

Using FEMA's Flood Risk Products to Increase Flood Resiliency

Town of Madbury
October 19, 2016



Welcome and Introductions

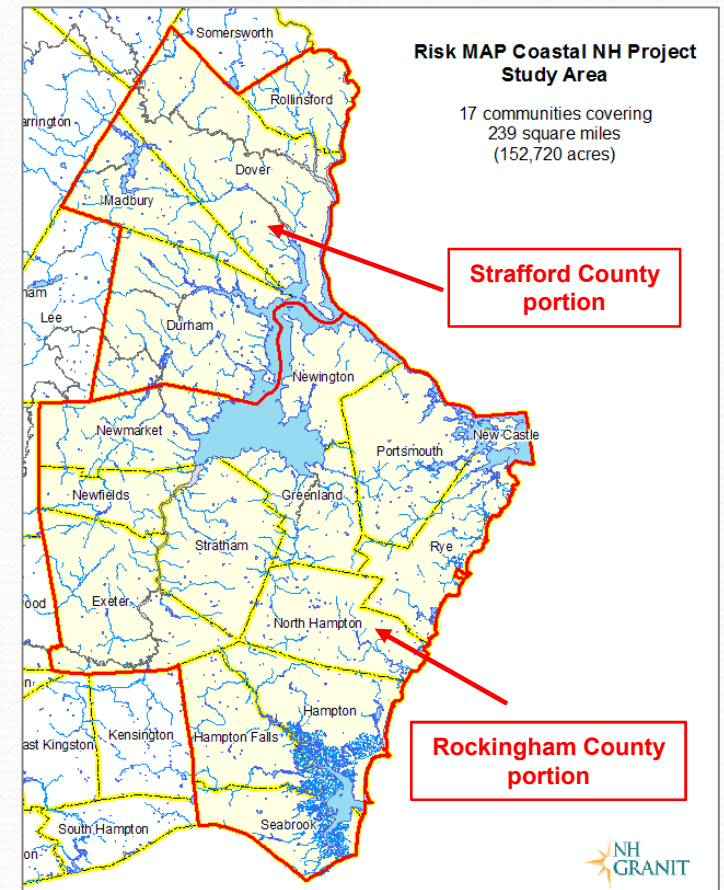
Agenda Items

- Overview of the FEMA Flood Risk Products
- Flood Risk Analysis Results for Your Community
- Using the Flood Risk Data for Your Community's Planning Initiatives



Coastal Project Summary

- Four communities in Strafford County were part of the FEMA Risk MAP Coastal Project.
- Flood Insurance Rate Maps (new format) and Flood Insurance Study went effective on 9/30/15.
- Flood Risk Products were also produced.
 - 1st time these products were released in NH



WWW.
coasta

Strafford County

Provides links and information regarding the new 2015 floodplain maps and study for the Strafford County 4 Communities in the Coastal NH Floodplain Mapping Project.

Strafford County Communities in Coastal NH Floodplain Mapping Project Timeline



The new floodplain maps for the four communities in the Strafford County project area (Durham, Madbury, Dover, and Rollinsford) became effective on September 30, 2015. Below are links to information about how to access the new maps.

Regulatory Products

- [Flood Insurance Rate Maps and Flood Insurance Studies](#) (Effective 2015 products and Historic Maps)
 - [How to View Current Maps using the Interactive Map](#) PDF
 - [How to Find the Current Map and Create a Printable Version of a Map](#) PDF

Non-Regulatory Products

Non-regulatory products were produced by FEMA as part of the NH Coastal Floodplain Mapping Project. FEMA is providing these products to help community members and officials view and visualize their local flood risk, allowing communities to make informed decisions about reducing flood loss and mitigating potential damage from flood hazards. A general description of the following products can be found on [FEMA's web site](#).

The following flood risk data can be found in the Strafford County Flood Risk Map, Report, and Database: ([How to View Flood Risk Products](#)) PDF

- Maps that Show the Floodplain Changes Between the 2005 Previous Maps and the 2015 Current Maps*
 - [Dover](#) PDF
 - [Durham](#) PDF
 - [Madbury](#) PDF
 - [Rollinsford](#) PDF

*All of these pdf files have been reduced in size for easier download. The reduction in size has not changed the viewing and printing quality of these maps. If a community is interested in obtaining the full-resolution pdf file, please contact Chris Phaneuf at chris.phaneuf@unh.edu.

Flood Insurance Information

/fmp/

IRE government website



For My Community

search this site

nd Great Bay

3.

