



FEMA

Community Coordination Meeting Rockingham County, New Hampshire

Risk MAP Study

May 8, 2014

RiskMAP

Increasing Resilience Together

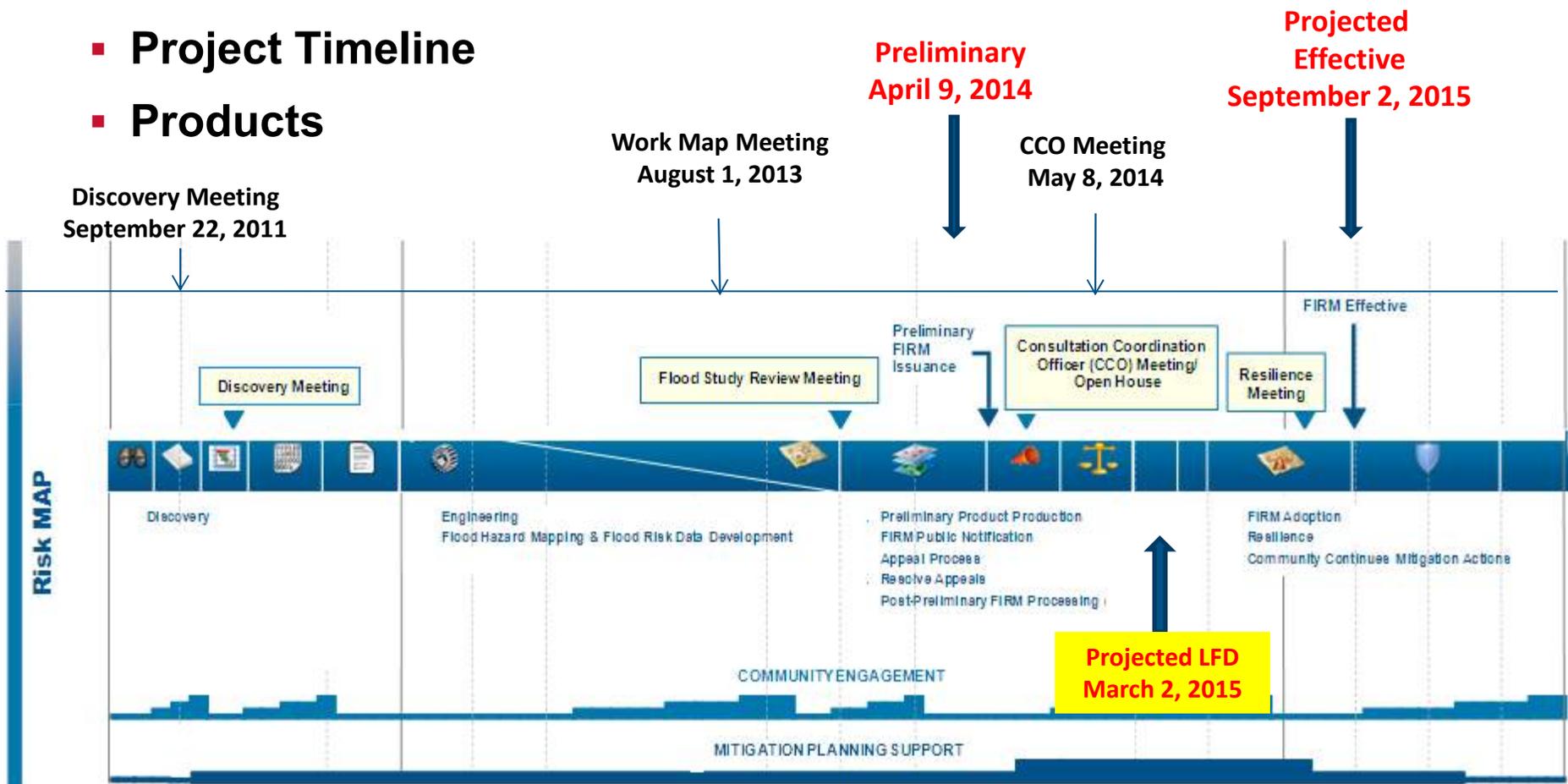


Agenda

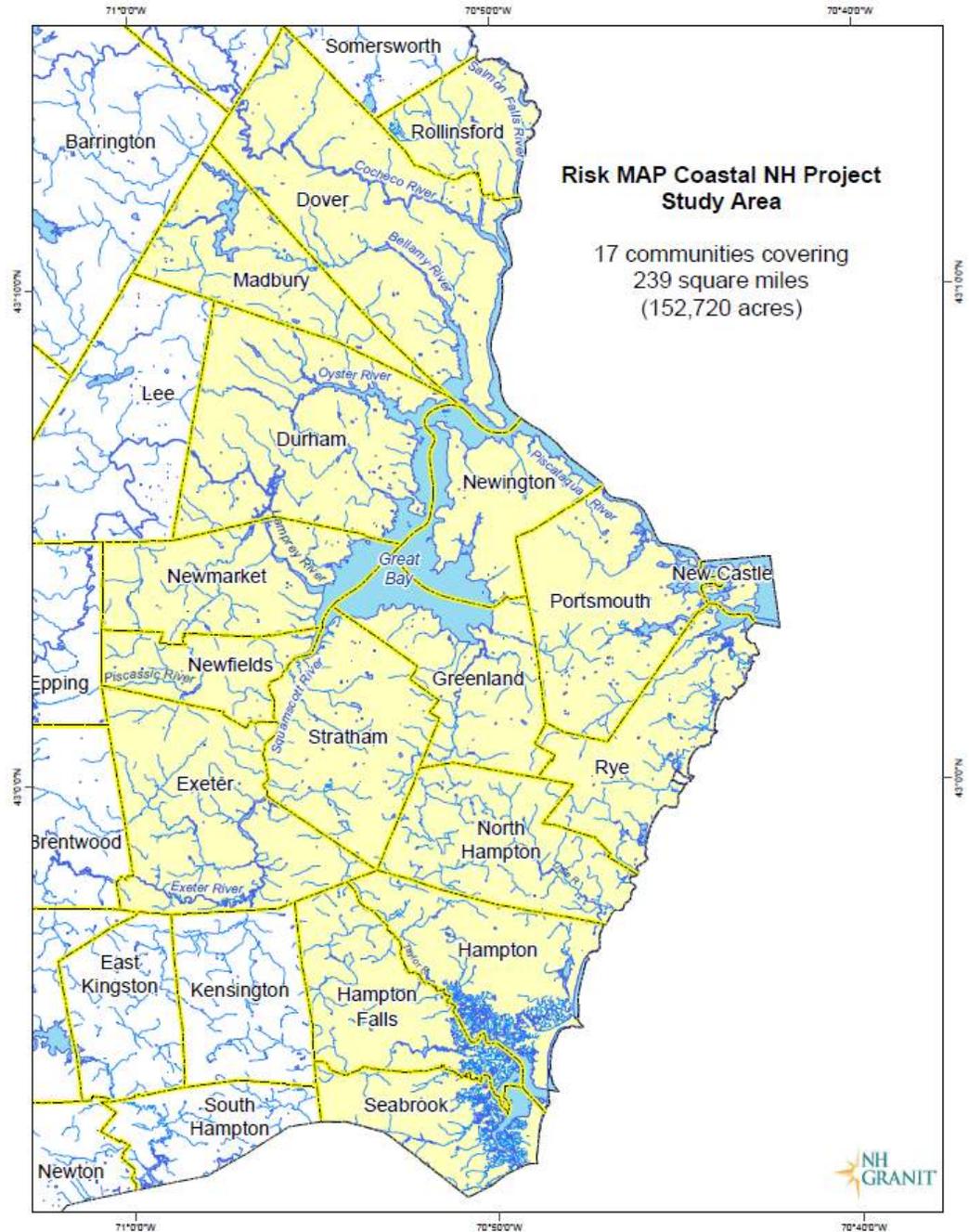
- **Welcome and Introductions**
- **Project Overview**
- **Flood Hazard Analysis Recap (Riverine and Coastal)**
- **Flood Risk Products**
- **Action: Hazard Mitigation & Flood Insurance**
- **PPP - Public Review and Appeal Period**
- **PPP - Effect on Existing Letters of Map Change**
- **PPP - Community Adoption Process**
- **Questions**

Risk MAP Study Timeline

- Activities
- Project Timeline
- Products



Project Overview



Study Types – Full Study Area

Type	Miles (Approximate)
Coastal Analysis	18
Riverine - Zone AE/Enhanced Study <ul style="list-style-type: none"> • Exeter River • Lamprey River • Oyster River 	21
Riverine - Zone AE Redelineation <ul style="list-style-type: none"> • Piscataqua River • Great Bay Shoreline • Squamscott River • Little River No. 1 (Exeter) • Little River No. 2 (Hampton) • Pickering Brook • Piscassic River • Bellamy River • Cocheco River • College Brook • Hamel Brook/Longmarsh Brook • Pettee Brook • Woodman Brook 	68
Riverine - Zone A/Basic Study	136

“Universal” Changes

- New Topographic Data
- Datum Conversion
- New Index Maps
- New Panel Design

New Topographic Data

Comparison of terrain models for Fresh Creek, Strafford County, NH: NED 30-meter and 10-meter DEMs versus 1-meter LiDAR

