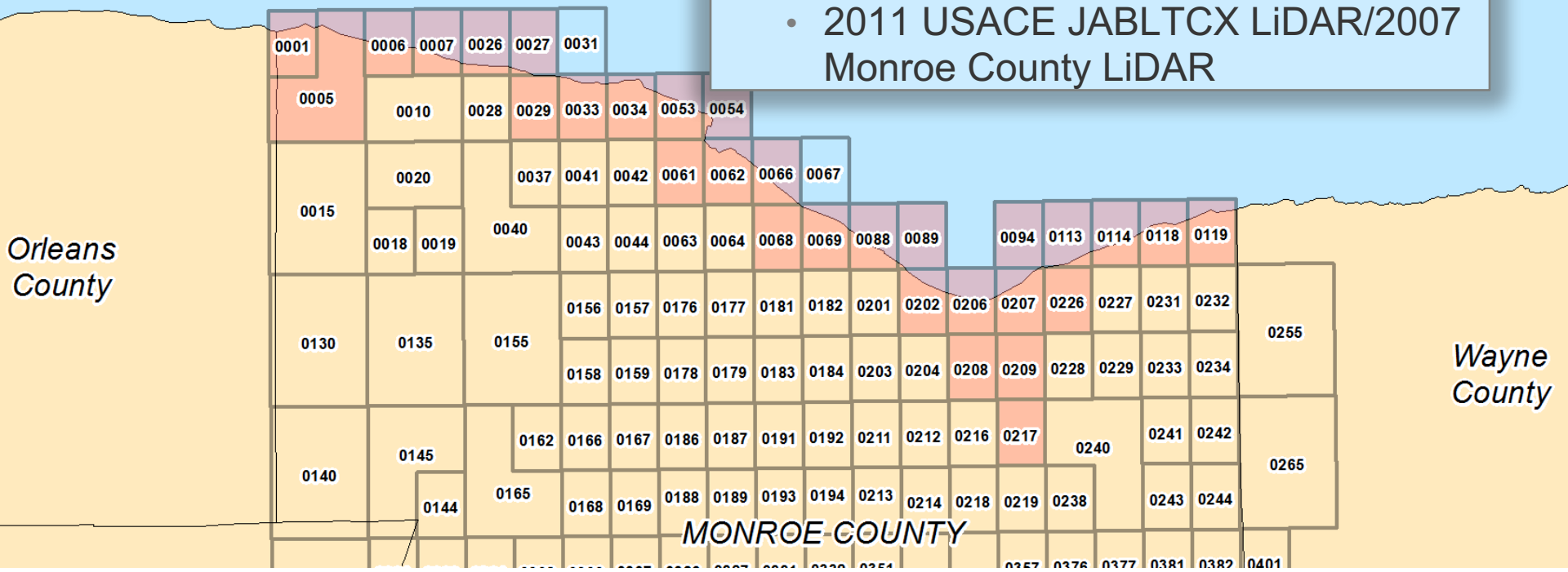
Project Timeline and Schedule



Study Area

Monroe County

- 8 Coastal Communities
- 48 miles of shoreline (Lake Ontario)
- Coastal Storm Flooding update
- 2011 USACE JABLTCX LiDAR/2007 Monroe County LiDAR

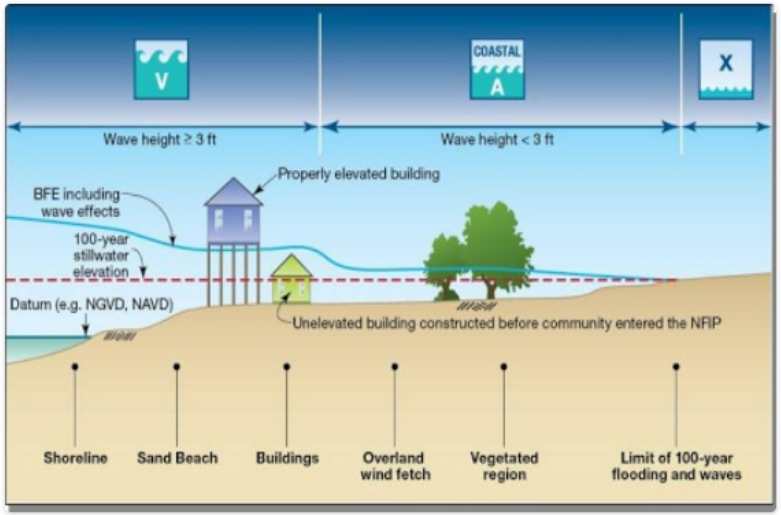


Effective vs New Coastal Study

Coastal Study Component	Effective Study (2013) – Previous Studies (1977 & 1999)	New Study (2017)
Topographic data	2007 Monroe County LiDAR	2011 USACE JALBTCX & 2007 Monroe County LiDAR
Stillwater Elevation (SWEL)	Gage Frequency Analysis (USACE 1988)	Lake Ontario Storm Surge Model (2012)
Modeled transects	0	57
Wave setup	No	Yes
Wave runup	Yes (Town of Richland)	Yes
Limit of Moderate Wave Action (LiMWA)	No	Yes

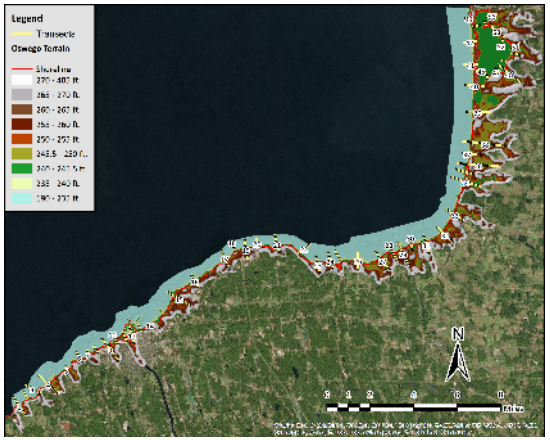
Study Approach

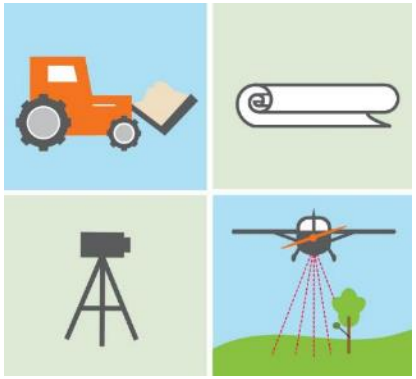
- Regional Study Approach
  - Water level and wave analysis
  - Improvement over community-county
  - Reduces number of boundary conditions
  - Greater consistency in assumptions



- Local/County Level Activities
  - Mapping level tasks performed at county level
  - Nearshore wave transformations
  - Wave runup
  - Overland wave propagation