A A A



Monday, September 26,

Home

About OEP

Energy Division

Planning Division

Planning Programs

Planning Services

Planning Resource

News and Events

Jobs, Grants, and RFP

State Data Center

Resource Library

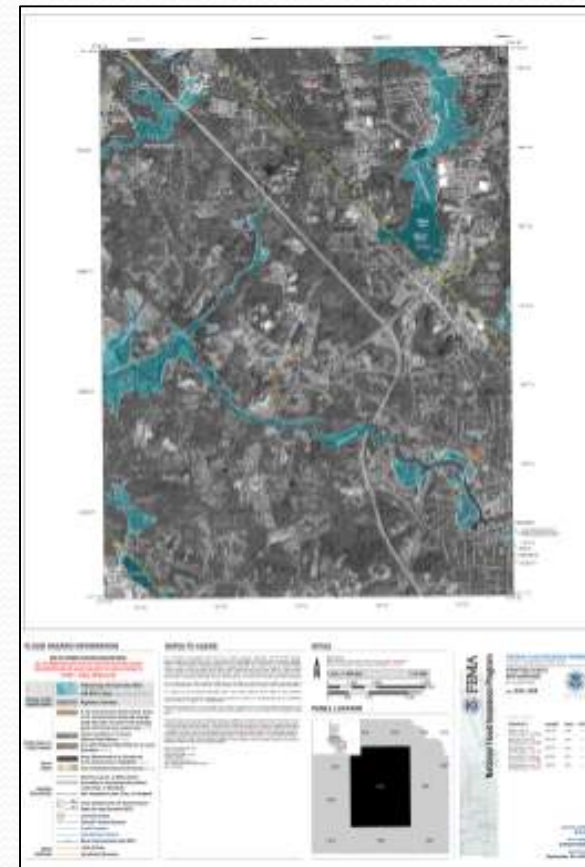
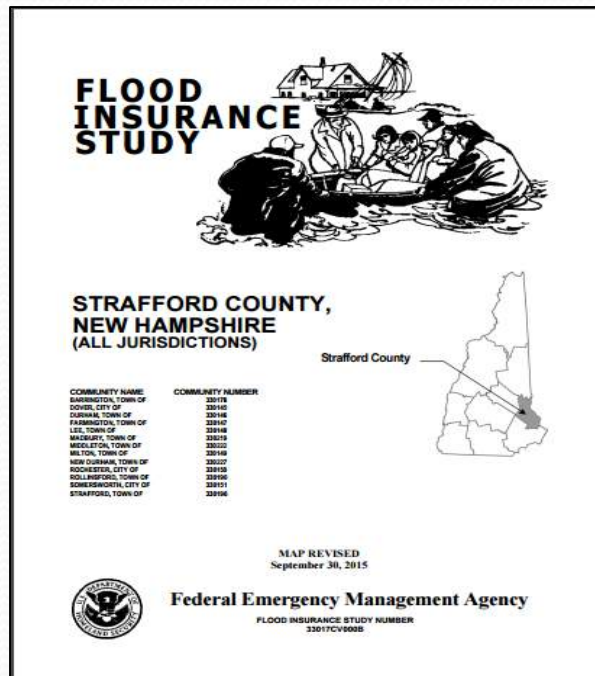
Contact OEP

Flood Risk Products for Your Community

Fay Rubin, Chris Phaneuf, NH GRANIT

NFIP Regulatory Products

- **Required** under the National Flood Insurance Program (NFIP)



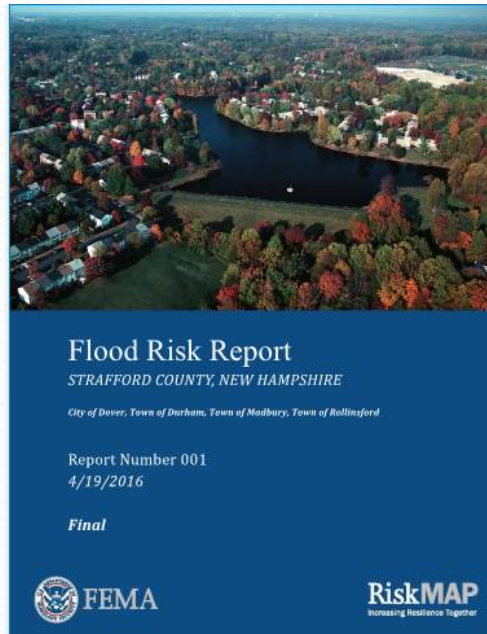
Flood Risk Products

- Products are not required by the NFIP (Non-Regulatory)
- Products are intended to help communities *better understand and communicate flood risk*
- All products are based on GIS analysis