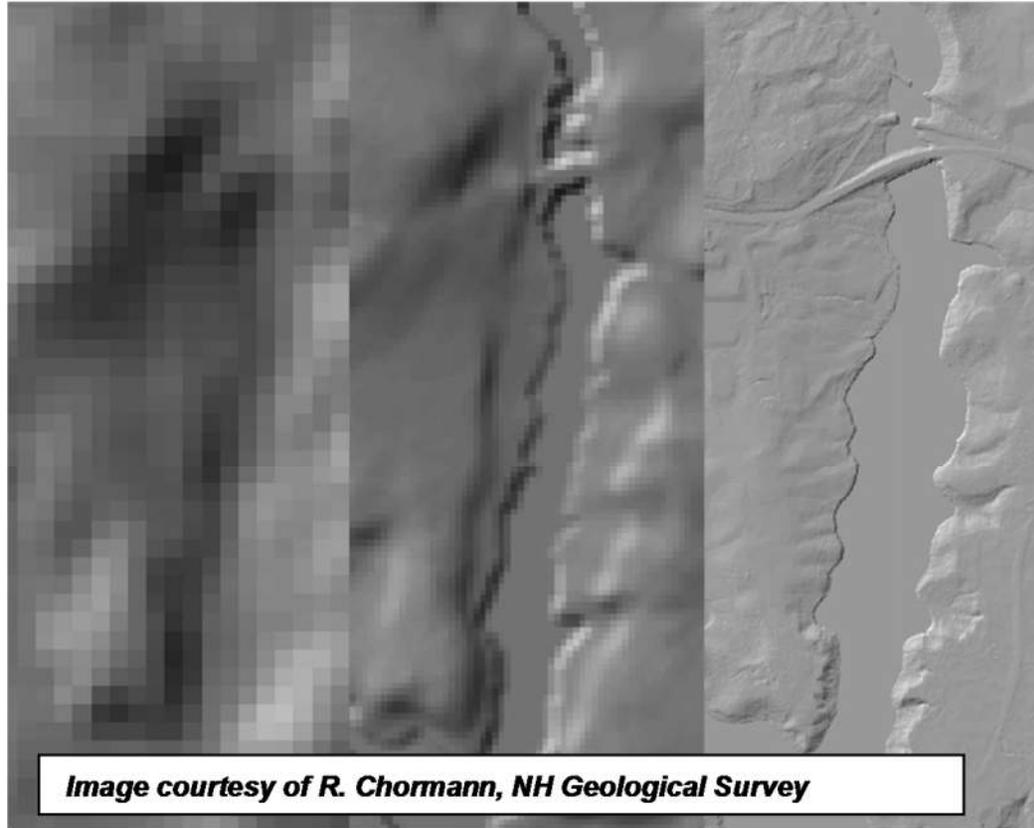


Image courtesy of R. Chormann, NH Geological Survey

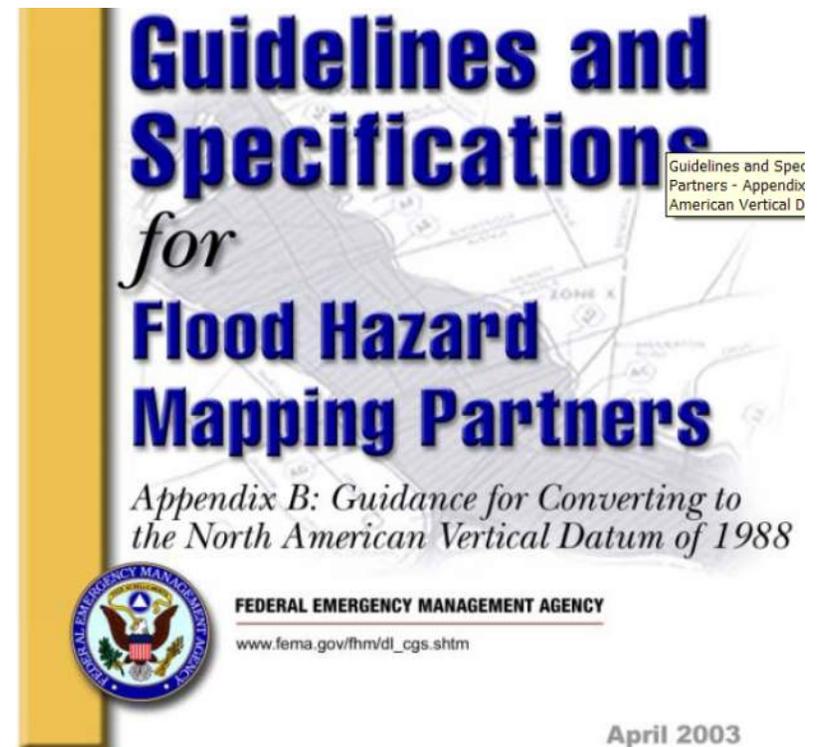
30-meter DEM

10-meter DEM

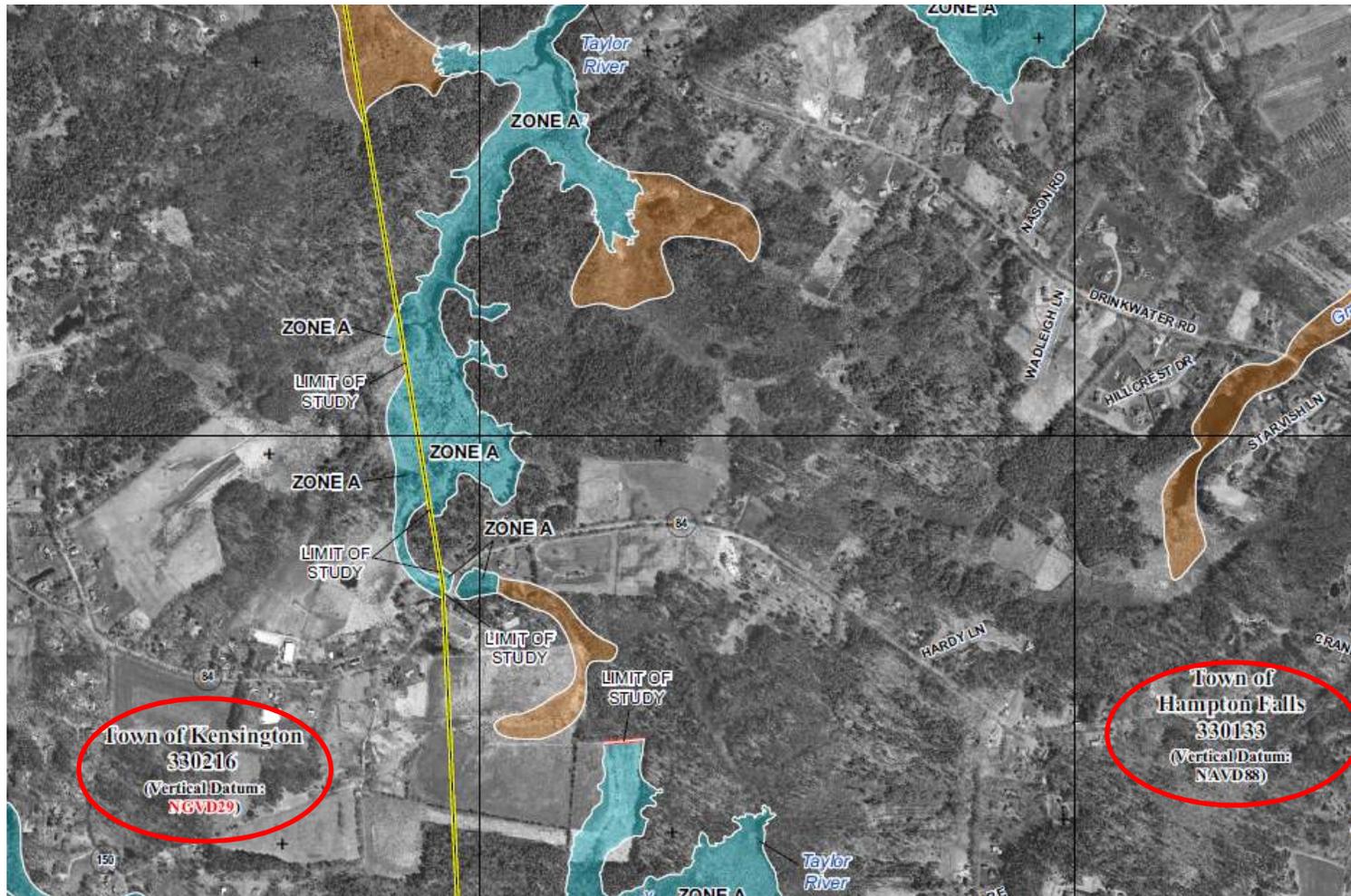
1-meter DEM

Datum Conversion

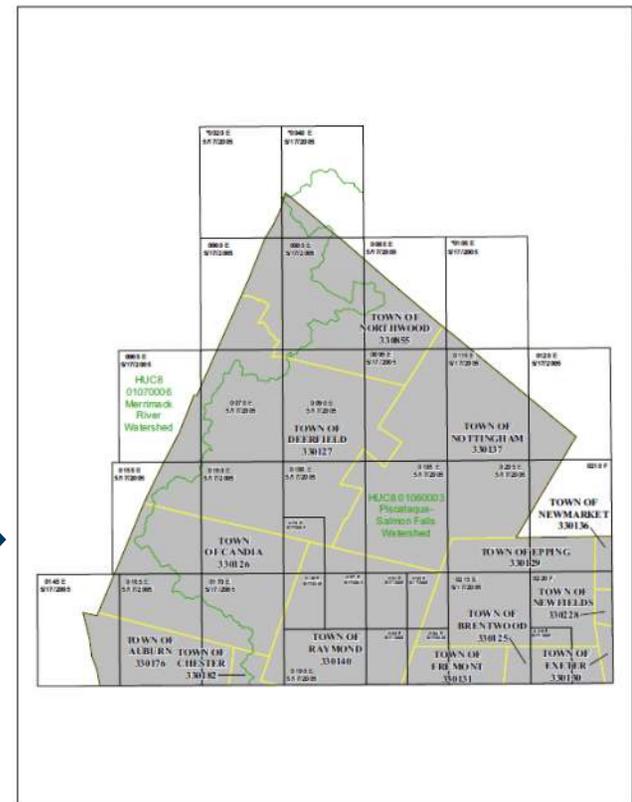
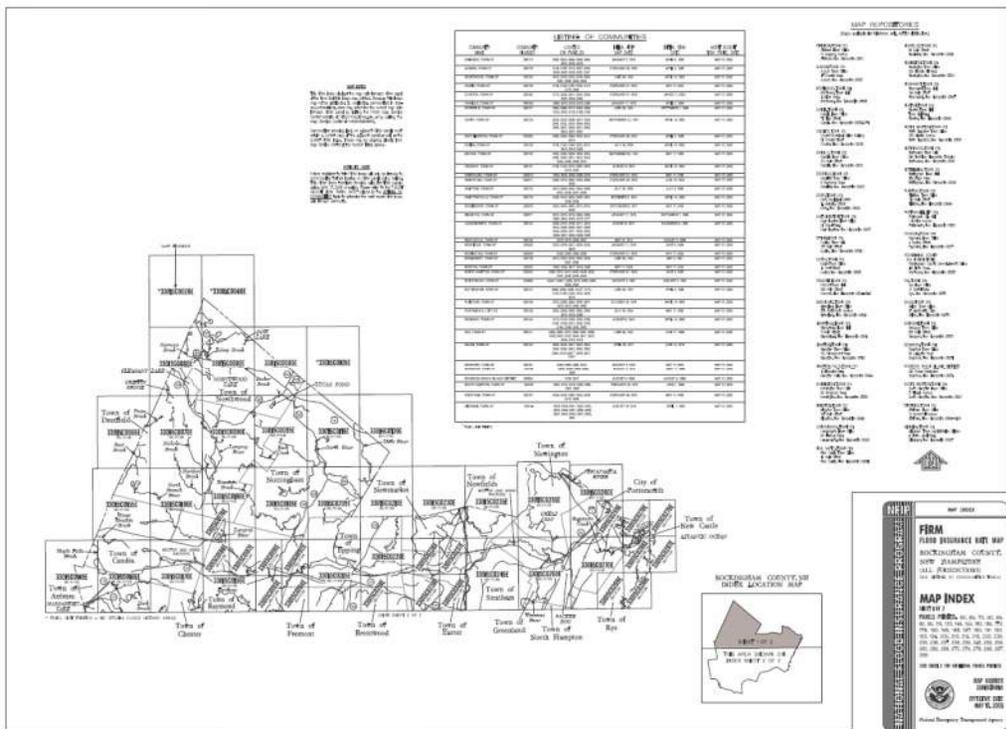
- Previous effective FIRM referenced to NGVD29 (National Geodetic Vertical Datum of 1929)
- New FIRMs referenced to NAVD88 (North American Vertical Datum of 1988)
- Conversion factor for Rockingham County = $-.7$ ft.
- Process described in Appendix B of FEMA's Guidelines and Specifications