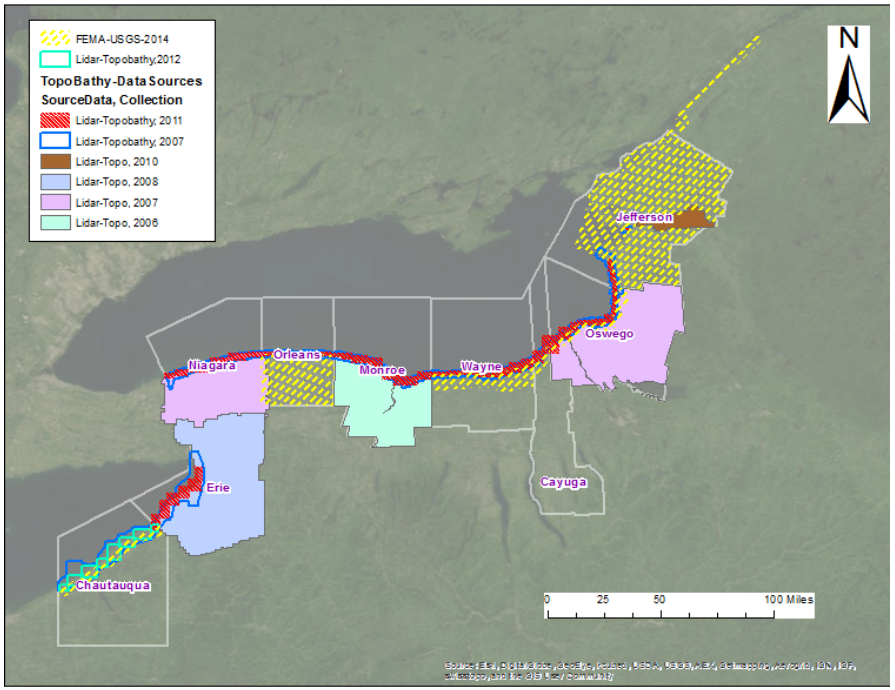
Light Detection and Ranging (LiDAR)





Terrain Dataset

Used for modeling & mapping



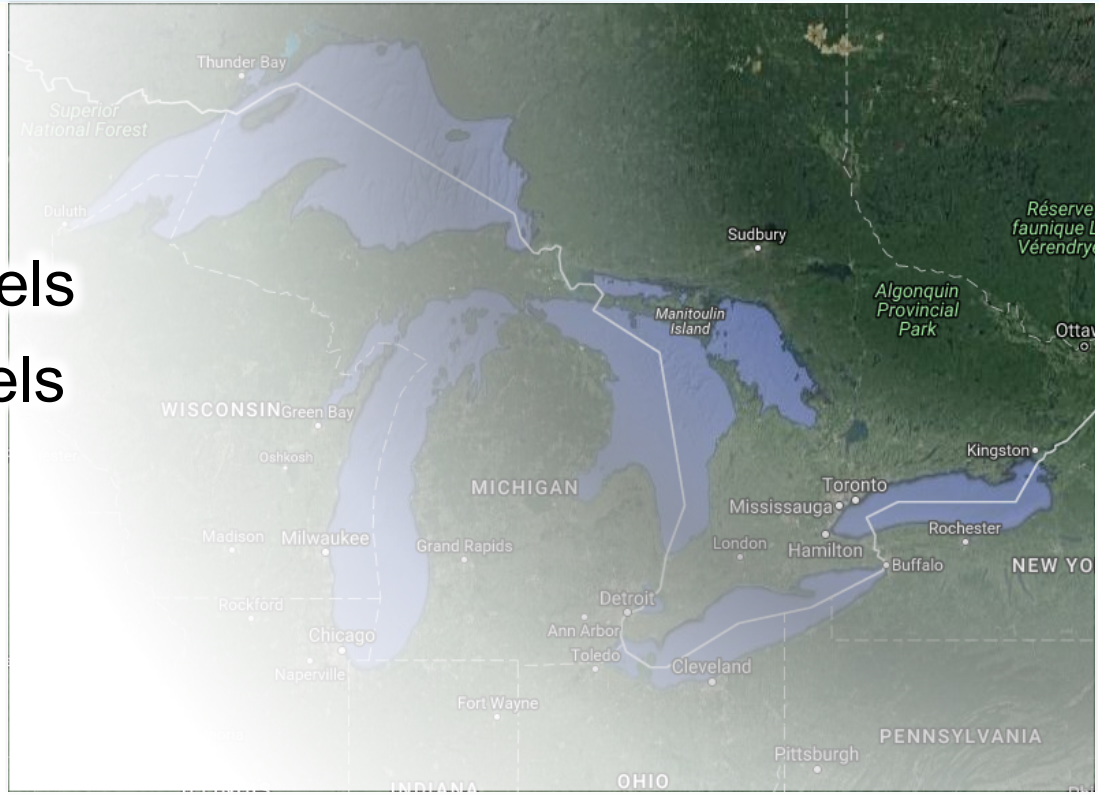
LiDAR Data Sources

2014 FEMA Lake Ontario LiDAR
2011 USACE/JALBTCX Great Lakes Topo/Bathy LiDAR
2001 USACE Detroit District Topo/Bathy LiDAR
1999 NOAA NGDC Bathymetry
1995 NOAA CHARTS Sounding Bathymetry

Storm Surge Study Technical Support

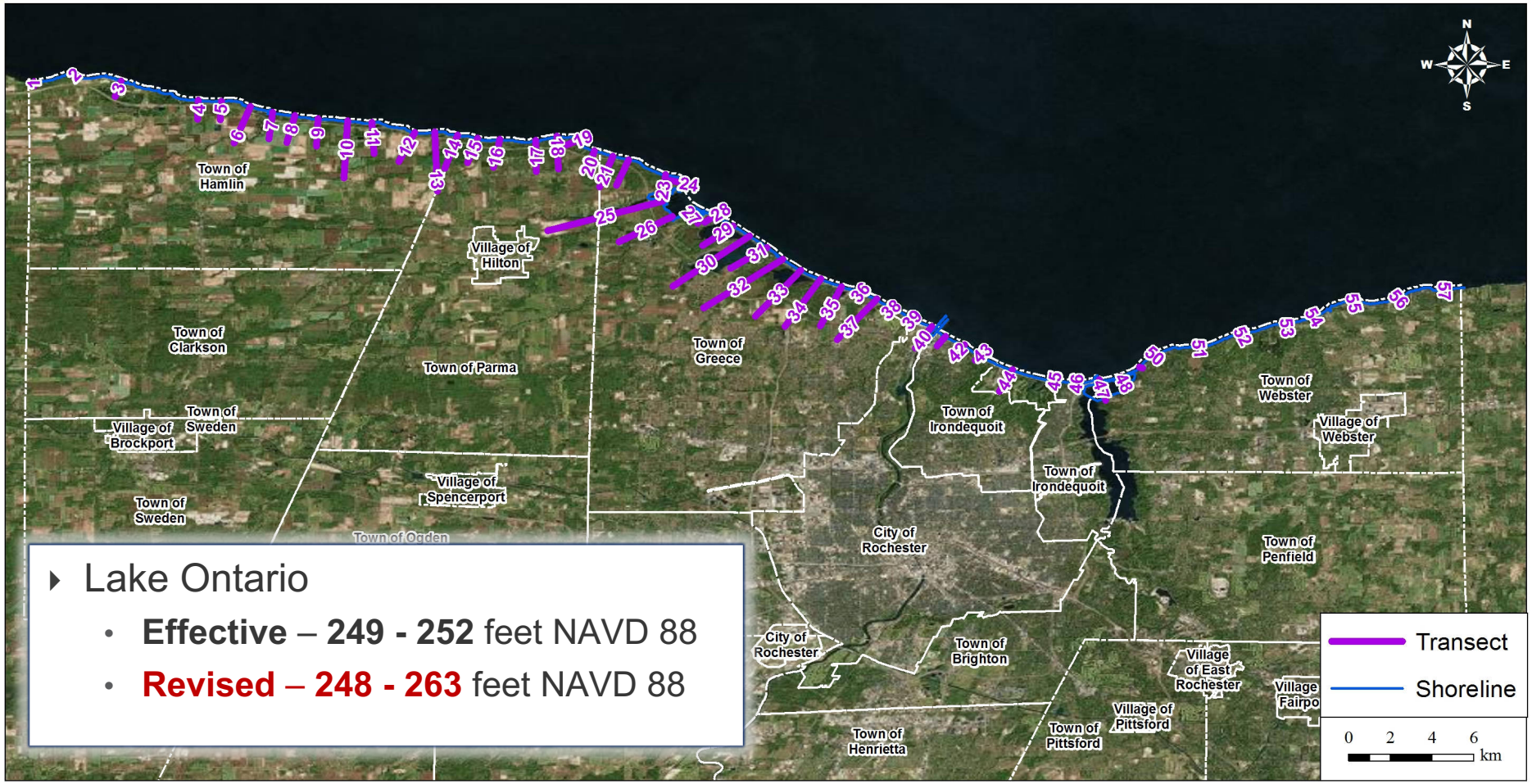
Five Report sections

- Short-term Water Levels
- Long-term Water Levels
- Statistical Analysis
- Storm Surge model Setup and Validation
- Storm Production