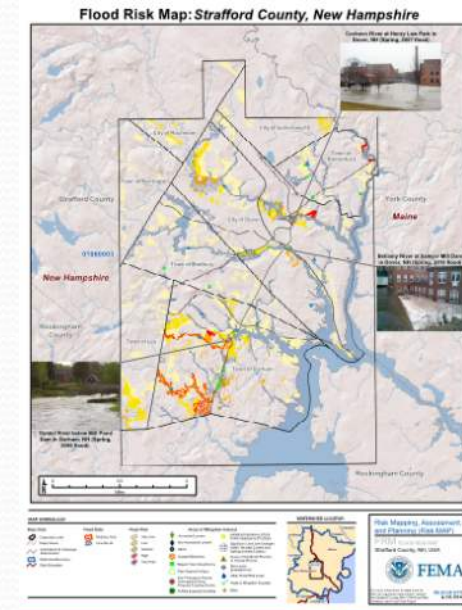
Flood Risk Products



Flood Risk Database



Flood Risk Report



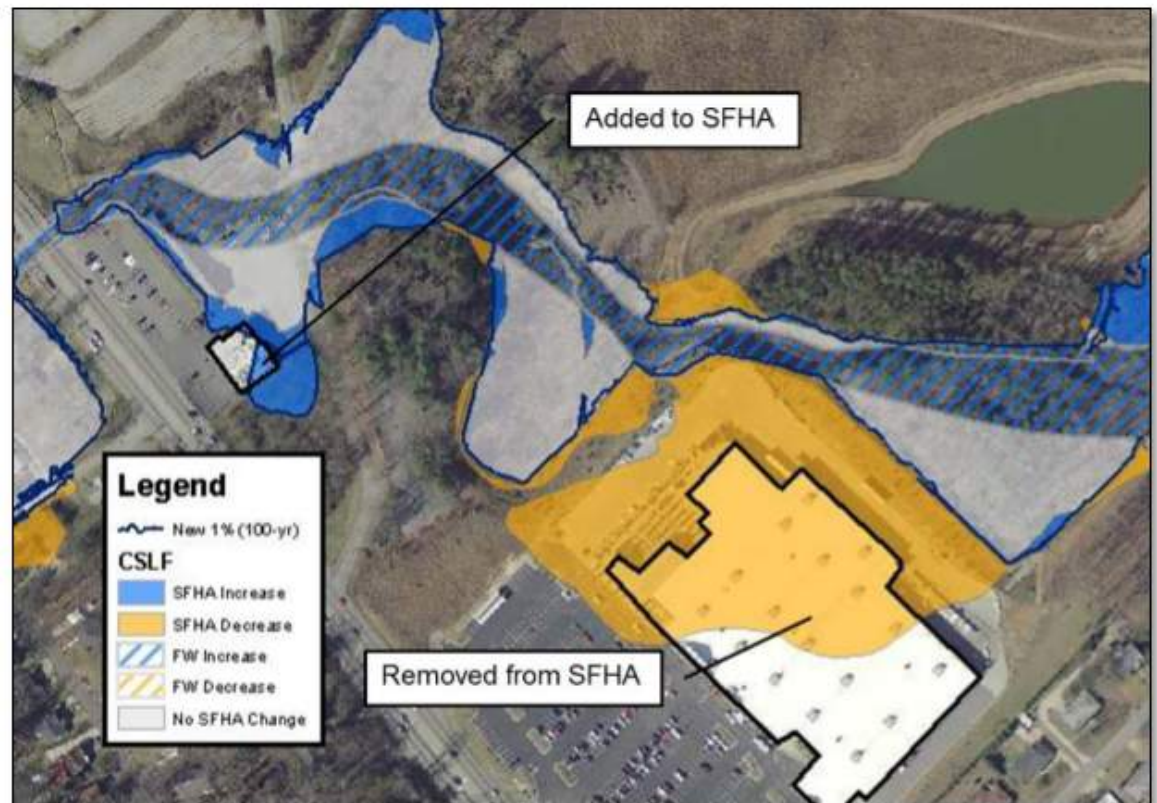
Flood Risk Map

Flood Risk Database

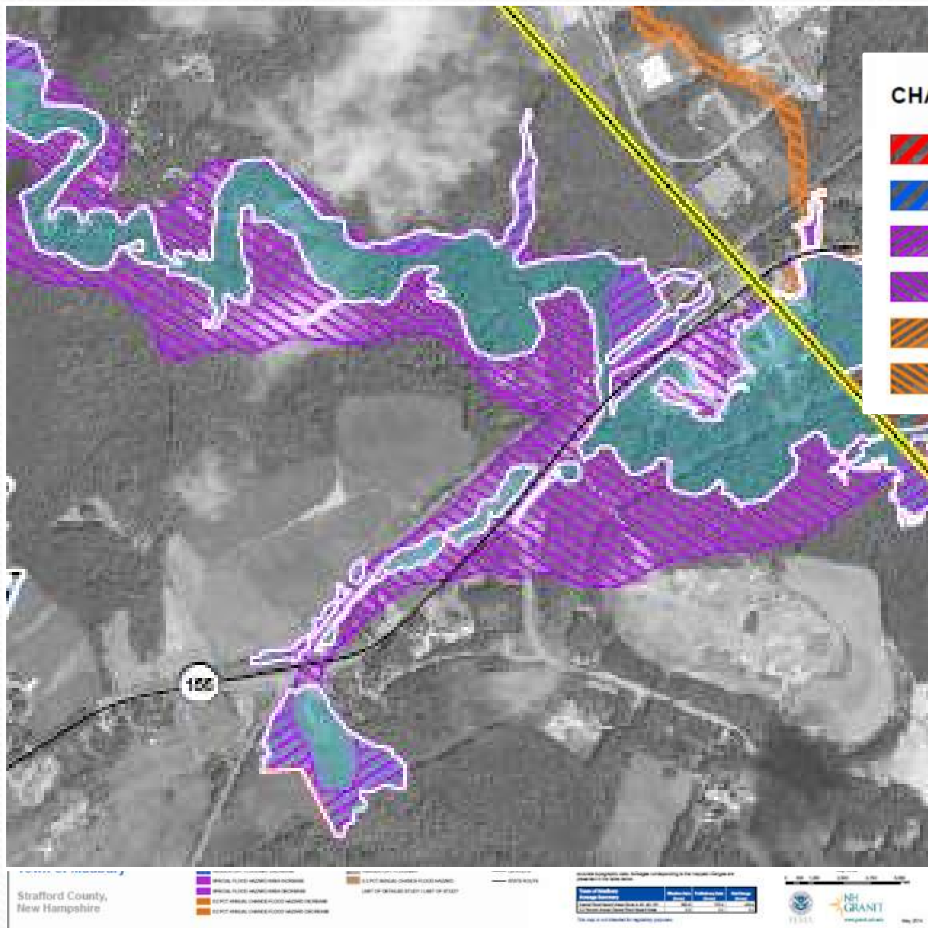
- Changes Since Last FIRM
- Flood Depth and Analysis Grids
- Estimated Flood Loss Information
(Not part of database for this project)
- Areas of Mitigation Interest

Changes Since Last FIRM

- Indicates changes in horizontal extent of the floodplain
- Attributes in dataset may include engineering factors that contributed to the map changes



Changes Since Last FIRM



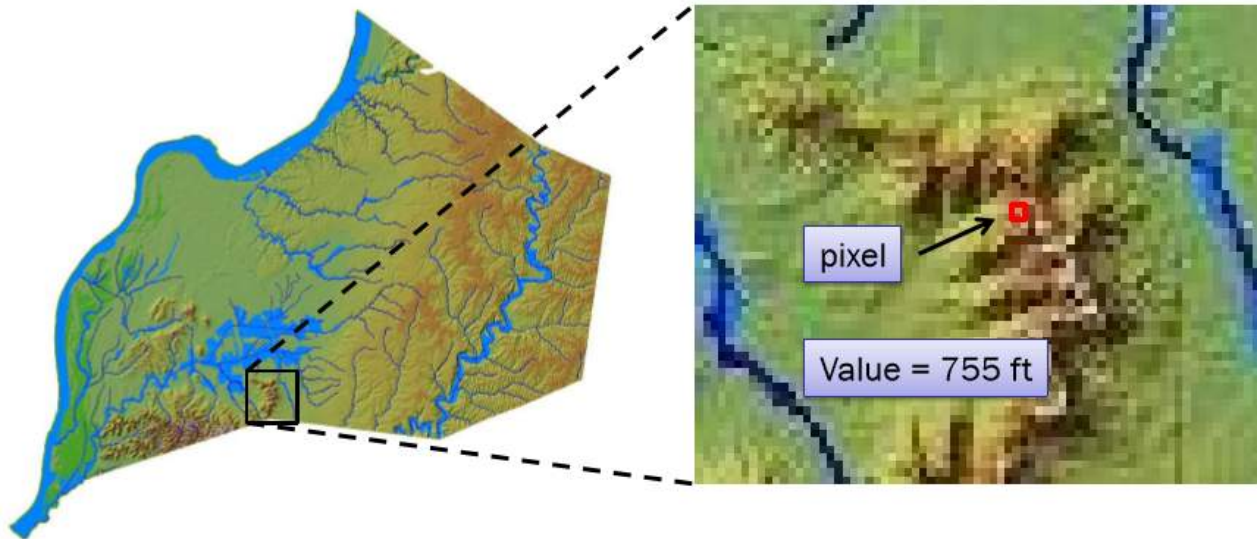
Changes Since Last FIRM

1% Annual Chance Event (Zones A, AE, AO)