Datum Conversion



Index Maps/Paneling Scheme

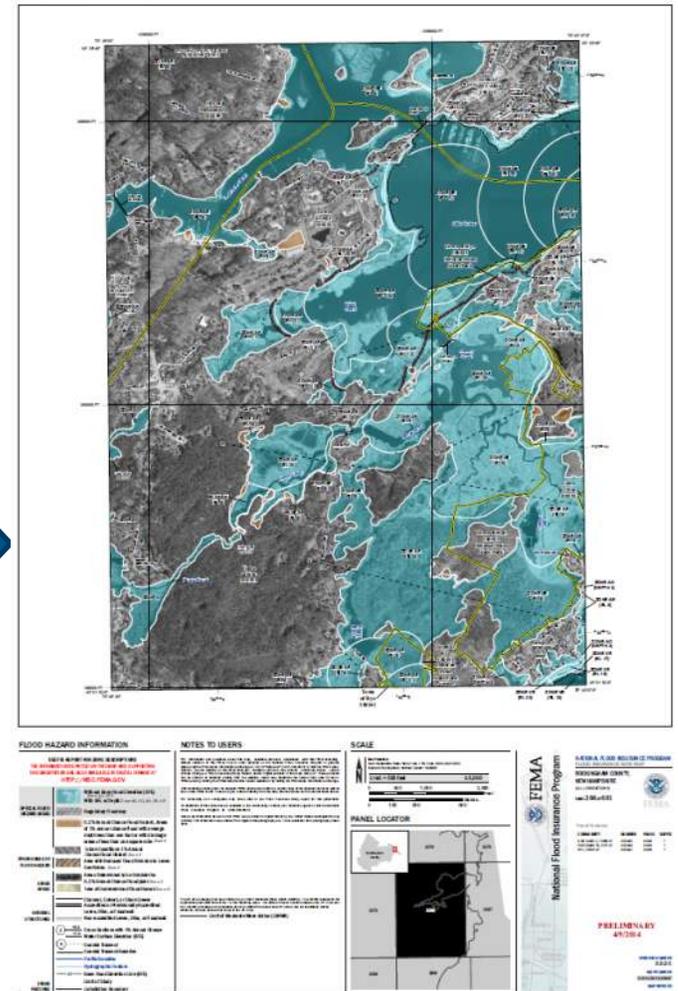
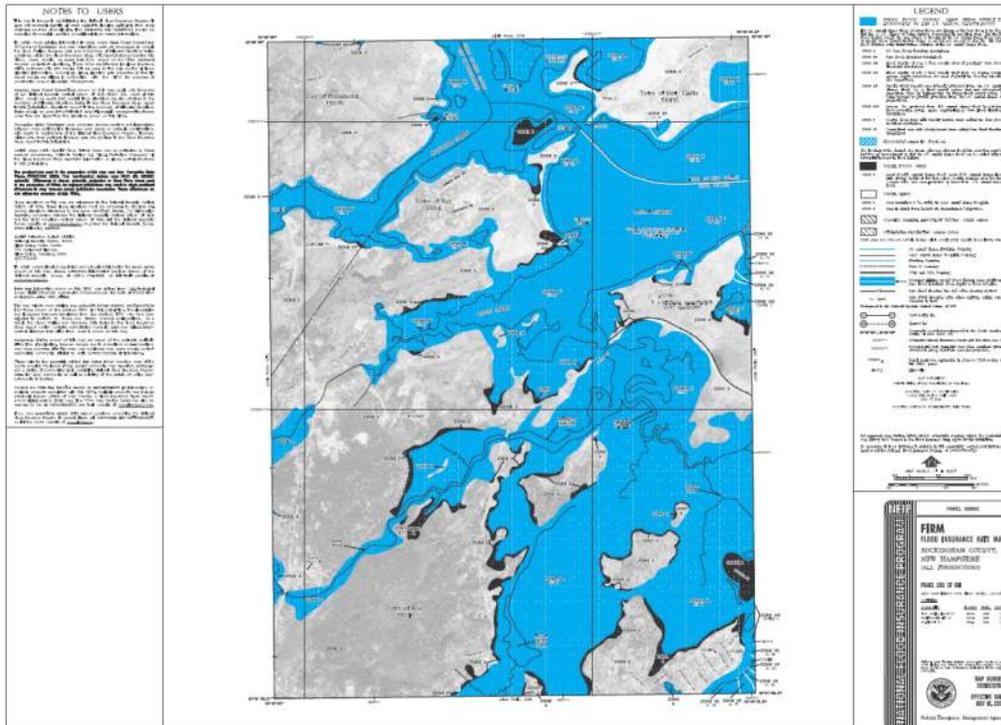


NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP (FIRM)
ROCKINGHAM COUNTY, NEW HAMPSHIRE
ALL ADDENDUMS

FEMA

MSC.FEMA.GOV

New Panel Design

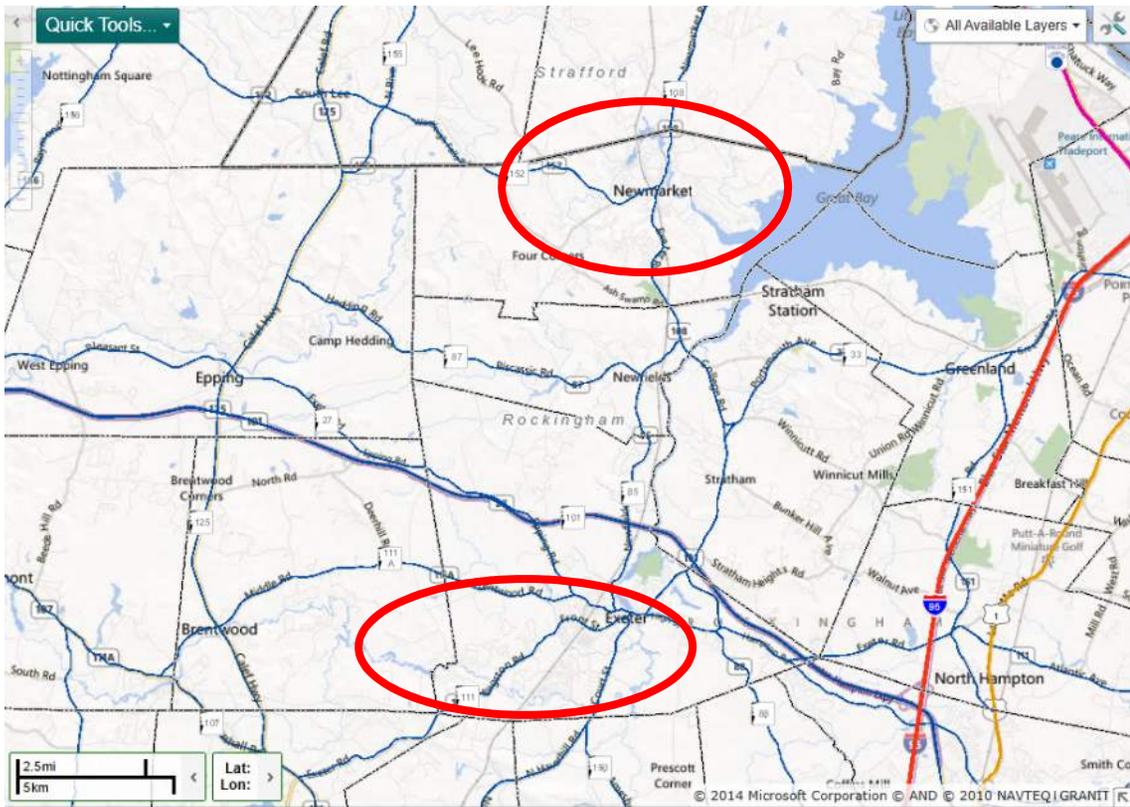


RIVERINE FLOOD HAZARD ANALYSIS RECAP:

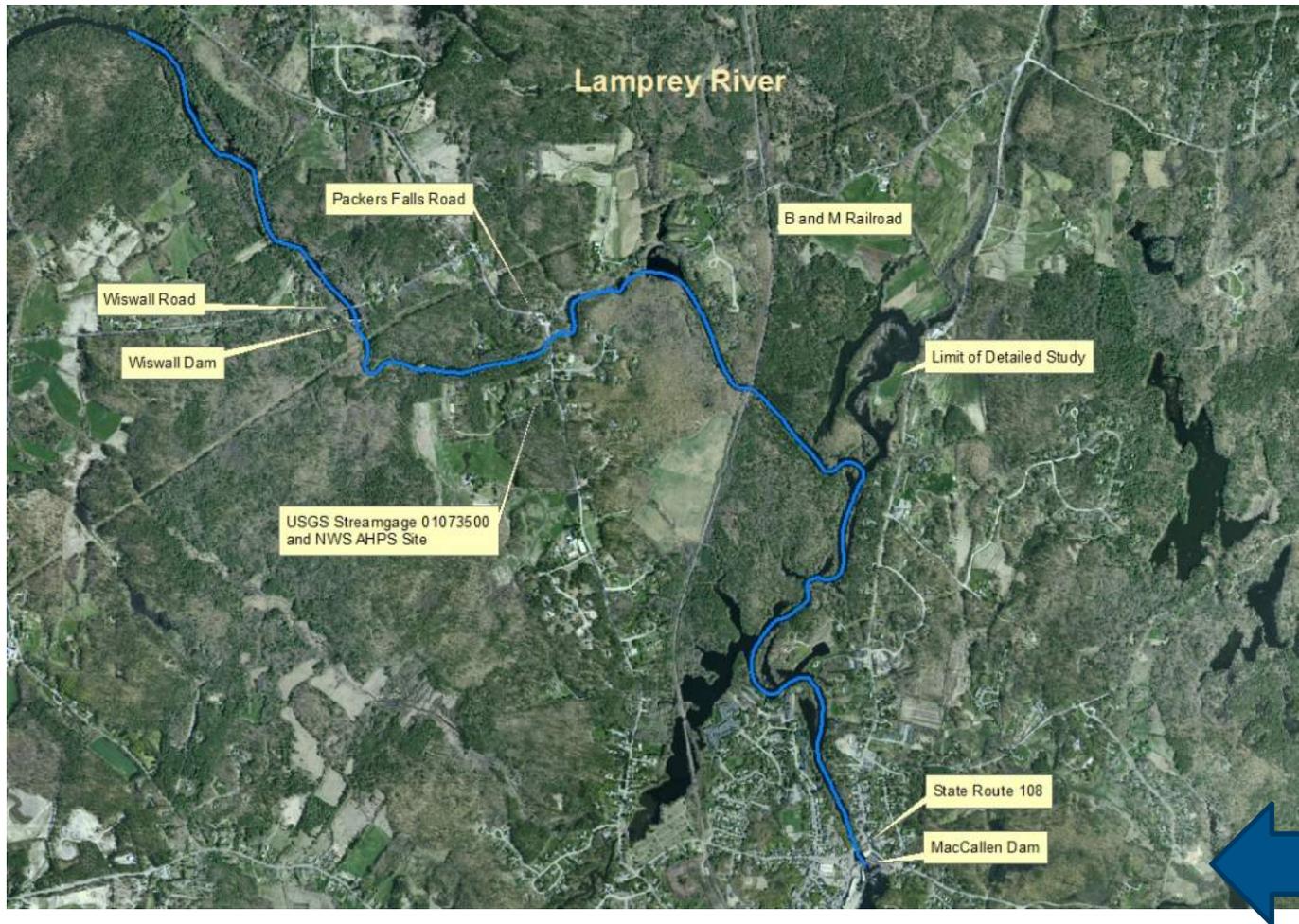
1. Zone AE Enhanced Study
2. Zone AE Redelineation
3. Zone A/Basic Study