Storm Surge From 12-8-2009

Monroe County Transects

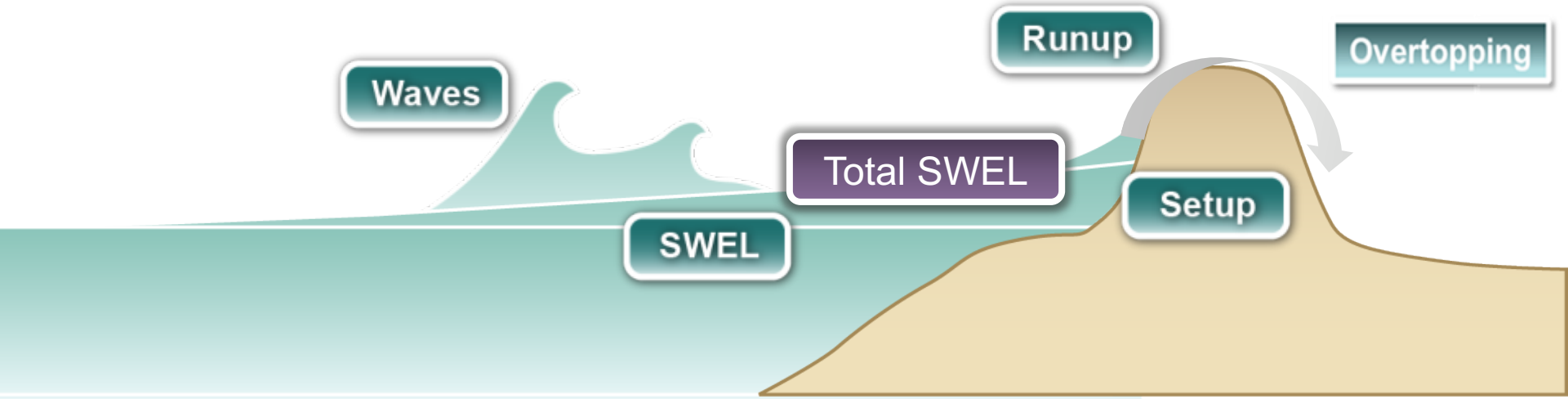


- Lake Ontario
  - **Effective** – **249 - 252** feet NAVD 88
  - **Revised** – **248 - 263** feet NAVD 88

Field Reconnaissance

County:	Monroe County, NY	
Water Body:	Lake Ontario	
Transect:	11	
Point:	1	
GPS ID:	99	
Latitude:	43.347229 N	
Longitude:	77.848217 W	
Date-Time:	Dec. 02 2014, 12:04	
Location Description:	Shoreline of Property on 6440 Shore Acres	
Fetch Description:	OF	
Shore Protection/Structure:	Sand and Cobble Beach	
Primary Frontal Dune Height:	-	
General Comments:		
Building Description	*Number of Rows:*	
	Open Space Ratio:	
Vegetation Description:	*Description:*	
	Type:	
	Height (ft):	
	Tree Diameter (ft):	
	Tree Spacing (ft)	
Marsh Description:	*Marsh Type:*	
	Height (ft):	
	Plant Density (#/sq.ft):	
	Base Stem Diameter (in):	
	Top Stem Diameter (in):	

Coastal Base Flood Elevation

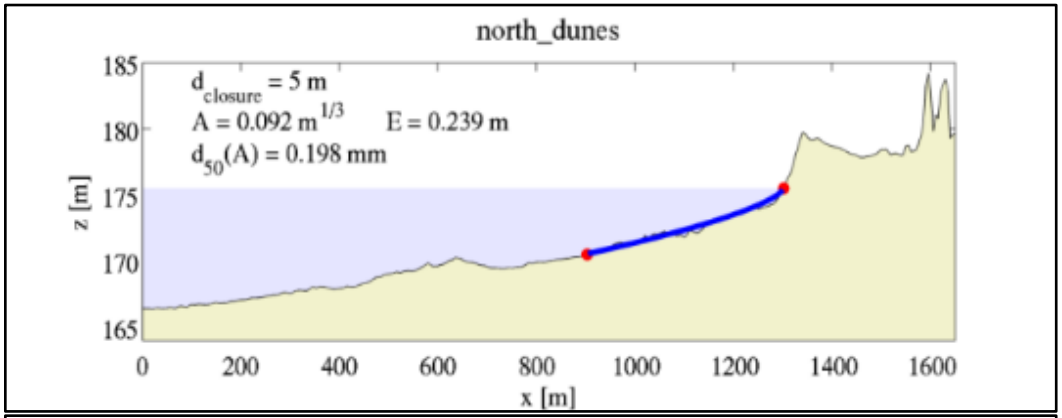


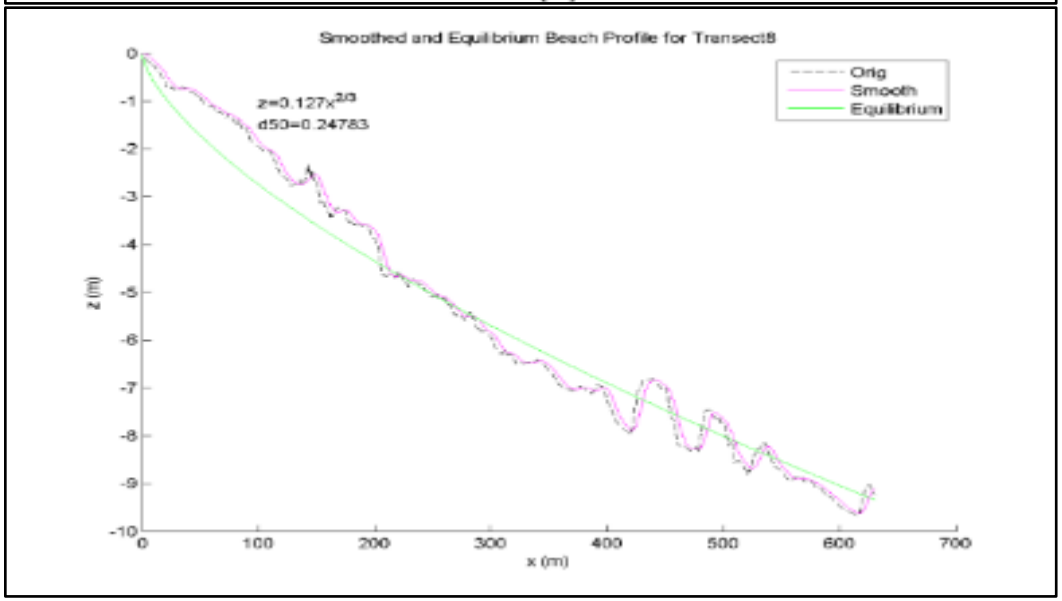
SWEL = Stillwater Elevation (storm surge level)
Total SWEL = Stillwater Elevation, inclusive of wave setup