	Total Acres	Prior to 9/2015		Effective (as of 9/2015)		Increase		Decrease		Net Change
		Acres	% of Town	Acres	% of Town	Acres	% of Town	Acres	% of Town	Acres
Dover	18,592.0	2,712.0	5.8	2,533.0	5.4	359.0	0.8	538.0	1.1	-179.0
Durham	15,852.0	2,740.5	5.8	2,572.4	5.5	283.0	0.6	451.0	1.0	-168.0
Madbury	7,799.0	960.8	2.0	797.4	1.7	123.3	0.3	286.8	0.6	-163.5
Rollinsford	4,843.0	418.4	0.9	405.9	0.9	101.0	0.2	113.4	0.2	-12.4
Total	47,086.0	6,831.7	14.5	6,308.7	13.4	866.3	1.8	1,389.2	3.0	-522.9

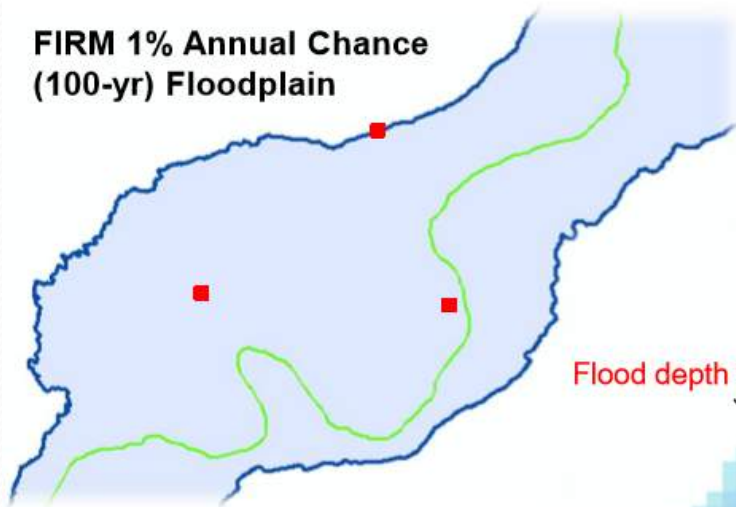
Flood Depth Grids

- What is a “Grid”?
 - a matrix of cells (or pixels) organized into rows and columns (or a grid) where each cell contains a value representing information, such as temperature, elevation, depth, etc. - esri