Detailed Riverine Analysis

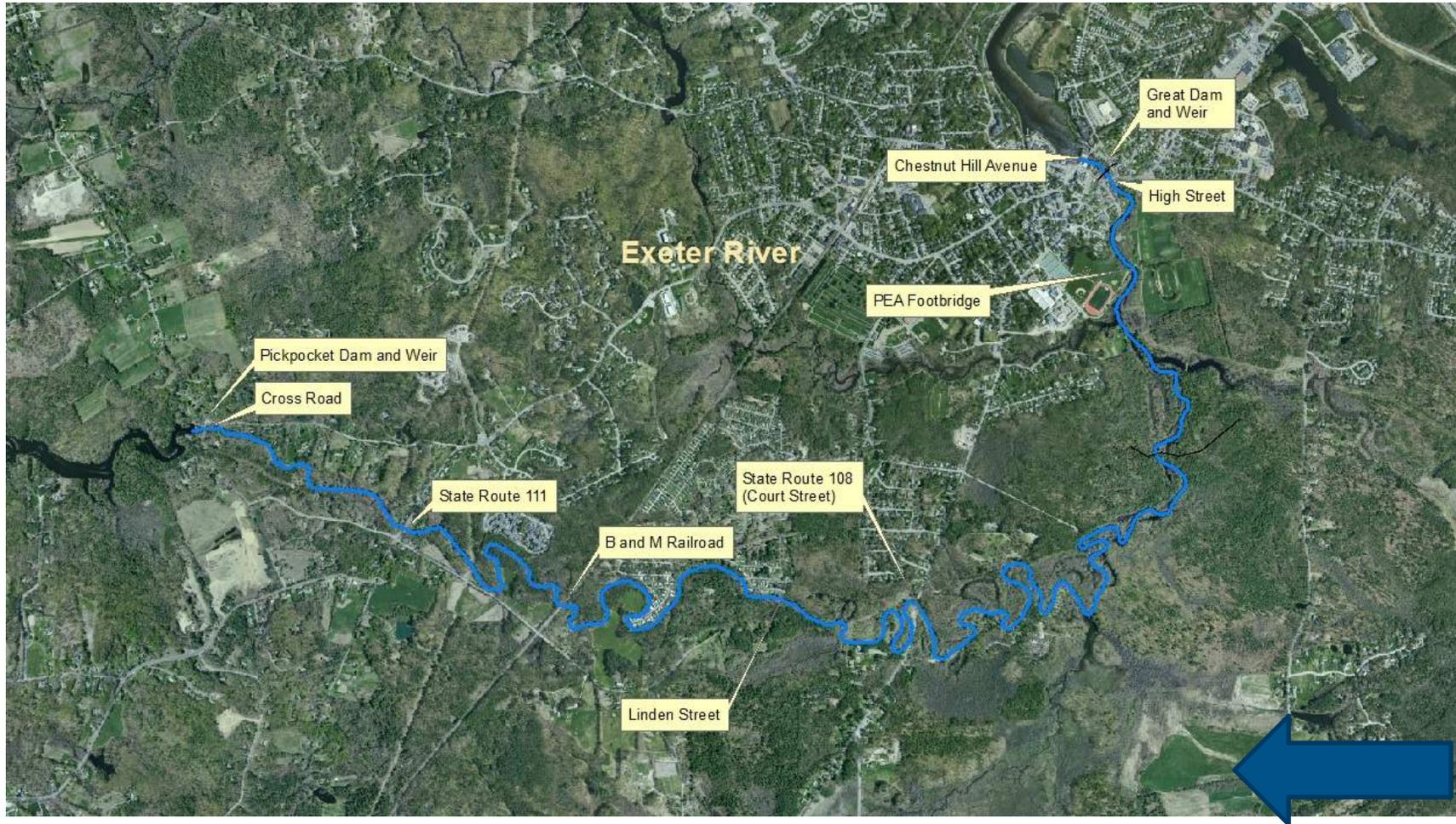
- 2 Rivers:
 - Exeter River
 - Lamprey River
- Revised hydrology and hydraulics
- Mapped with new topography



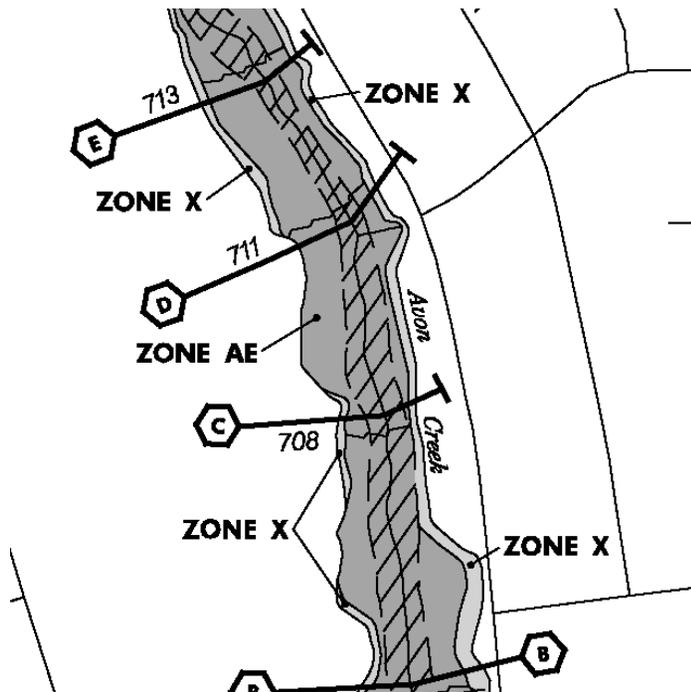
Lamprey River



Exeter River

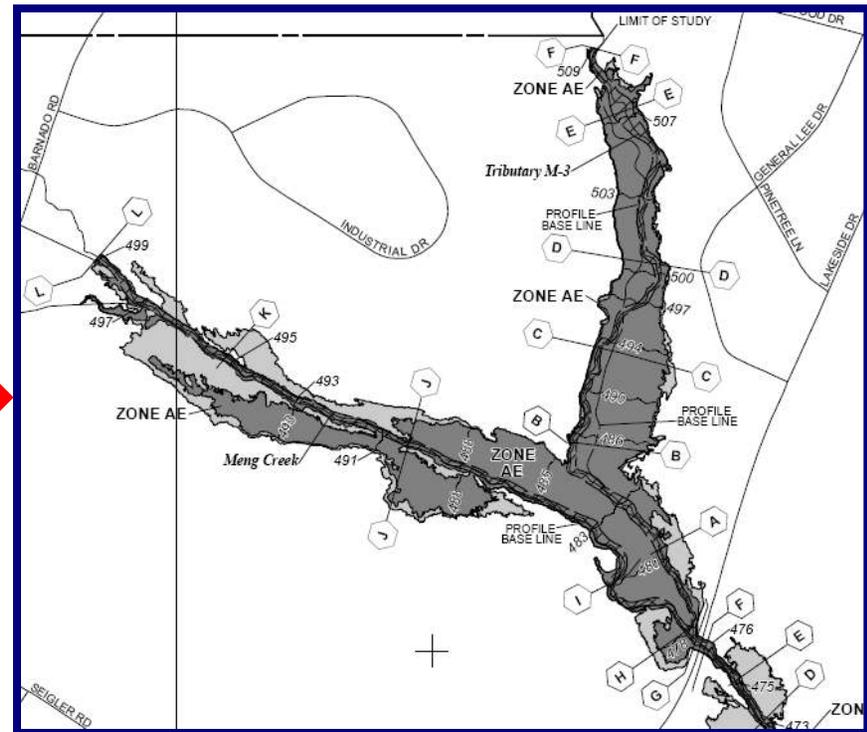
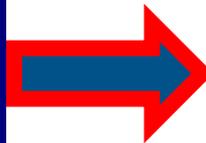
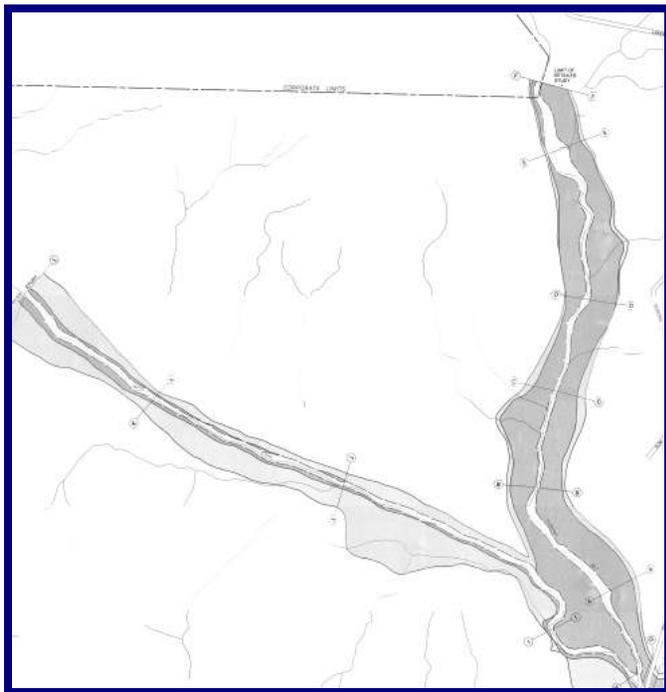


Riverine Zone AE Enhanced Study



- **Traditional Detail Study**
- **Sections Field Surveyed**
- **All Hydraulic Structures Surveyed**
- **Detailed Hydrologic Analysis**
- **Traditional Mapping**
 - Floodways
 - Floodway Data Table
 - Flood Profile

Revisions Due to Updated Topography (Redelineation)



Revisions Due to Updated Topography (Redelineation)

The screenshot displays a database application interface with several windows. The main window shows a table named 'HydraEsriProfFloodEvent' with columns: SheetId, XsectId, FwStation, FwRegElev, and Station. Below it, another window shows a table named 'HydraEsriProfSheet' with columns: StreamAbbr, FullStreamName, Filename, OriginX, OriginY, Xscale, Yscale, and SheetId. A third window shows a table named 'HydraEsriProfStructures' with columns: SheetId, RoadName, and Str. A fourth window shows a graph of a stream profile with a vertical axis for elevation and a horizontal axis for distance. A small dialog box titled 'Attach Tags' is also visible.