Erosion in the Great Lakes

USACE CSHORE model

- Applies real physics
- Near-shore wave processes
- Cross-shore and along shore sediment transport
- Requires sediment grain size



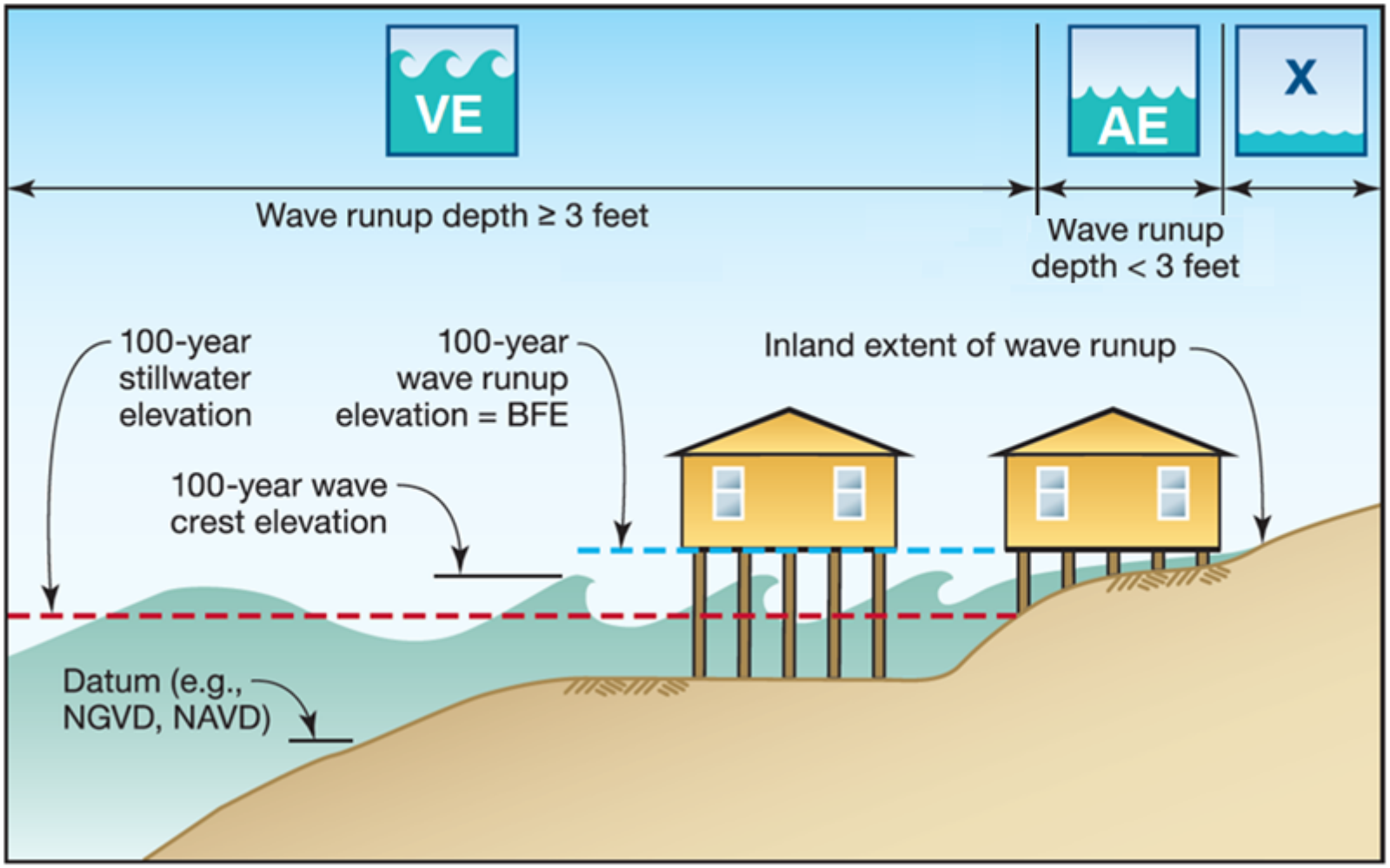


Coastal Erosion and Scour

The two most damaging aspects of coastal flooding for coastal buildings are erosion and scour.

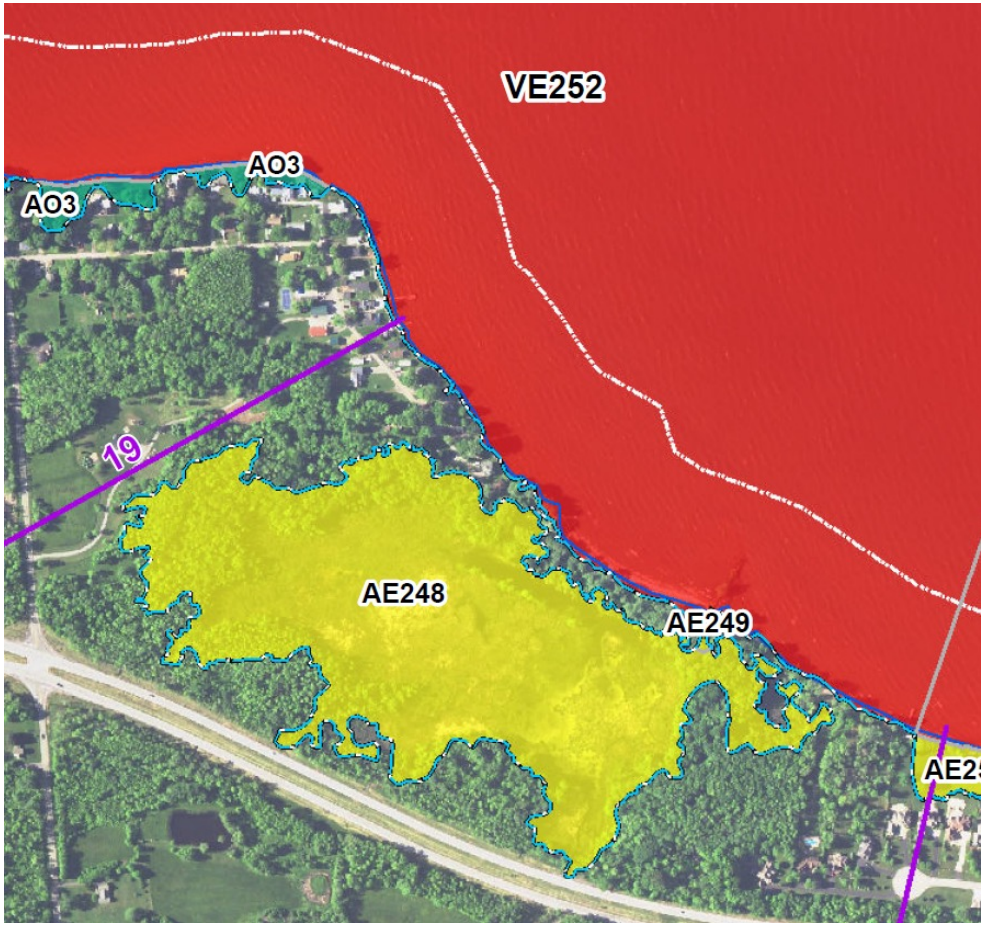
- Erosion should be considered in determining foundation depths and heights.
- Nature and extent of soil loss expected around a building is critical.
- A slab is not a substitute for adequate embedment.