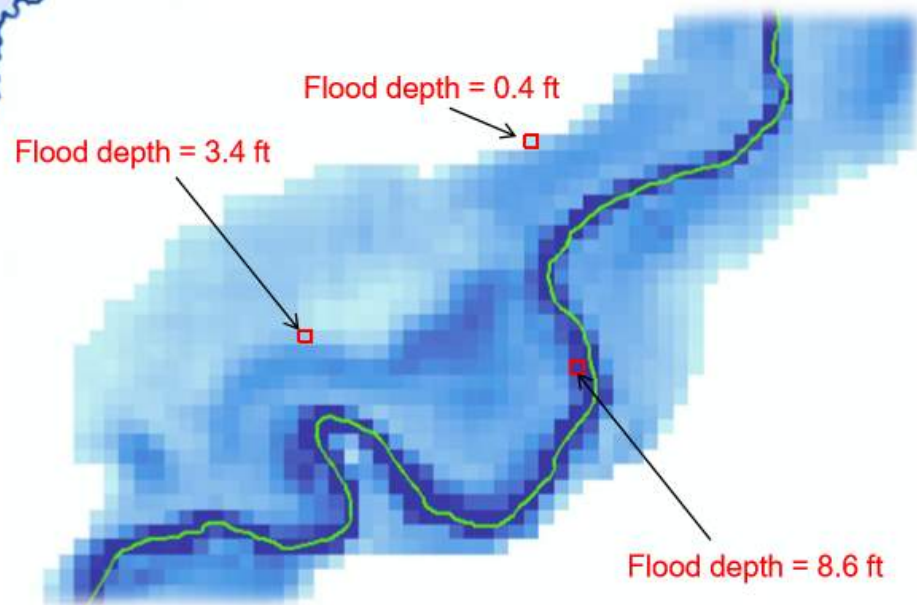


Flood Depth Grids

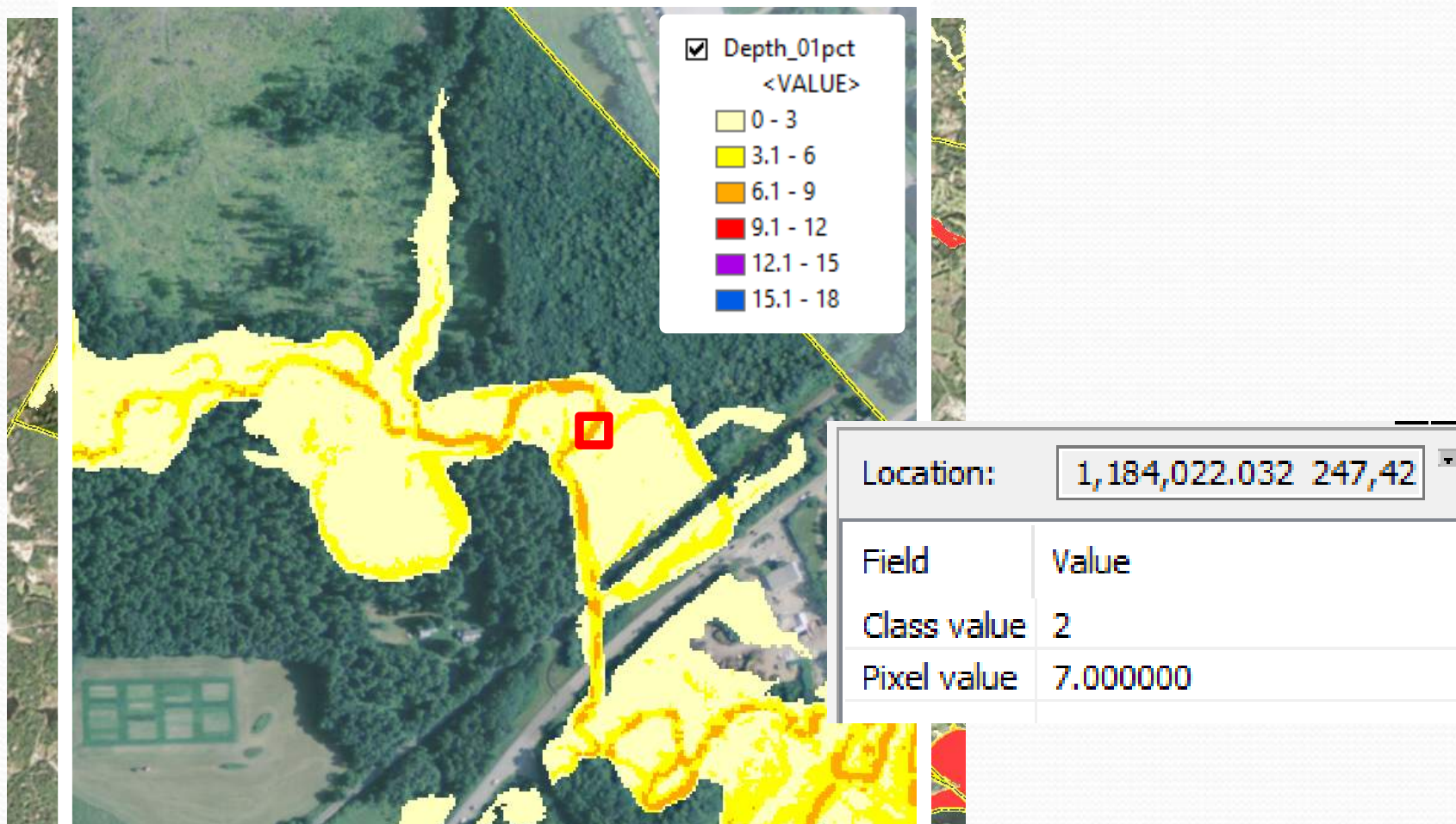
**FIRM 1% Annual Chance
(100-yr) Floodplain**