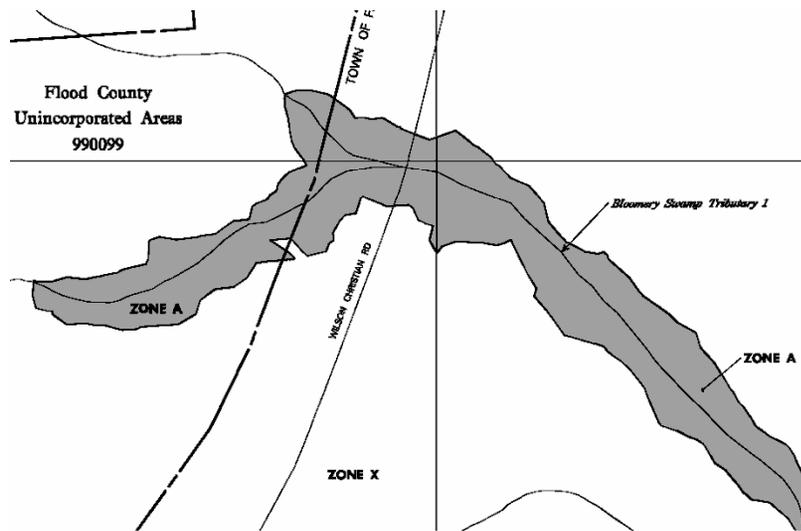
SheetId	XsectId	FwStation	FwRegElev	Station
A		21880	866.2	21879.06551
11.B		22010	867.2	22030
11.C		23180	871.9	23173.1249
11.D		23260	872.2	23267.30237
11.E		24040	874.3	24020
11.F		25080	877.4	25072.76982

StreamAbbr	FullStreamName	Filename	OriginX	OriginY	Xscale	Yscale	SheetId
Maple Creek	Maple Creek	MAFILES200	21000	850	1000		10

SheetId	RoadName	Str
11	Acorn Avenue	BR
11	Harvey Road	BR
11	Polar Drive	BR
11	South Main St	BR
11	Brushy Creek J	ER
11	Southern Railw	CUL

- Used to Update Effective Mapping with new Terrain Data
- Foundation is the FEMA Profile

Riverine Zone A Basic Studies



- **Replaces Unnumbered A Zones**
- **Much more automated approach**
- **Hydrology from Regional Equations**
- **Hydraulic Models Developed**
- **Flood boundaries mapped from model output**

COASTAL FLOOD HAZARD ANALYSIS RECAP

Coastal Analysis

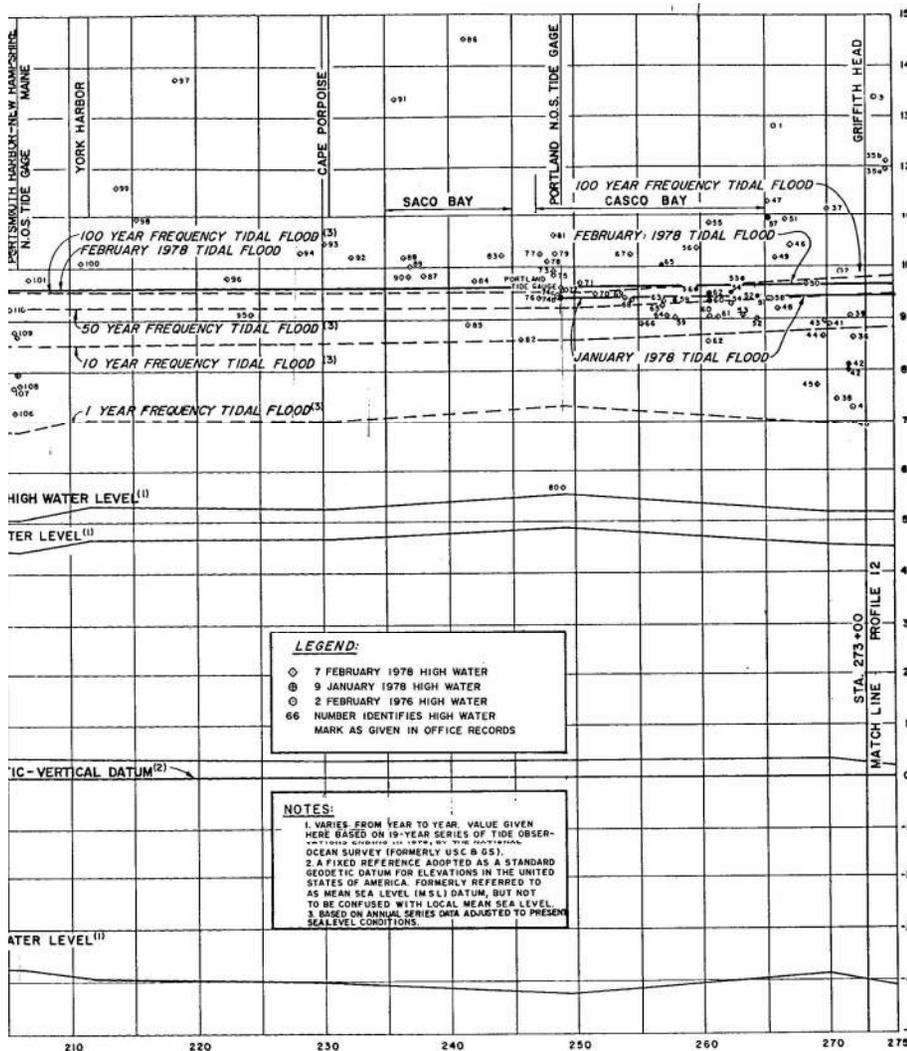
- Performed new coastal flood hazard analysis
 - Rockingham Co
- Reasons for the update:
 - New topographic data
 - Implemented new modeling and mapping FEMA G&S (LiMWA)

Detailed Study – Coastal Analysis

- Coastal analysis - includes 4 main components:
 - Stillwater Level (storm surge) + Wave Set-up
 - Overland Wave Propagation
 - Wave Runup and Overtopping
 - Primary Frontal Dune



Detailed Study – Stillwater Level (SWEL)



- 1988 USACE Tidal Flood Profiles
- Elevation converted in NAVD88

Detailed Study – Wave Setup

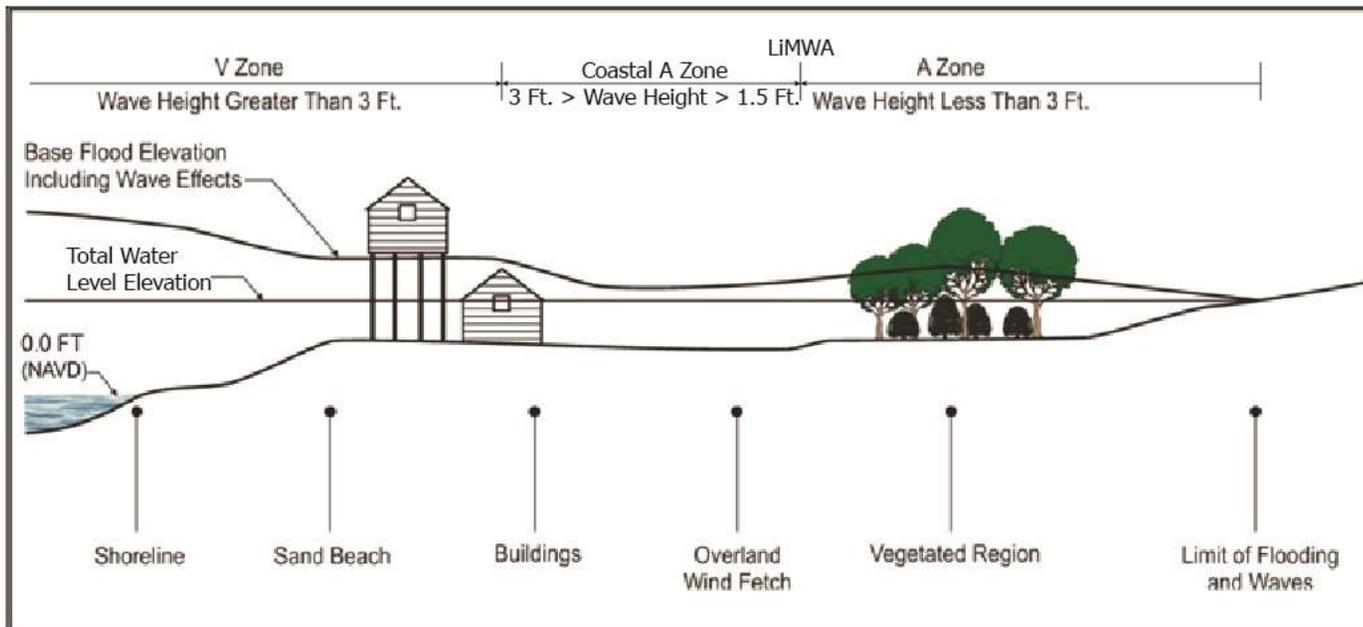
- **Numerically determined at each coastal transect**

- **Determining factors**
 - Average nearshore slope [depth of wave breaking to 1% SWEL]
 - Deepwater significant wave height and period

- **1% SWEL + 1% Wave Setup = 1% Total Water Level (TWL)**

- **Wave setup inland mapping**
 - Generally carried up to first encountered high ground (dune, structure, cliff)
 - Propagated occasionally up to inlets to the end of the floodplain (if no high ground was encountered)

Detailed Study – Overland Wave Propagation



Detailed Study – Runup and Overtopping

- **New Wave Runup Methodology**
 - From mean wave runup to 2% wave runup (increase by factor of 2.2)
- **Wave Runup Methods**
 - Runup 2.0 (mildly sloping beaches)
 - TAW (structures, steeper slope 1:1 to 1:8)
- **Overtopping**
 - AO Zone (1-3 ft depth) depending upon the wave runup discharge above the structure crest



Detailed Study – Primary Frontal Dunes

- **Primary Frontal Dune (PFD)**
 - Delineated in accordance with FEMA 2007 G&S
 - PFD is delineated at the dune heel for each modeled transect
 - The VE Zone is extended to the PFD line in accordance with FEMA 2007 G&S



Limit of Moderate Wave Action

■ LiMWA

- Areas subject to wave heights greater than 1.5 feet
- Defines Coastal A Zone
- Recommendation of building to V zone standards



Detailed Study – Summary

- **Significant Changes from previous study:**
 - Updated Topographic Data
 - Updated Land Use
 - Includes Primary Frontal Dune Delineation
 - Includes Wave Set-up
 - Includes 2% Wave Runup
 - VE zone mapping to PFD Line
 - LiMWA Mapping



FLOOD RISK PRODUCTS

Flood Risk Products - Background

- **These products are intended to help communities better understand and communicate flood risk**
- **All of these products are GIS based**