Detailed Coastal Mapping – Wave Runup



Wave Runup

- Rush of water that extends inland when waves come ashore
- These elevations may be higher than the stillwater elevations developed as part of the storm surge analysis
- Wave effects have been mapped for the first time for most of this area

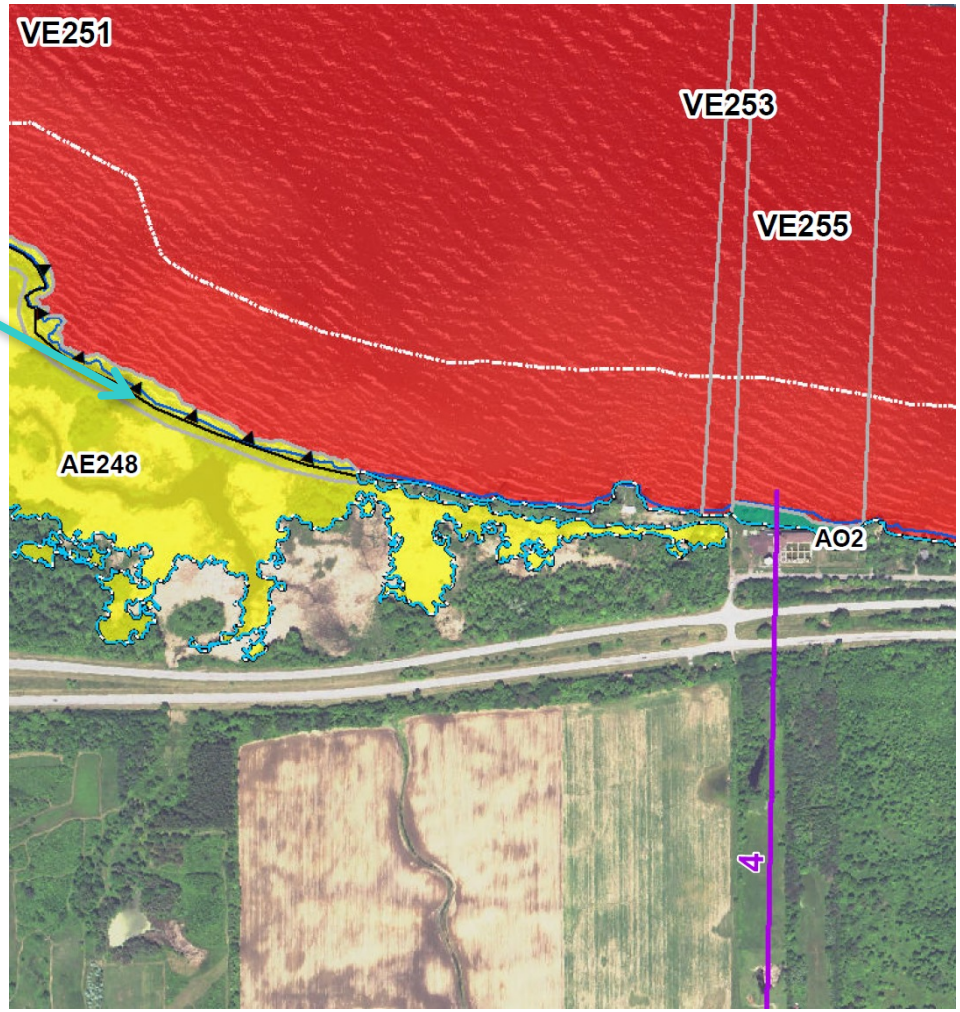


Wave Overtopping – AO Zones

- Overtopping Rate Considerations for Establishing Flood Insurance Rate Zones
- Ponding Considerations
  - Areas where AE not present beyond slope break
  - Duration of overtopping
  - Topography
  - Drainage landward of the overtopped barrier

Limit of Moderate Wave Action - LiMWA

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



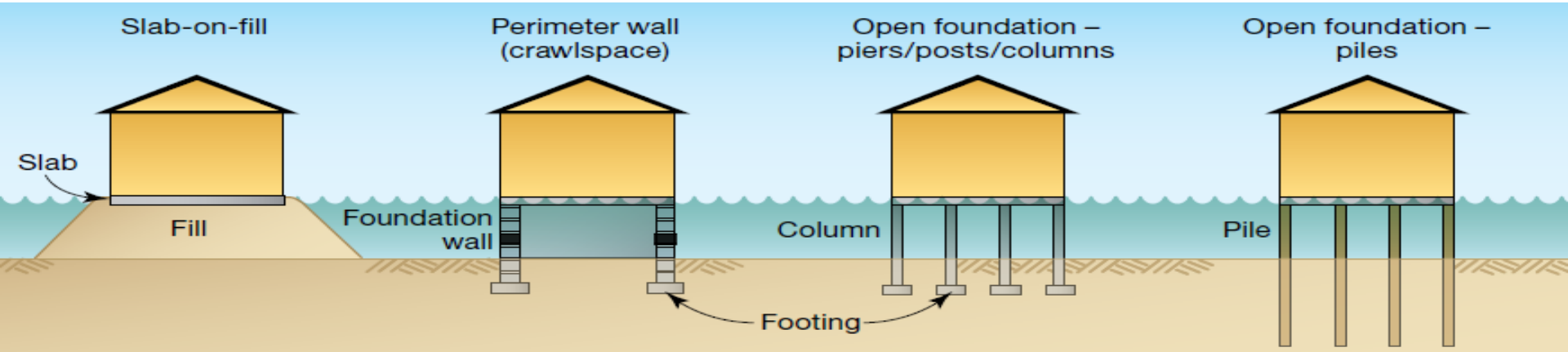
Development Requirements

A Zones

- Slab-on-grade / Slab-on-fill
- Fully-enclosed foundation wall (flood openings required)
- Open foundation on piers, posts, piles, or columns
- Top of lowest floor elevated to or above the BFE
- AO Zone – elevate to or above flood depth number or 2 feet above HAG