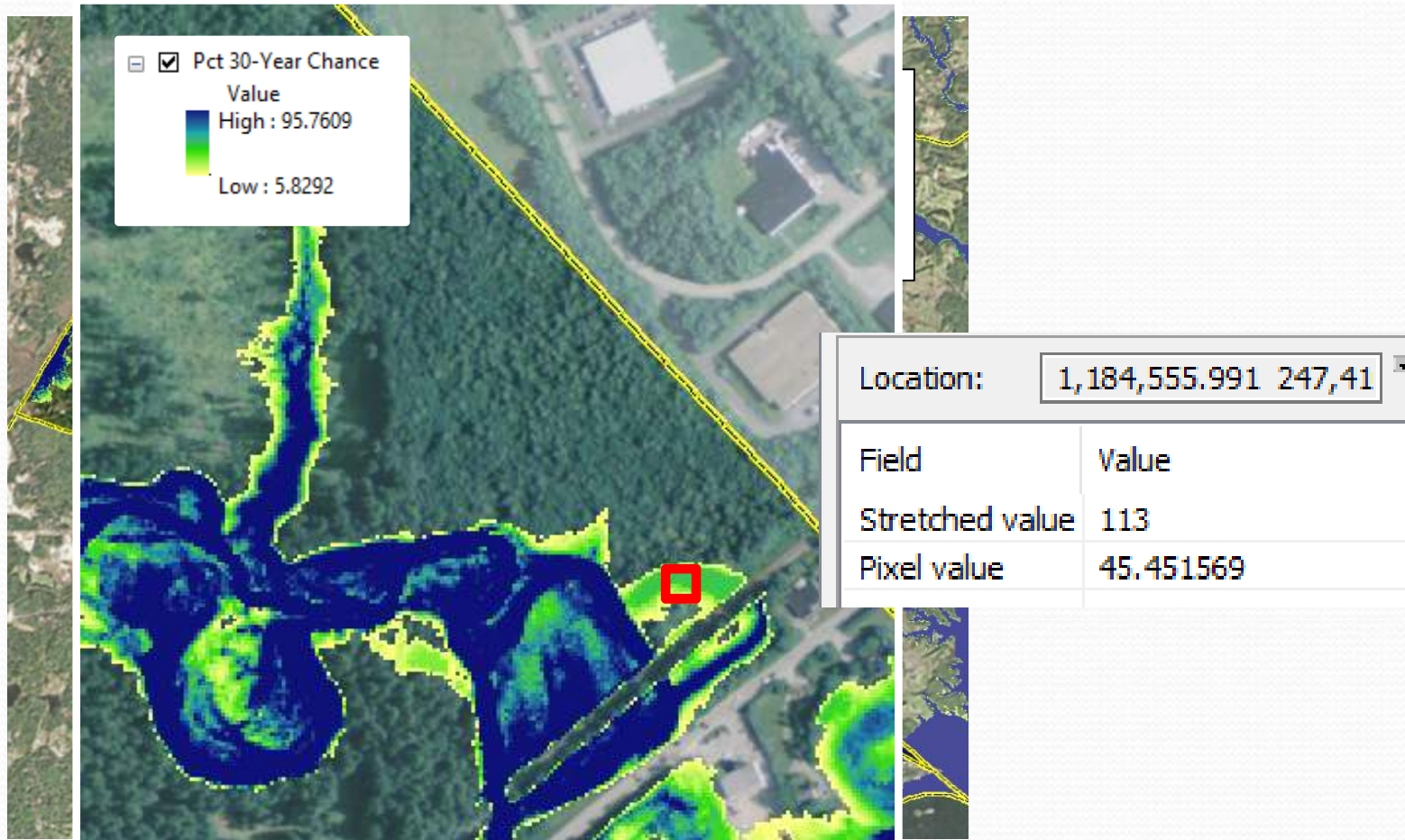
1% Annual Chance Depth Grid



Flood Depth Grid: 1 Pct Chance Event



Flood Depth Grid: Pct 30-Year Chance



HAZUS-Multi-Hazard Flood Risk Assessment

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



Estimated Potential Losses for Flood Event Scenarios Table

	Total Inventory		10% (10-yr)		1% (100-yr)		Losses for Flood Event Scenarios					
	Estimated Value	% of Total	Dollar Losses ¹	Loss Ratio ²	Dollar Losses ¹	Loss Ratio ²	1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
							Dollar Losses ¹	Loss Ratio ²	Dollar Losses ¹	Loss Ratio ²	Dollar Losses ¹	Loss Ratio ²
Residential Building / Contents	\$244,112,000	72%	\$43,000	<1%	\$148,000	<1%	\$8,000	<1%	\$250,000	<1%	\$8,000	N/A
Commercial Building / Contents	\$67,676,000	20%	\$56,000	<1%	\$72,000	<1%	\$2,000	<1%	\$96,000	<1%	\$7,000	N/A
Other Building / Contents	\$26,973,000	8%	\$42,000	<1%	\$3,000	<1%	\$3,000	<1%	\$77,000	<1%	\$5,000	N/A
Total Building / Contents ³	\$338,761,000	100%	\$141,000	<1%	\$53,000	<1%	\$3,000	<1%	\$423,000	<1%	\$21,000	N/A
Business Disruption ⁴	N/A	N/A	\$1,000	N/A	\$0	N/A	\$0	N/A	\$6,000	N/A	\$0	N/A
TOTAL⁵	\$338,761,000	N/A	\$142,000	<1%	\$273,000	<1%	\$6,000	<1%	\$429,000	<1%	\$21,000	N/A
					\$3,000	N/A						
					\$276,000	<1%						

Source: Hazus analysis results stored as the Flood Risk Assessment Data.

¹ Losses shown are rounded to nearest \$10,000 for values under \$100,000.

² Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to <1%.

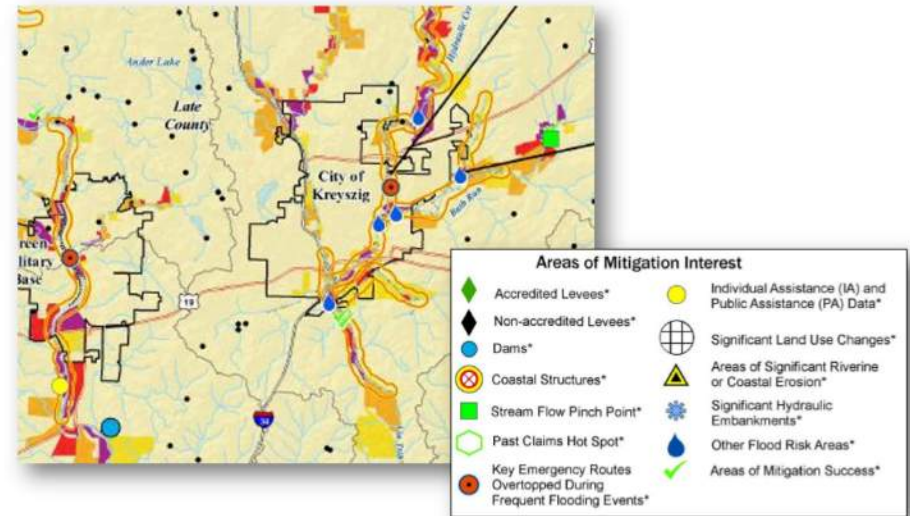
³ Total Building / Contents Loss = Residential Building / Contents Loss + Commercial Building / Contents Loss + Other Building / Contents Loss.

⁴ Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Profit Loss.

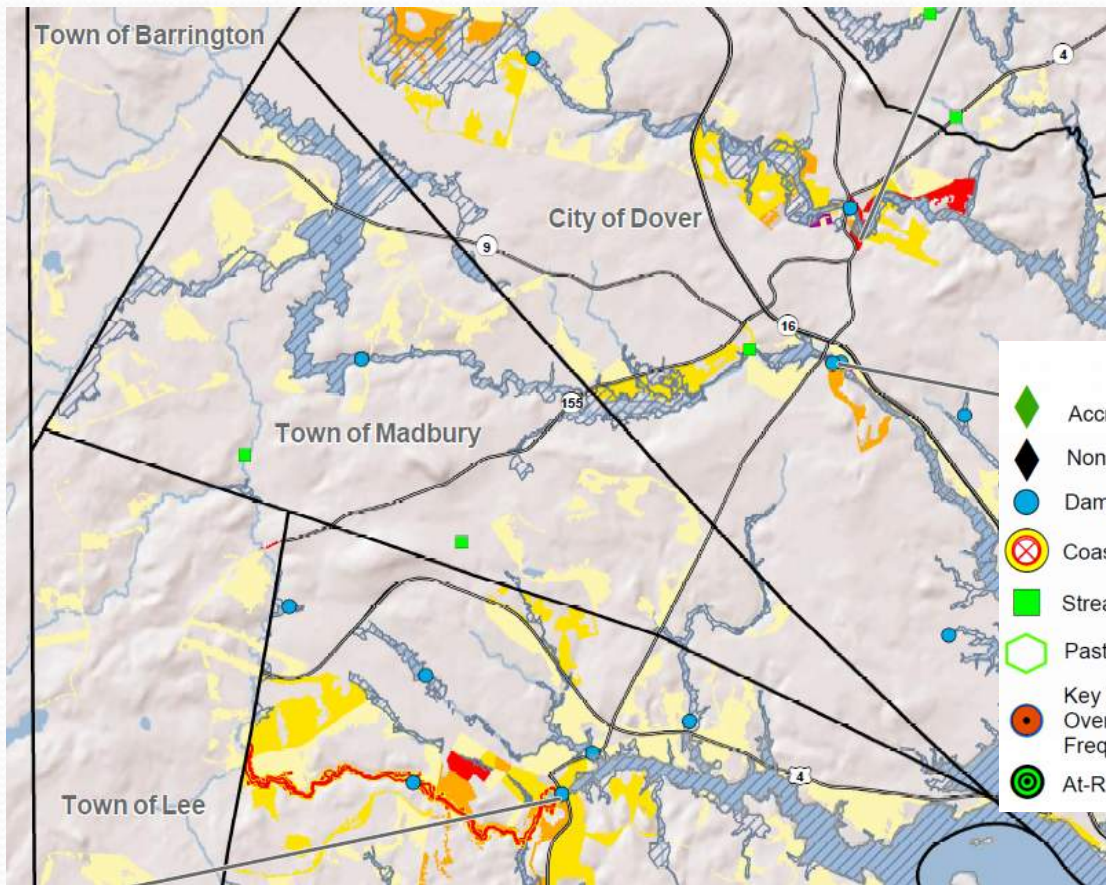
⁵ Total Loss = Total Building / Contents + Business Disruption.