Flood Risk Products - Background

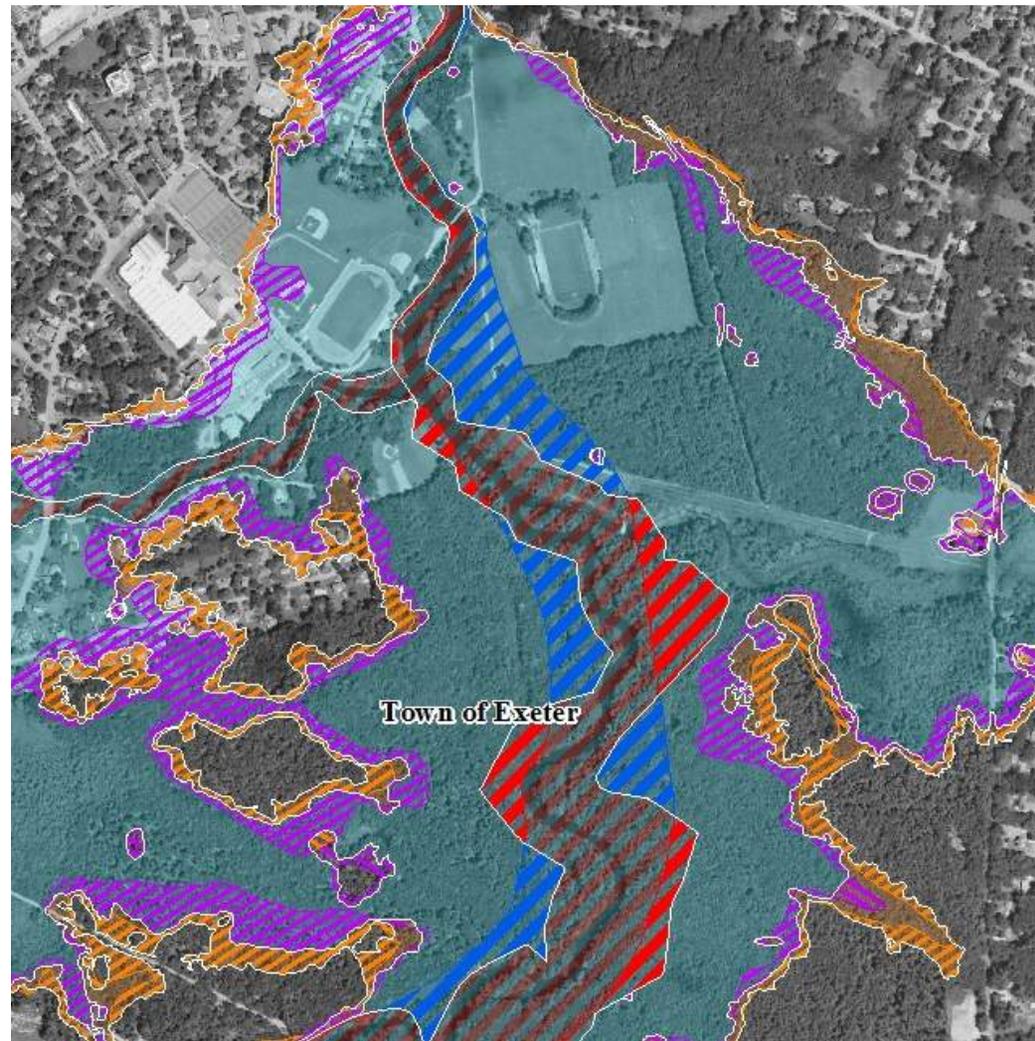
The following flood risk products are being created for this study:

- Changes Since Last FIRM
- Flood Depth Grids (coastal and riverine)
- HAZUS-MH Analysis
- Sea Level Rise Analysis
- Flood Risk Report and Flood Risk Map

Changes Since Last FIRM

Legend

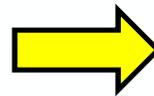
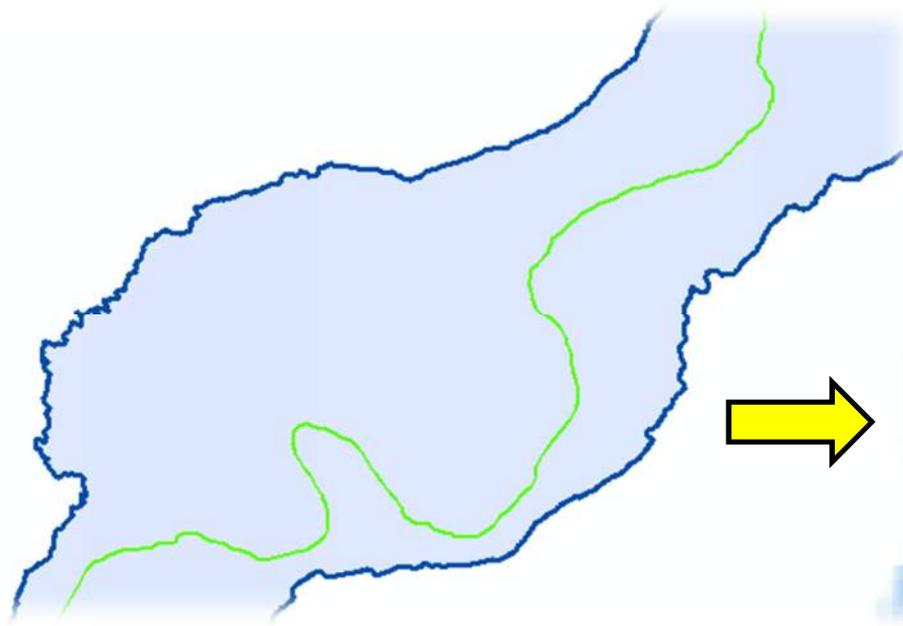
-  Floodway decrease
-  Floodway increase
-  1% Annual event increase
-  1% Annual event decrease
-  0.2% Annual event increase
-  0.2% Annual event decrease