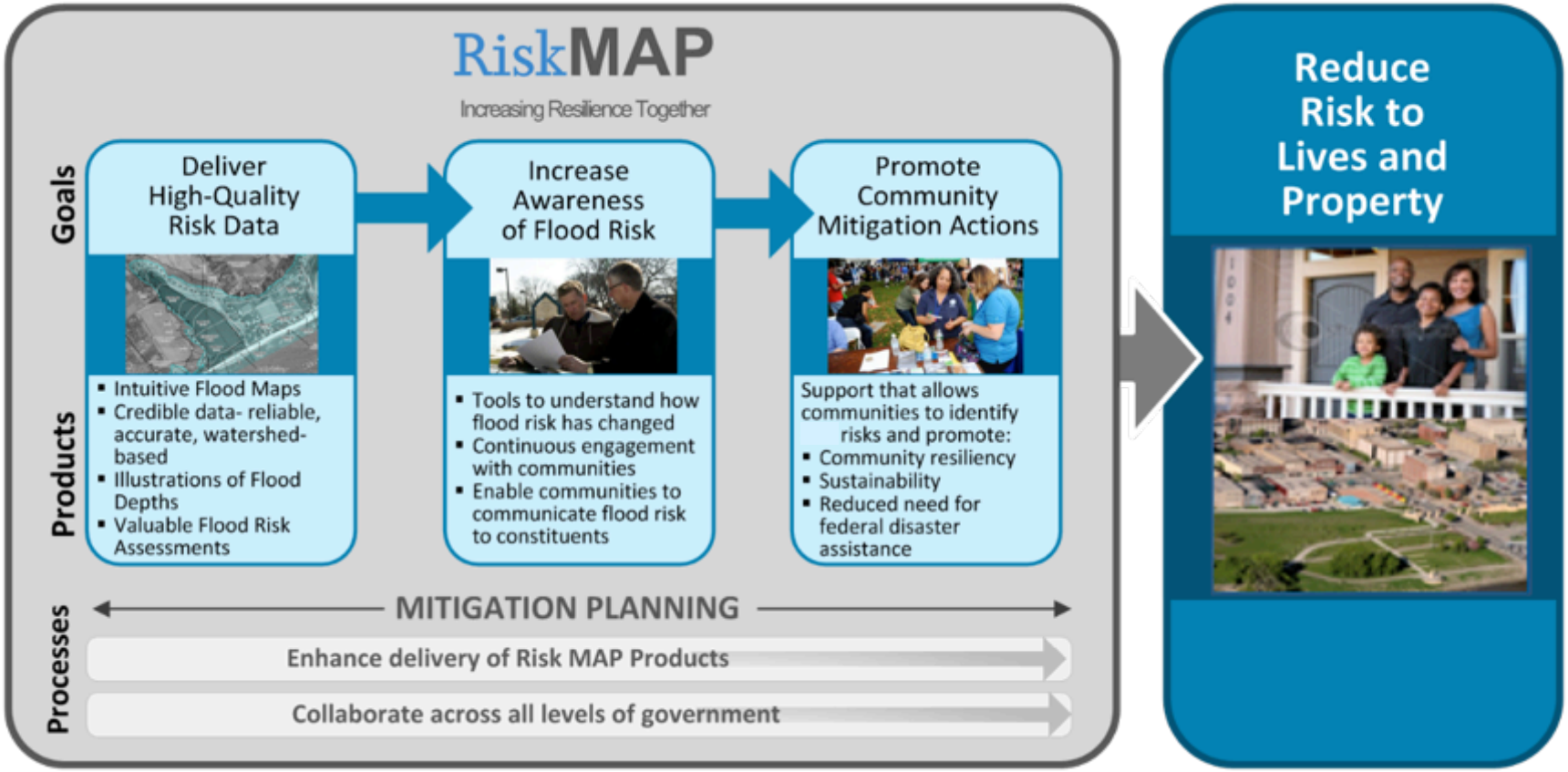
V Zones

- Open foundation on columns or piles
- Free of obstruction or use of breakaway walls/lattice work
- Parking, access, and storage
- Designed by a registered design professional
- Bottom of lowest horizontal structural member to or above BFE



Increase Mitigation Opportunities

Goal: Stronger and Safer Communities



Proposed Mitigation Actions

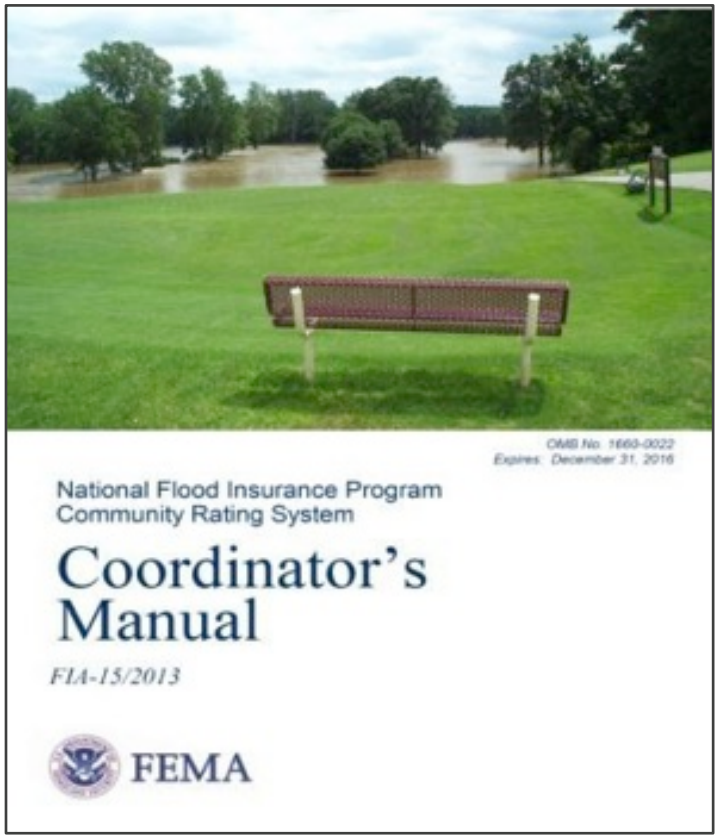
From the Hazard Mitigation Plan

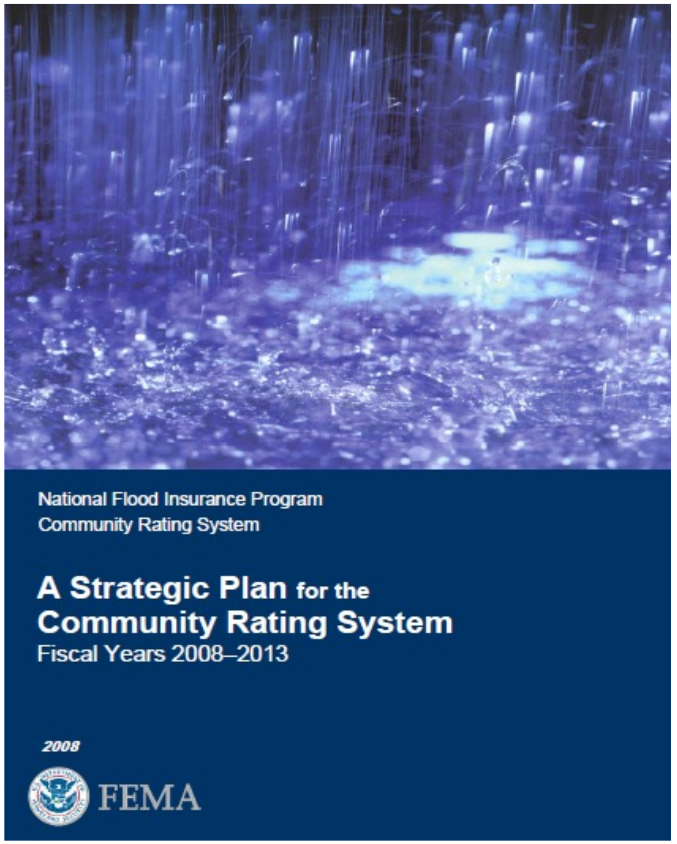
- Building setback will be increased along Lake Ontario to reduce potential erosion and its impacts. Multiple municipalities proposed this effort.
- Better enforcement of zoning regulations.
- Implement response protocols to remove ice/debris jams from waterways.
- Conduct outreach and public education pre-/post-hazard event.