Areas of Mitigation Interest

- At Risk Essential Facilities
- Dams
- Streamflow Constrictions
- Past Claims Hot Spot
- Individual and Public Assistance Data
- Areas of Mitigation Success




Areas of Mitigation Interest



Areas of Mitigation Interest

- Accredited Levees
- Non-Accredited Levees
- Dams
- Coastal Structures
- Stream Flow Constrictions
- Past Claims Hot Spot
- Key Emergency Routes Overtopped During Frequent Flooding Events
- At-Risk Essential Facilities
- Individual Assistance (IA) & Public Assistance (PA) Data
- Significant Land Use Changes (within the past 5 years and looking forward 5 years)
- Areas of Significant Riverine or Coastal Erosion
- Non-Levee Embankments
- Other Flood Risk Areas
- Areas of Mitigation Success
- Other

Flood Risk Report & Map




Flood Risk Report
STRAFFORD COUNTY, NEW HAMPSHIRE

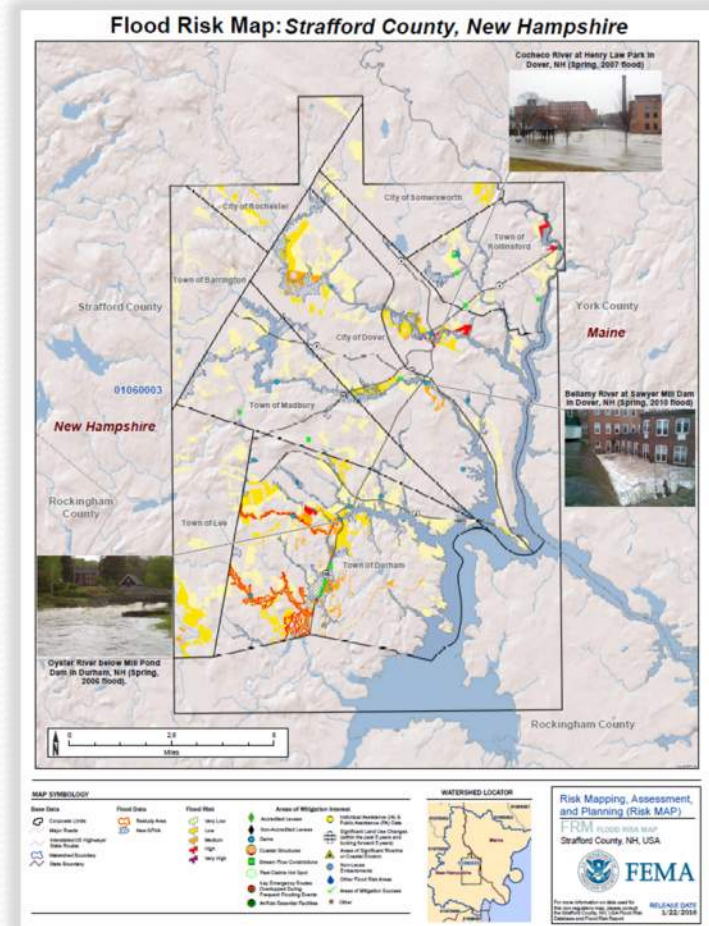
City of Dover, Town of Durham, Town of Madbury, Town of Rollinsford

Report Number 001
 4/19/2016

Final



RiskMAP
 Increasing Resilience Together



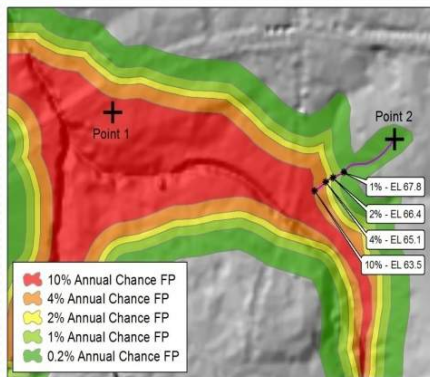
Using the Flood Risk Data for Your Community's Planning Initiatives

Kyle Pimental, Strafford Regional Planning Commission

Uses of Flood Risk Data

Identifying vulnerable areas that may need additional focus

Develop mitigation strategies and techniques



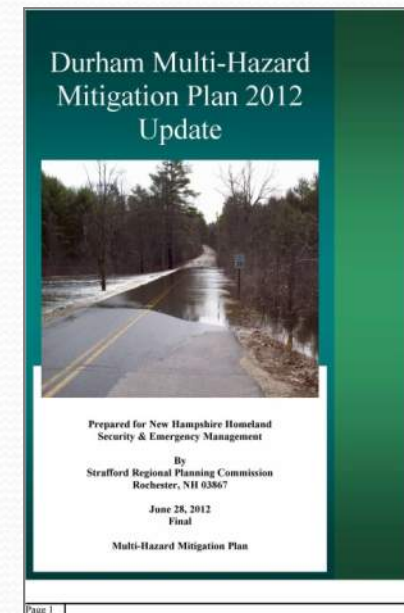
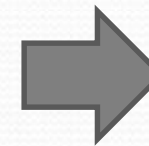
Flood Depth Grids