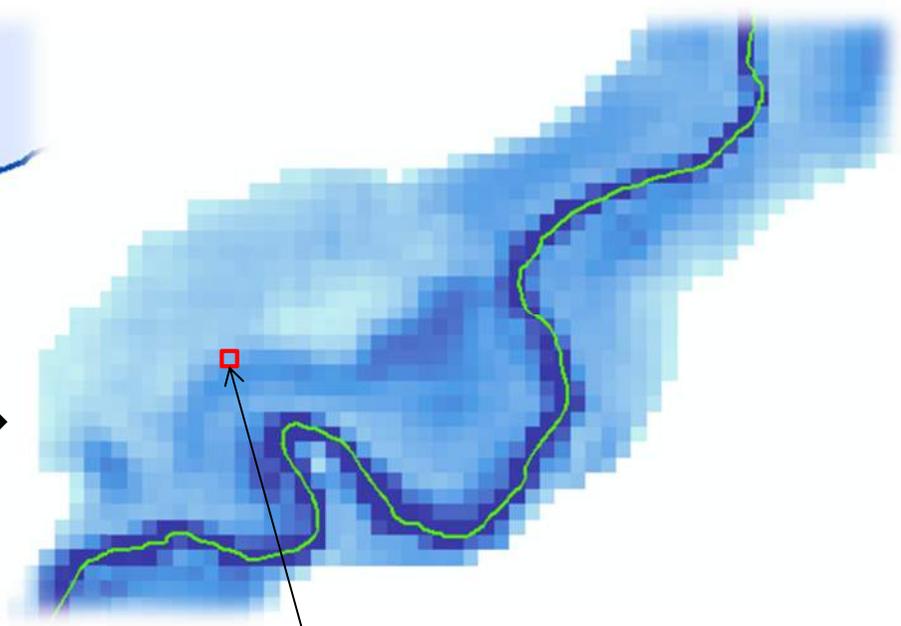
Flood Depth Grids

- Each Grid Cell has a Unique Value

FIRM 1% Annual Chance (100-yr) Floodplain



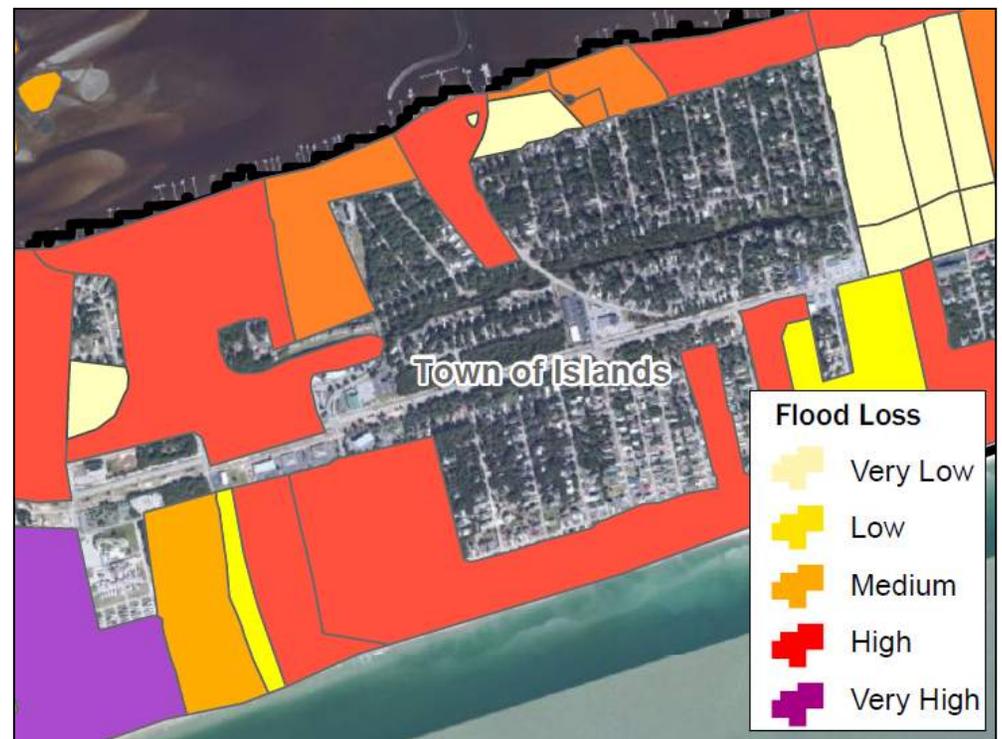
1% Annual Chance Depth Grid



Individual Grid Cell

HAZUS-MH Flood Risk Assessment

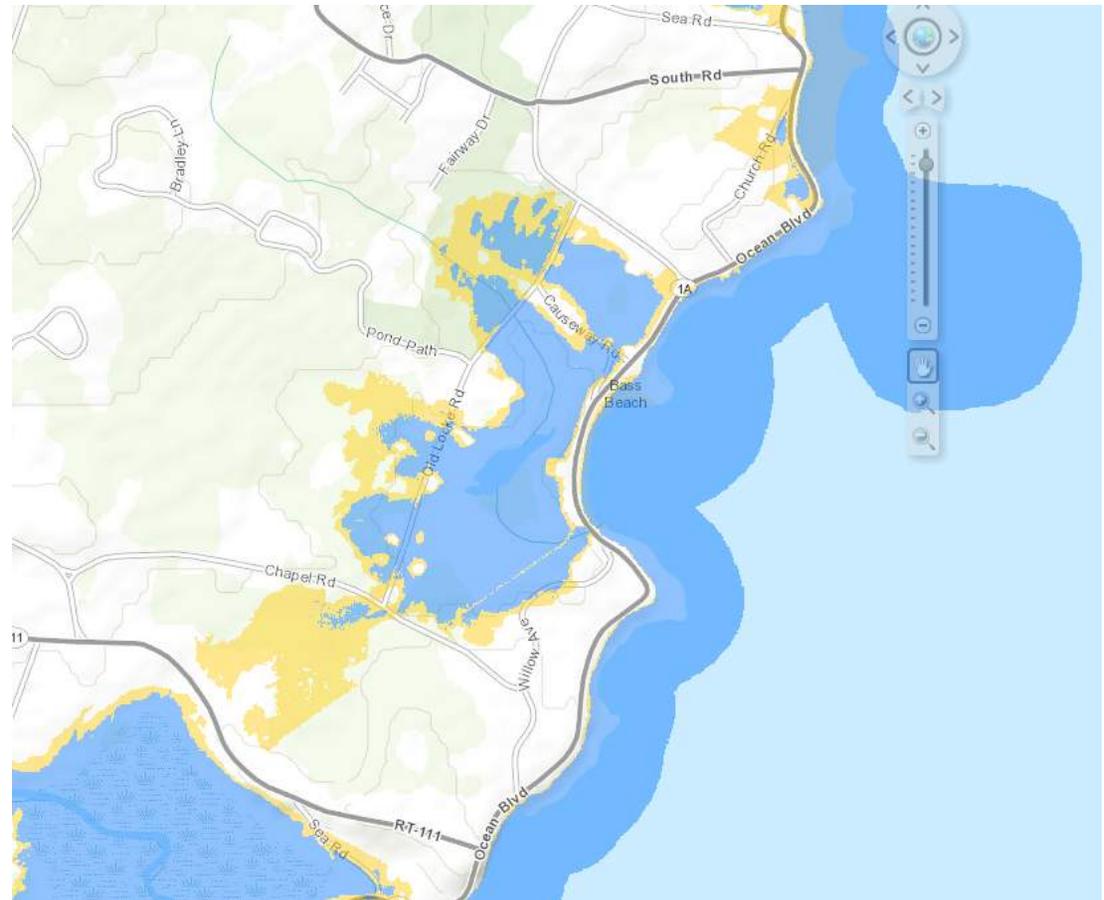
- Annualized flood losses are displayed on the Census Block Data
- Aimed at depicting general flood loss areas



Sea Level Rise Analysis

4 Scenarios:

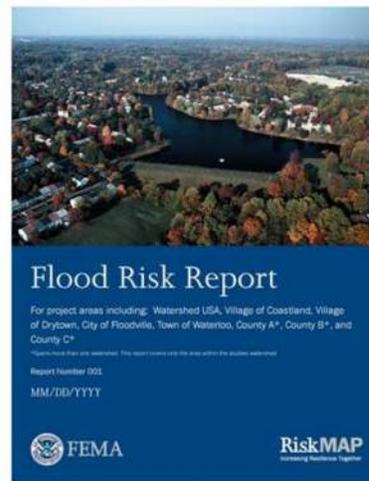
- MHHW + 1.7' (IPCC 2050 high emissions scenario estimate)
- MHHW + 6.3' (2100 high)
- 100-year event + 1.7'
- 100-year event + 6.3'



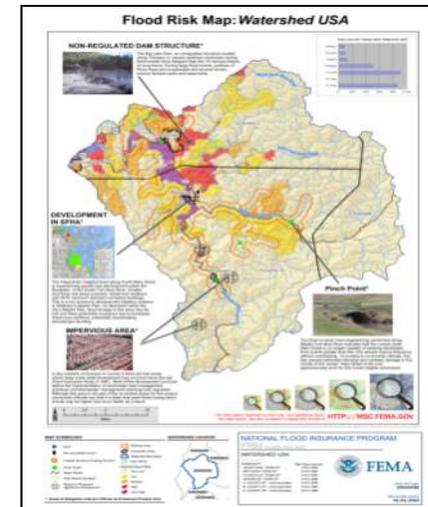
Flood Risk Report and Map



Flood Risk Database



Flood Risk Report



Flood Risk Map

ACTION: HAZARD MITIGATION AND FLOOD INSURANCE

Hazard Mitigation Resources, Strategies & Actions

- **The right action (or mix of actions) will be based on recent community experiences and level of complexity in existing infrastructure**
 - *Public Works*
 - *Building Standards*
 - *Community Planning and HM Plan Update / Integration processes*
 - *Communication Processes, GIS, etc.*
- **Get the right people to the table: Integrated vs. Discipline-specific**
- **Document ideas and actions through the FEMA Mitigation Action Form**



Mitigation Actions

- Address specific **existing** assets (e.g., elevate critical facility, enlarge a culvert, acquisition of floodplain properties, floodproof floodprone properties)
- Address **future** risks (e.g., update building codes)
- Based on local capabilities
 - Build on current strengths, ongoing efforts (add-on to stormwater management regulations)
 - Coordinate with Federal programs (e.g., NFIP, CRS)



Mitigation Action Categories



STRUCTURAL /NON-STRUCTURAL PROJECTS

Detention
Drainage
Acquisition
Elevation
Retrofits

PLANNING MECHANISMS

Zoning
Building Codes
Ordinances
Open Space Plan

EDUCATION & OUTREACH

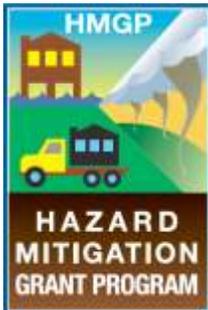
Public Awareness
Outreach
Educational programs

NATURAL RESOURCE PROTECTION

Stream and wetland restoration
Erosion control

Driving Action Through HMA Grants

- Hazard Mitigation Assistance (HMA) includes both post-disaster and pre-disaster grants



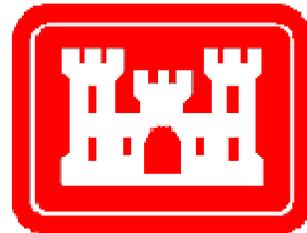
HMGP is a post-disaster grant program.

PDM and FMA are available annually subject to Congressional appropriations.



- Mitigation Plan Requirement
- Local/State Cost Share
- States Manage Programs and Set Funding Priorities
- State Hazard Mitigation Officer (SHMO) is contact
- These grants share the common goal of reducing risk to life and property due to natural hazards

Mitigation Grants/Programs: OFAs



**US Army Corps
of Engineers®**



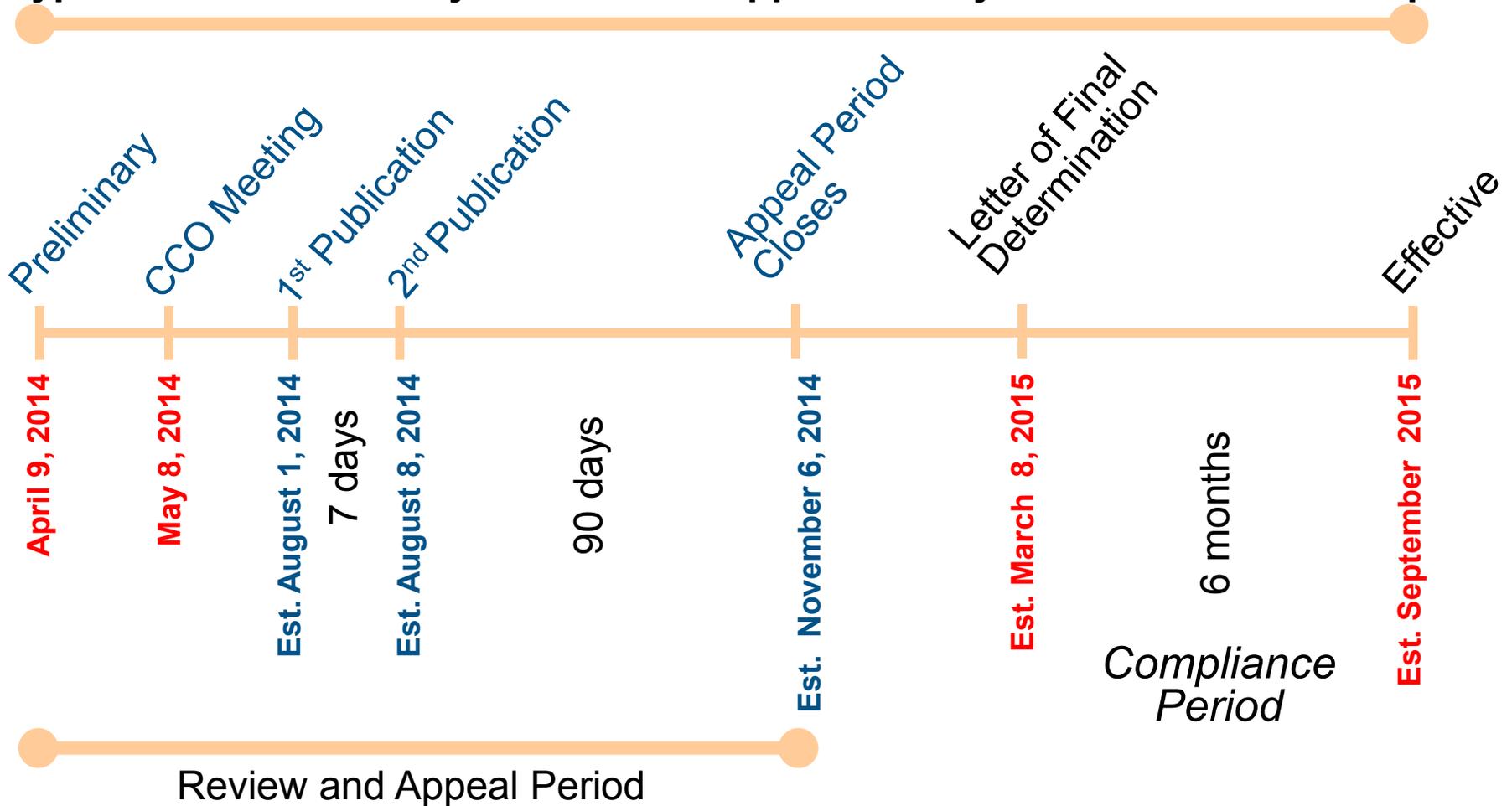
Driving Action Through the CRS

- **Rewards NFIP communities taking additional actions to reduce risk**
- **Most flood insurance policies can receive discounted rates (In New England generally ranging from 5%-15%)**
- **To be eligible FEMA must determine that the community is in full compliance with the NFIP**
- **If you are interested in joining, FEMA can provide assistance**
- **For additional information please contact:**
Chris Markesich, FEMA Region 1 CRS Coordinator
christopher.markesich@fema.dhs.gov (617) 832-4712

POST-PRELIMINARY PROCESSING (PPP)

Post-Preliminary Phase Timeline

Typical Post Preliminary Phase takes approximately 14-20 months to complete



Community Review

Public Review and Expanded Appeal Period (EAP) Process

Begin reviewing now!

Outreach to your community members
Templates available!