Grants Overview

- **Grants available AFTER a disaster**
  - Hazard Mitigation Grant Program (HMGP)
- **Grants available BEFORE a disaster**
  - Pre-Disaster Mitigation (PDM) Program
  - Flood Mitigation Assistance (FMA) Program
- **FEMA awards grants to States, tribes, and territories**
  - Communities contact State Hazard Mitigation Office (SHMO) if interested in applying for HMA

NFIP Community Rating System Program Basics & Benefits

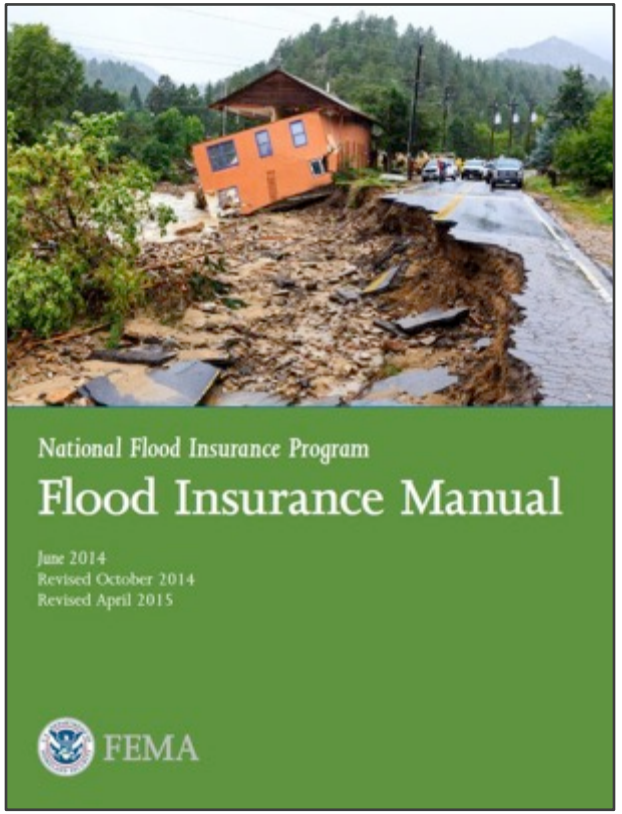




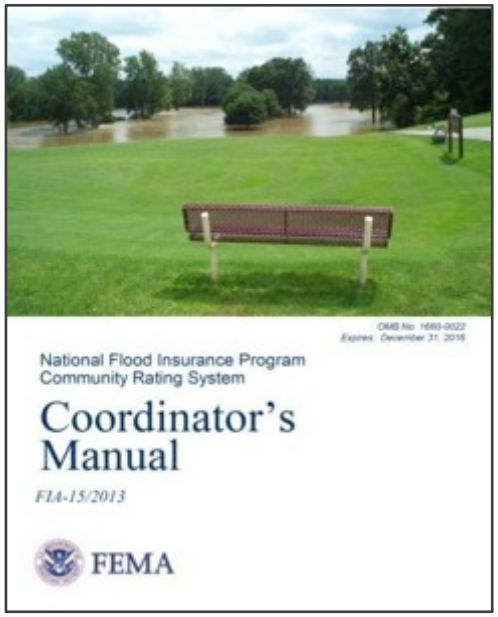
www.CRSResources.org

CRS Community Requirements

- Be in full compliance with the NFIP
- Implement activities
- Maintain Elevation Certificates
- Verification visit every 3 to 5 years
- Recertify each year
- Must meet Class prerequisites
  - Repetitive loss (Class 9)
  - BCEGS 5/5 or better (Class 6)
  - BCEGS 4/4 or better; 1 foot of freeboard and more (Class 4)



CRS Coordinator's Manual – Series Organization



100 – Program Overview

200 – Procedures

300 – Public Information Activities

400 – Mapping and Regulations

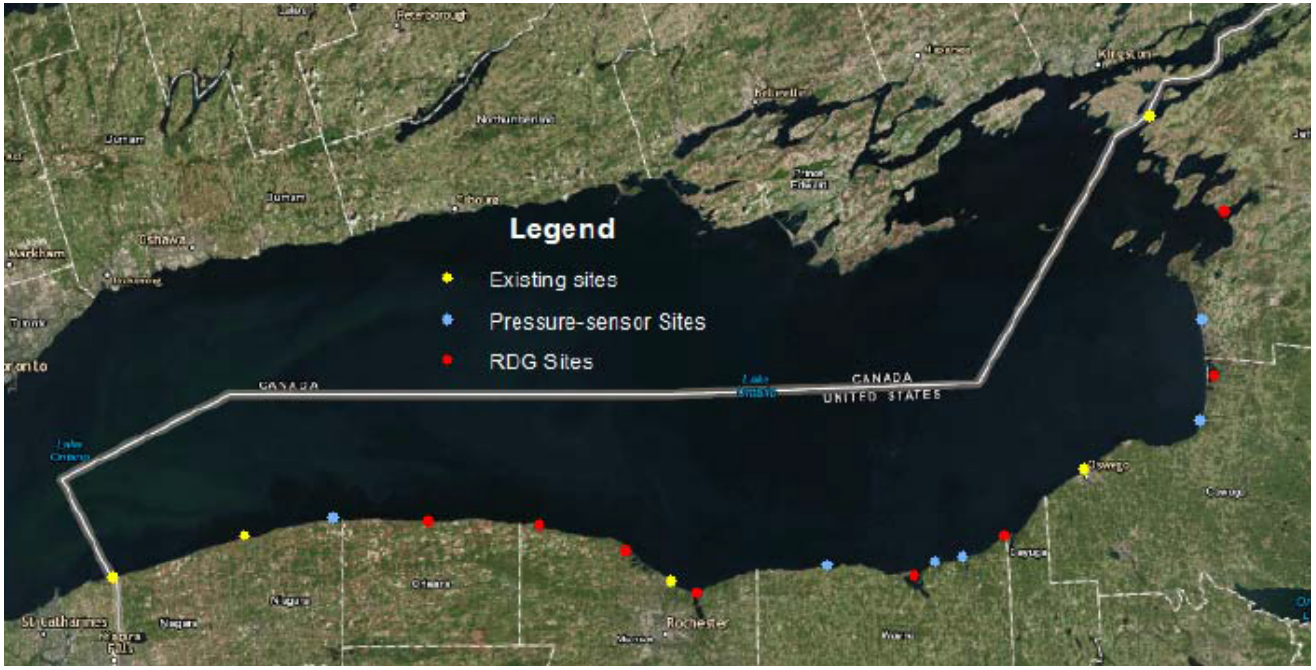
500 – Flood Damage Reduction Activities

600 – Warning and Response

700 – County Growth Adjustment

Elements of a comprehensive community floodplain management program

U.S. Geological Survey (USGS) Study



USGS
science for a changing world

Combination of sensors:

- Record water levels at 14 locations along Lake Ontario.
- Drones supplemented high-resolution elevation maps and documentation of flooding extents and coastal impacts.

Hazard Mitigation Program

Monroe County

Learning Objective

- **Participants will gain an understanding of the Hazard Mitigation Program and the process to receive hazard mitigation funding.**

Hazard Mitigation

Mit-i-ga-tion **\ n. : sustained actions that eliminate or reduce long-term risk to people and improved property from natural hazards**

- **Creates safer communities, reduces loss of life and damage to improved property, and diminishes financial and emotional stress**
- **Breaks the cycle of disaster damage and loss**
- **Allows communities to rebuild more quickly**
- **Saves money: every mitigation $ spent avoids an average of $4 in future damages**

3 Hazard Mitigation Programs

- **Hazard Mitigation Grant Program (HMGP)**
- **Pre-Disaster Mitigation Program (PDM)**
- **Flood Mitigation Assistance Program (FMA)**
  - includes former Repetitive Flood Claims program
  - includes former Severe Repetitive Loss program

[NB:HMGP is tied to NYS disaster declarations]

[NB:PDM & FMA are nationally competitive and announced once a year, subject to Congressional appropriation]

Requirements: Applicants

- **Eligible Applicant: NYS, acting through DHSES**
- **Eligible Sub-applicants:**
  - State agencies & local governments
  - Federally-recognized Indian Tribal Governments
  - State-recognized Indian Tribes
  - Private non-profits providing government services (HMGP only, not PDM or FMA)

[NB: PNPs participating in property acquisition must have land conservation as a mission]

- **Individuals/businesses are not eligible applicants**

Requirements: Mitigation Plans

- **Generally speaking, sub-applicants seeking project funds must be covered by a current all-hazards mitigation plan at the time of award**

  [A current mitigation plan is one approved by FEMA and adopted by the community; some plans cover a community while others were regional or county-wide efforts]

- **Sub-applicants that have begun the update process when grants are announced should be able to meet this requirement**