Estimated Loss Information



Areas of Mitigation Interest



Incorporating into local planning mechanisms

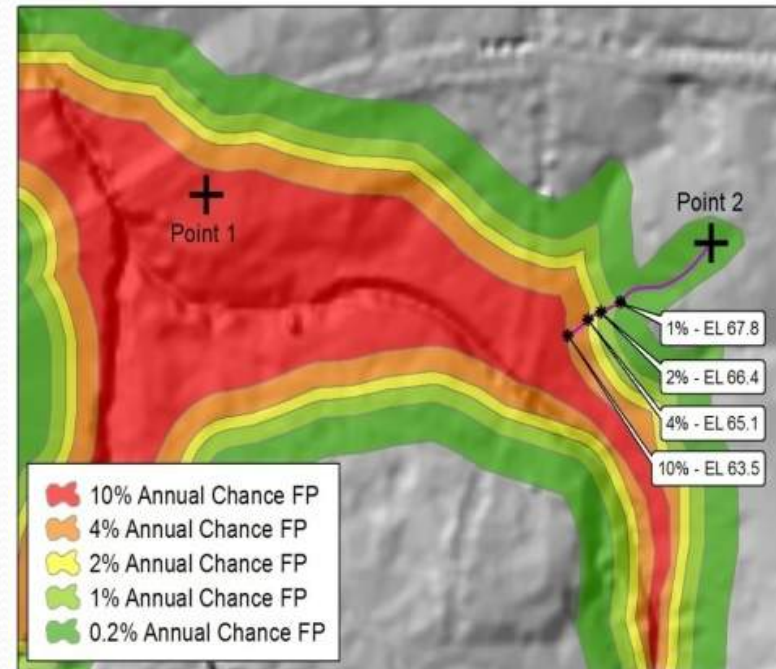
Flood Depth Grids

FEMA - FIRM



“What” & “Where”

Flood Depth Grid



“How bad”

Vs.

Flood Depth Grids

- Additional analysis and scenario planning
 - Determining risk with different flood depths under various flooding frequencies
- Enhanced visualization & communication
 - Showing where floodplains are particularly deep or hazardous
 - Determining where losses may be the greatest after an event
- Inform vulnerability analysis and floodplain management
 - Use as preliminary benefit-cost analysis screening
 - Higher regulatory standards can be developed in higher hazard flood prone areas

Estimated Loss Information

- HAZUS is a loss estimation methodology (FEMA)
 - Newly modeled areas and depths

	Estimated Potential Losses for Flood Event Scenarios											
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Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

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³Total Building / Contents Loss = Residential Building / Contents Loss + Commercial Building / Contents Loss + Other Building / Contents Loss.

⁴Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Wage Loss + Direct Output Loss.

⁵Total Loss = Total Building / Contents + Business Disruption.

Estimated Loss Information

Additional information and data layers should be used to further analyze potential losses:

- Use the average annual losses by Census block to identify and prioritize areas for mitigation activities.
- Provide more local information such as building footprint and assessing data



Areas of Mitigation Interest

Important element of defining a more comprehensive picture of flood risk:

- Dams
- Levees and major embankments
- Coastal structures
- Stream flow constrictions
- Essential facilities
- Insurance claims
- Significant land use change
- Emergency routes impacted
- Drainage or stormwater-based flood areas
- Mitigation success
- Riverine or coastal erosion

Areas of Mitigation Interest

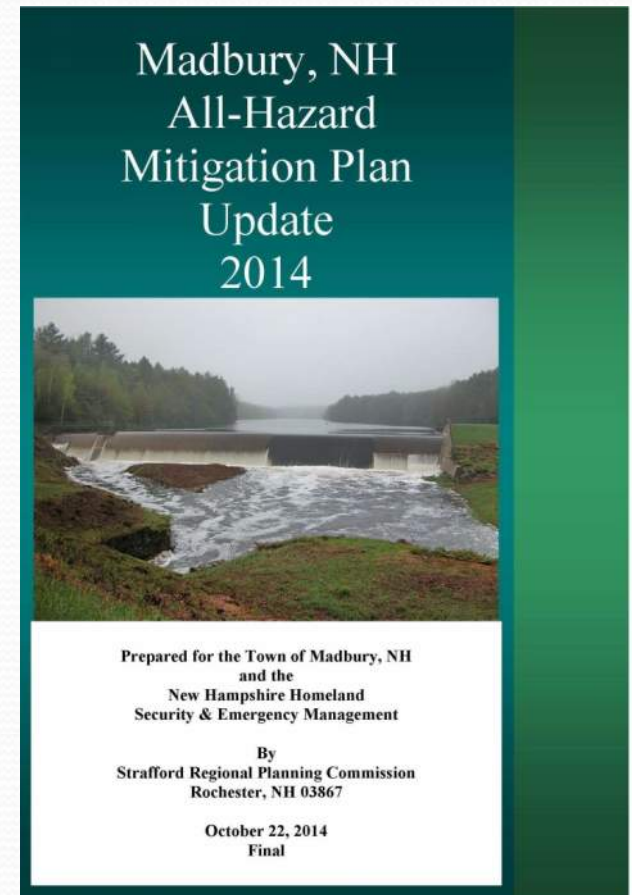
In Madbury:

- Dams – 1
- Stream flow constrictions – 2
 - High rate of crossing failure
- NFIP insurance – 1 policy
 - \$42,000 (repetitive loss property)



Incorporating into Planning Mechanisms

- Updates to local plans:
 - Hazard Mitigation Plan (10/22/2019)
 - Emergency Operations Plan
 - Master Plan
 - Modification of development standards
 - Capital Improvements Plan
 - Mitigation projects
 - Communicate flood risk



The image features a solid blue background with a subtle gradient. At the top, there are several overlapping, wavy lines in various shades of blue, creating a sense of movement and depth. The text "Thank you" is centered in a clean, white, sans-serif font.

Thank you