Statutory 90-day Appeal Period:
Publication in Federal Register
Letter to Community Official
Newspaper publication, and...
Maps and data available online!



Website



FEMA

What are you looking for?



→ Safer, Stronger, Protected Homes & Communities

↓ Protecting Homes

- ▶ Flood Insurance
- ▶ Flood Hazard Mapping

→ Protecting Our Communities

→ Protecting Your Businesses

→ National Preparedness

→ Preparedness (Non-Disaster) Grants

→ Assistance To Firefighters Grant Program

View Your Community's Preliminary Flood Hazard Data

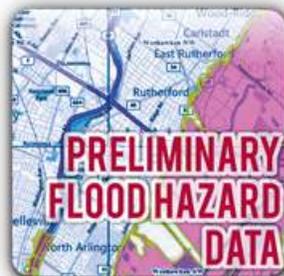
[+ Share/Email This Page](#)

Related Links

[Understanding the Changes to Your Community's Flood Insurance Rate Map](#)

[Understanding Preliminary Flood Maps](#)

[Preliminary Flood Hazard Data Search Tool](#)



Now Available! Access Your Community's Preliminary Flood Hazard Data in One Centralized and Easily Accessible [Location!](#)

If the preliminary flood hazard data (preliminary data) [search tool](#) is unavailable, please visit this [alternate site](#) to view your data.

www.fema.gov/preliminaryfloodhazarddata



Expanded Appeal Period (EAP) Process

The Facts

New process detailed in Procedure Memorandum issued to the public by FEMA on December 1, 2011

What's the same?

An appeal must be based on data that shows the flood hazard information is scientifically or technically incorrect

What's different?

Anything that may have an impact on flood insurance requirements will now be given the same 90-day appeal period!

Expanded Appeal Period (EAP) Process

Appeals versus Comments under the new EAP process

Appeals :

- **Areas showing new or revised Base Flood Elevations (BFEs) or Zone AO depths**
- **Areas showing new or revised Special Flood Hazard Area (SFHA) boundaries (including both increases and decreases in the extent of the SFHA)**
- **Areas where there is a change in SFHA zone designation**
- **Areas showing new or revised regulatory floodway boundaries (including both increases and decreases in the extent of the regulatory floodway)**

Expanded Appeal Period (EAP) Process

Appeals versus Comments under the new EAP process

Comments:

- **Corporate limit revisions**
- **Road name errors and revisions**
- **Flooding source name errors and revisions**
- **Base map errors**
- **Other possible omissions or potential improvements to the mapping**

MYTHS!

- ***“The Expanded Appeal Period (EAP) means I have more time to submit an appeal.”***
- ***“The 90- day appeal/comment period is my only chance to change FEMA’s maps?”***
- ***“What are my other options?”***
 - Letter of Map Amendments (LOMA): A request to FEMA for removal of individual properties or structures from the SFHA
 - Letter of Map Revisions (LOMR): A request to FEMA to modify an effective Flood Insurance Rate Map (FIRM), or Flood Boundary and Floodway Map (FBFM), or both. Results in the modification of the floodway, BFEs, or the Special Flood Hazard Area (SFHA).

Post-Preliminary Processing

- **Summary of Map Actions (SOMA)**
 - Background
 - Letters of Map Change (LOMCs) are legally binding changes to the map
 - Summary of Map Actions is an assessment of all existing LOMCs compared with the new FEMA maps

Summary of Map Actions

SOMA-1

PRELIMINARY SUMMARY OF MAP ACTIONS

- Category 1: shown on the new DFIRM panel
- Category 2: NOT shown on the new DFIRM panel due to scale limitations (revalidated after the new DFIRMs become effective)

Community: HAMPTON, TOWN OF

Community No: 330132

To assist your community in maintaining the Flood Insurance Rate Map (FIRM), we have summarized below the previously issued Letter of Map Change (LOMC) actions (i.e., Letters of Map Revision (LOMRs) and Letters of Map Amendment (LOMAs)) that will be affected by the preparation of the enclosed revised FIRM panel(s).

1. LOMCs Incorporated

The modifications effected by the LOMCs listed below have been reflected on the Preliminary copies of the revised FIRM panels. In addition, these LOMCs will remain in effect until the revised FIRM becomes effective.

LOMC	Case No.	Date Issued	Project Identifier	Old Panel	New Panel
			NO CASES RECORDED		

2. LOMCs Not Incorporated

The modifications effected by the LOMCs listed below have not been reflected on the Preliminary copies of the revised FIRM panels because of scale limitations or because the LOMC issued had determined that the lot(s) or structure(s) involved were outside the Special Flood Hazard Area, as shown on the FIRM. These LOMCs will be revalidated free of charge 1 day after the revised FIRM becomes effective through a single revalidation letter that reaffirms the validity of the previous LOMCs.

LOMC	Case No.	Date Issued	Project Identifier	Old Panel	New Panel
LOMA	01-01-0544A	03/28/2001	THE COTTAGES AT BOARS HEAD, UNITS 1-11 - 520 OCEAN BOULEVARD	3301320008B	33015C0441F
LOMA	06-01-B326A	05/23/2006	TAX MAP 134, LOT 9 - 180 NORTH SHORE ROAD (NH)	33015C0433E	33015C0433F

Summary of Map Actions (continued)

- Category 3: superseded, and no longer valid, due to revised flood hazards
- Category 4: property owner must request this be re-determined

3. LOMCs Superseded

The modifications effected by the LOMCs listed below have not been reflected on the Preliminary copies of the revised FIRM panels because they are being superseded by new detailed flood hazard information or the information available was not sufficient to make a determination. The reason each is being superseded is noted below. These LOMCs will no longer be in effect when the revised FIRM becomes effective.

LOMC	Case No.	Date Issued	Project Identifier	Reason Determination Will be Superseded
LOMA	97-01-112A	04/01/1997	OCEAN SPRAY CONDOS - 407 OCEAN BLVD.	4
LOMA	11-01-3013A	11/15/2011	MAP 222, LOT 117 – 501C WINNACUNNET ROAD	2

1. Insufficient information available to make a determination.
2. Lowest Adjacent Grade and Lowest Finished Floor are below the proposed Base Flood Elevation.
3. Lowest Ground Elevation is below the proposed Base Flood Elevation.
4. Revised hydrologic and hydraulic analyses.
5. Revised topographic information.

4. LOMCs To Be Redetermined

The LOMCs in Category 2 above will be revalidated through a single revalidation letter that reaffirms the validity of the determination in the previously issued LOMC. For LOMCs issued for multiple lots or structures where the determination for one or more of the lots or structures has changed, the LOMC cannot be revalidated through this administrative process. Therefore, we will review the data previously submitted for the LOMC requests listed below and issue a new determination for the affected properties after the effective date of the revised FIRM.

LOMC	Case No.	Date Issued	Project Identifier	Old Panel	New Panel
LOMR-F	11-01-2035A	07/14/2011	DUNVEGAN WOODS CONDOMINIUM, UNITS 43-49, 95-110, 103-110 TAX MAP 180, LOT 5 – DUNVEGAN WOODS DRIVE	33015C0441E	33015C0441F

Post-Preliminary Processing

- **Revalidation of Letters of Map Change (LOMCs)**
 - The Summary of Map Actions (SOMA) is used to generate a Revalidation Letter
 - The Revalidation Letter is issued to the community
 - Community officials are encouraged to disseminate this information.

Post-Preliminary Processing

■ Revalidation Letter Distribution

- Community
- FEMA Regional Office
- State NFIP Coordinator
- LOMC Compendium
- **NOT** to Homeowners or Developers
- **IS** available through Map Service Center:
<http://msc.fema.gov/>

Post-Preliminary Processing

- **The compliance and map adoption** period begins at the date the Letter of Final Determination is sent, and ends at the effective date.
- During this period, community officials review, and if appropriate, revise the community's floodplain ordinances to ensure they are compliant with NFIP regulations.
- To avoid suspension from the NFIP, the community must adopt a compliant floodplain management ordinance. Communities should contact their State NFIP Coordinator's Office for model language and any questions regarding higher standards.
- Once the State has reviewed the ordinance and the community has adopted it, the ordinance must be approved by FEMA before close of business on the effective date. Do not wait until the last day to adopt your ordinance!

OEP – Coastal NH Floodplain Mapping Website

an official NEW HAMPSHIRE government website

OFFICE OF Energy and Planning

Thursday, May 1, 2014

For My Home For My Business For My Community

Planning Programs > Floodplain Management Program >

search this site

- Home
- About OEP
- Energy Division
- Planning Division
 - Planning Programs
 - Planning Services
 - Planning Resources
- News and Events
- Jobs, Grants, and RFP's
- State Data Center
- Resource Library
- Contact OEP

Coastal NH Floodplain Mapping Project

A resource page about FEMA's revised mapping of the Atlantic Coast and Great Bay watershed area of New Hampshire.

- [About the Project](#)
- [Mapping Data and Methodology](#)
- [Mapping Products](#)
- [Outreach Activities and Materials](#)
- [Additional Resources](#)

FEMA Resources

- [View Preliminary Maps on FEMA MSC](#)
- [FEMA Appeals Guidance](#)

OEP Events Calendar						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

High Resolution Version of Timeline

Upcoming CRS Workshop

Increasing Flood Resilience in Your Community

June 12, 2014 from 5:00 to 8:30 PM

Hugh Gregg Coastal Conservation Center at the Great Bay
Discovery Center, Greenland

Contact: Jennifer Gilbert, NH OEP
jennifer.gilbert@nh.gov
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Points of Contact

■ University of New Hampshire Contact

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Earth Systems Research Center
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■ FEMA Region I Contacts

- John Grace, Coastal Engineer
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- Jeb Killion, Congressional Liaison
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- Chris Markesich, CRS Coordinator
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■ STARR Regional Service Center

- Alex Sirotek, RSC Lead
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NH Office of Energy and Planning, Floodplain Management Program Contacts

- Jennifer Gilbert, State NFIP Coordinator
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Please send all comments/protests/appeals to:

Fay Rubin, Earth Systems Research Center, University of
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Please copy:

John Grace, FEMA Region 1, 99 High Street, 6th Floor,
Boston, MA 02110

Jennifer Gilbert, NH Office of Energy and Planning,
107 Pleasant St., Johnson Hall, 3rd Floor, Concord, NH
03301



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Questions?

RiskMAP

Increasing Resilience Together



WEB LINKS

- **Preliminary Data**
 - msc.fema.gov
- **Effective Data (including Future Effective)**
 - msc.fema.gov
- **Coastal Outreach Material**
 - www.fema.gov/coastal-flood-risks
- **Mitigation Action Tracker**
 - fema.starr-team.com
- **Multi-Hazard Planning Website**
 - www.fema.gov/multi-hazard-mitigation-planning
- **Mitigation Ideas**
 - www.fema.gov/library/viewRecord.do?id=6938
- **National Flood Insurance Program**
 - www.floodsmart.gov
- **Flood Insurance Reform Act**
 - www.fema.gov/national-flood-insurance-program/flood-insurance-reform-act-2012



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Thank you ...

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