Requirements: Cost-Effectiveness

- **Projects must be cost-effective as determined by a Benefit-Cost Analysis (BCA)**

- **BCA must verify that future benefits (losses to be avoided) equal or exceed the project's cost**

Requirements: 25% Local Share

- **FEMA funds typically provide up to 75% reimbursement of eligible costs, up to the amount of the award**
- **In-kind services or materials may be used toward the 25% non-Federal match**
- **Other Federal funds cannot, with some exceptions:**
  - Increased Cost of Compliance (ICC) payouts from a National Flood Insurance Program (NFIP) policy
  - Most HUD Community Development Block Grants (CDBG)

Non-Federal Match Sources

- **The value of a sub-applicant's staff & expenses in processing an application**
- **Donations, private funds, and non-Federal funds**
- **HUD Community Development Block Grants**
- **Increased Cost of Compliance (ICC) funds received from an National Flood Insurance Program (NFIP) policy can pay up to $30,000 for qualifying work**

What HMGP Will Pay For

- **Creating or updating a Multi-jurisdictional Hazard Mitigation Plan**
- **Acquisition and Demolition/Relocation *or* Elevation**
- **Structural Retrofitting; Dry Floodproofing**
- **Localized flood reduction measures**
- **Floodplain restoration, green infrastructure improvements**
- **Roadway elevation, culvert enlargements**
- **Storm water drainage system expansion/upgrade**
- **Retention or detention basins**
- **Streambank stabilization to protect infrastructure**
- **Placing overhead electrical systems underground**

[NB: State establishes priorities every cycle]

What HMGP Will Not Pay For

- **Preparedness activities: shelters, sandbags**
- **Projects dependent on other phases for benefits**
- **Studies not directly tied to a proposed project to be completed**
- **Deferred repairs, negligence, operating expenses**
- **Dredging, limb & debris removal, beach nourishment**
- **Projects initiated or completed**

What is the Process?

- **State establishes priorities**
- **Letter of Intent (LOI) phase:**
  - basic sub-applicant info
  - brief narrative describing the problem and proposed solution
- **Application phase: detailed SOW, estimate (engineering, construction, etc.), maps, etc.**
- **Provide information to evaluate environmental impacts**

Monroe County

- **Monroe County Multi-jurisdictional Hazard Mitigation Plan Approved: May 18, 2017 Expires: May 18, 2022**
- **Plan to identify short- and long-term housing options for flood-prone residents; plan to develop evacuation routes and procedures and identify shelter locations outside of Special Flood Hazard Areas.**
- **Several projects completed under the Hazard Mitigation Grant Program – drainage, electrical upgrades, culvert upgrades**

Questions & Contact

For more information, please contact us:

Hazard Mitigation Programs

NYS Division of Homeland Security & Emergency Services

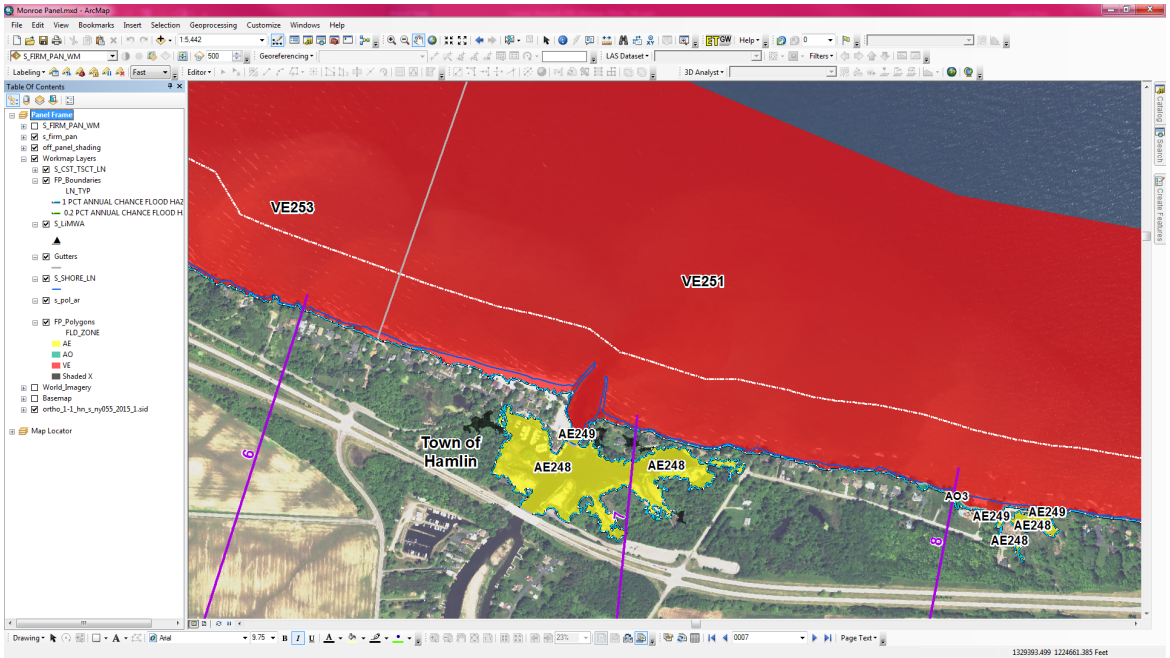
1220 Washington Avenue, Bldg. 7A, Floor 4

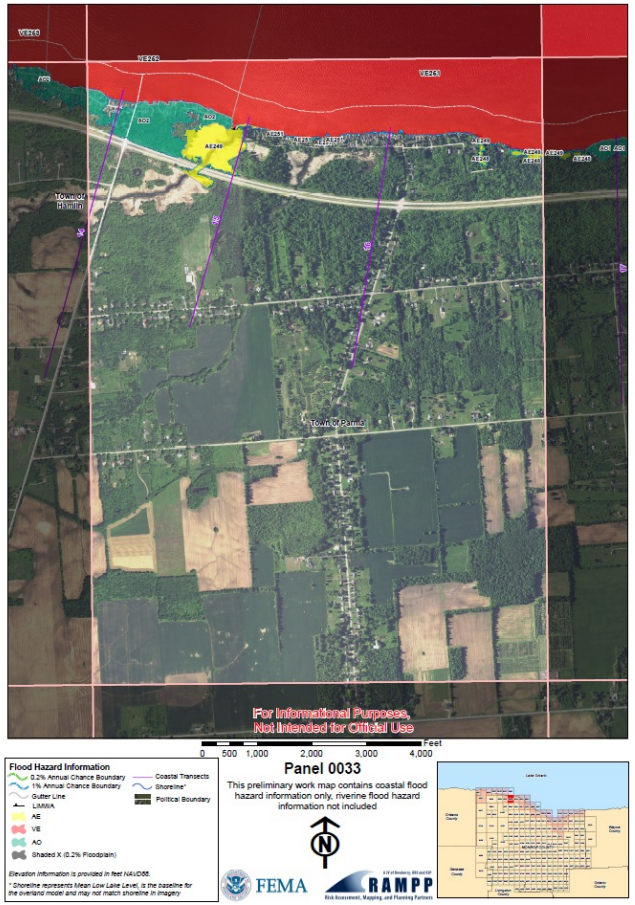
Albany, NY 12242

- 518-292-1155
- Corrina.Cavallo@dhses.ny.gov
- www.dhses.ny.gov/recovery

Work Session:
Review floodplain mapping and flood risk products for validity. Ask questions!

Workmap Data Viewer





Questions about Maps?

Learn more at: http://www.greatlakescoast.org/

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Working Together to Build a Stronger & More Resilient Monroe County

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