



FEMA

Discovery Meeting

Nashua Watershed

April 27, 2016 – Leominster, Massachusetts

RiskMAP
Increasing Resilience Together



Introductions

- Risk MAP Project Team
- Community partners and officials
- State partners and officials
- Other Federal Agencies partner representatives
- Associations
- Others

Why are we here?

Risk Mapping, Assessment and Planning (RiskMAP): What is different?

- **FY2016 - FY2020?**
- **Mitigation Planning - Status update**
- **4-Meeting Format**
 - Discovery meeting today
- **Study approach – Watershed based**

Best Available Data

Community data available?

Discovery

Discovery for the Nashua Watershed is the process of data mining, collection, and analysis with the goal of conducting a comprehensive watershed study and initiating communication and mitigation planning discussions with the communities in the watershed.

Occurs prior to...

- **Flood studies**
- **Flood risk assessments**
- **Mitigation planning technical assistance projects**



Involvement from Communities

- **Four meetings during the study when involvement from communities is needed:**
 - ***Discovery meeting***
 - ***Work Map meeting***
 - ***CCO meeting***
 - ***Open House/Resiliency meeting***

Nashua Watershed Timeline

- **Activities**
- **Project Timeline**
- **Products**

Discovery Meeting
April 2016

Projected
Flood Study Review
Work Map Meeting

Projected
Preliminary

Projected CCO Meeting

Projected
Effective

Discovery Meeting

Flood Study Review Meeting

Preliminary
FIRM
Issuance

Consultation Coordination
Officer (CCO) Meeting/
Open House

Resilience
Meeting

FIRM Effective

Risk MAP

Discovery

Engineering
Flood Hazard Mapping & Flood Risk Data Development

Preliminary Product Production
FIRM Public Notification
Appeal Process
Resolve Appeals
Post-Preliminary FIRM Processing

Projected LFD

FIRM Adoption
Resilience
Community Continuous Mitigation Actions

COMMUNITY ENGAGEMENT

MITIGATION PLANNING SUPPORT

Nashua Watershed Communities

- **The Nashua Watershed contains or touches:**
 - **2 counties in MA and 1 county in NH (3 total)**
 - **27 communities in MA and 8 in NH (35 total)**
 - **1,016 total stream miles (415 miles of named reaches)**
 - **Around 282,000 residents**
 - **Nashua Headwaters, North Nashua, Squannacook, and Nissitissit HUC10 Basins**

Need for Updates

- **Known discrepancies in current FISs**
- **Additional problems**
 - Out-of-date hydrology
 - Re-calculation of peakflows at the 10-, 25-, 50-, 100-, and 500-year recurrence intervals (10%, 2%, 4%, 1%, and 0.2% annual exceedance probabilities), due to as much as 35 years of additional streamflow data, recent large events, and improved statistical techniques

Need for Updates

■ **Additional problems (continued)**

- Identified discrepancies in current FISs for north-central MA compared with data from the Spring 2010 floods
 - 17 high-water marks (HWMs) set by USGS on Nashua River
 - Compared how HWMs plot on FIS profiles and on USGS streamgauge statistics
 - Very different AEPs (~50% of HWMs) indicate problems in effective hydraulic models used to build profiles
- Clusters of Letters of Map Change (LOMCs) indicating inaccuracies in the effective floodplains
- First Order Approximation (FOA) indicates that many effective A Zones may be inaccurately mapped and/or may be based on outdated engineering

First Order Approximation

■ Goal:

- Perform approximate engineering analysis using modern data and tools
- Compare effective Zone A to new one using a formula to determine pass/fail

■ Results:

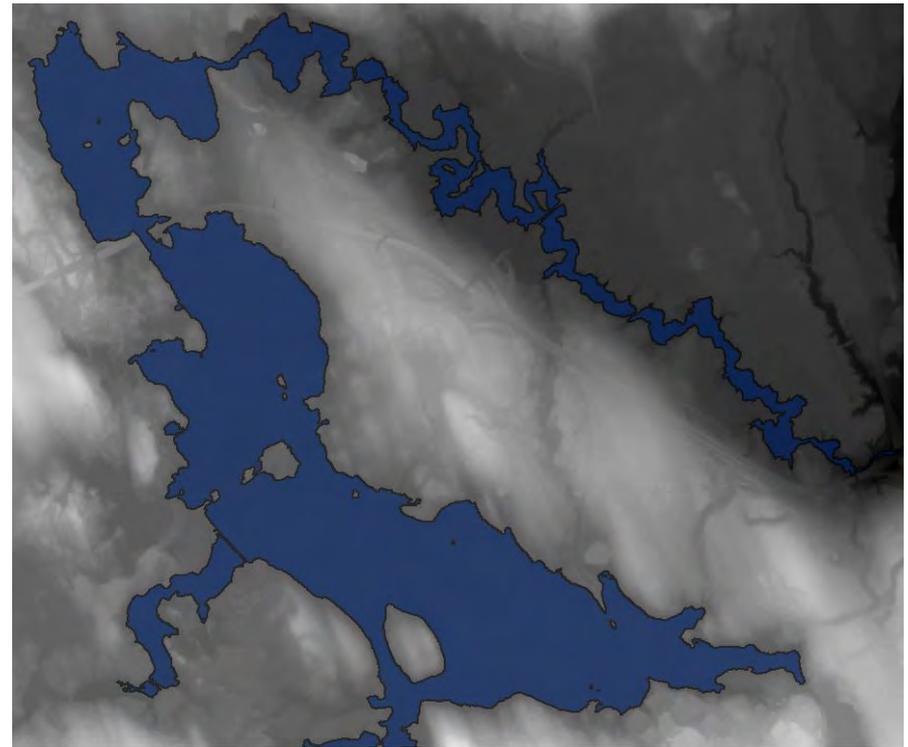
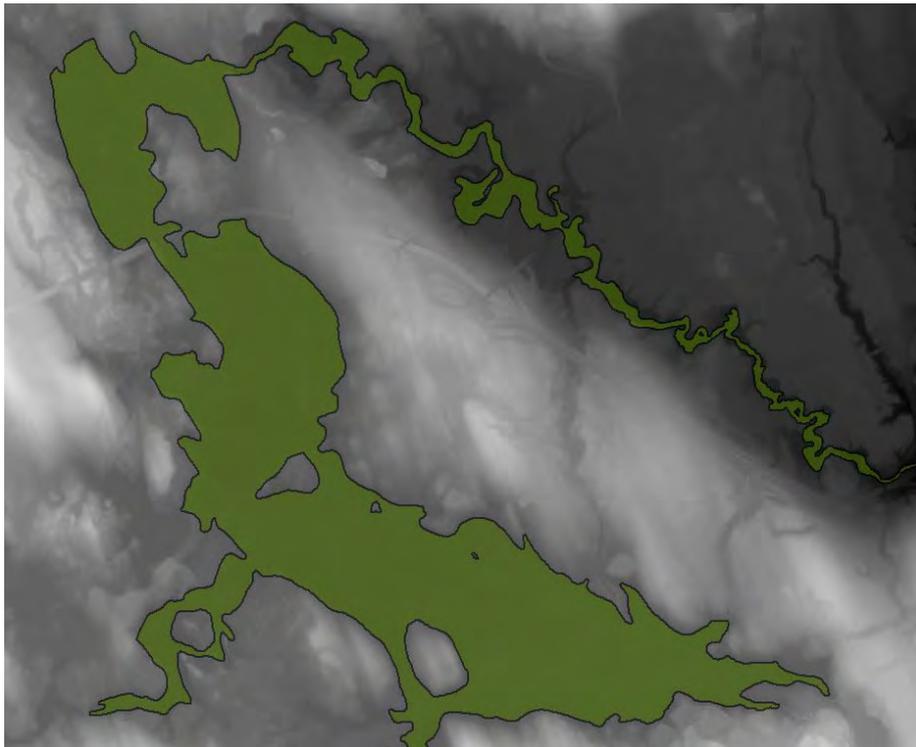
- 100% of watershed analyzed
- Direct comparisons: 99% of zones fail
- Even with generous tolerances: 59% of zones fail

■ Conclusion:

- A Zones in Nashua Watershed study area are not in good shape

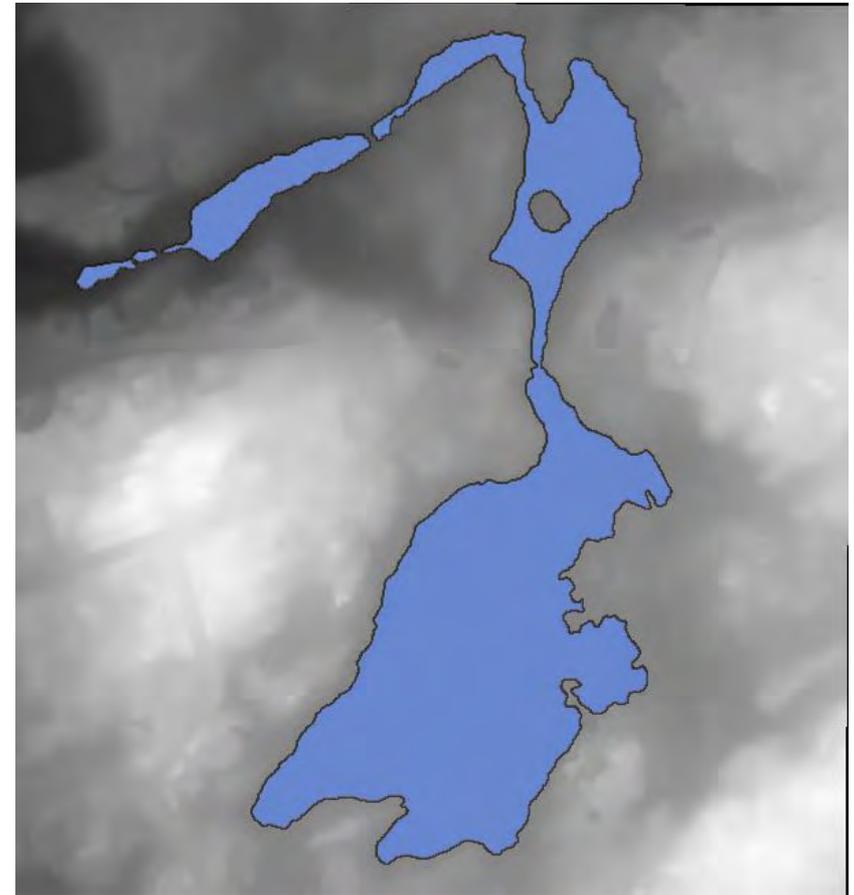
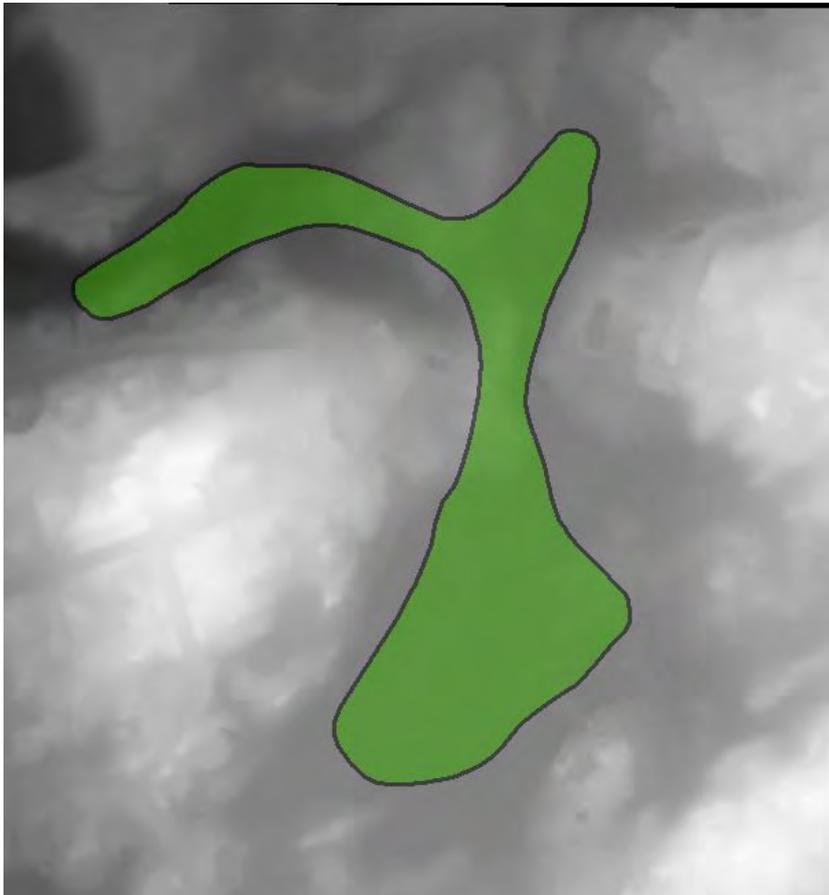
First Order Approximation

FOA Results Similar to Effective:

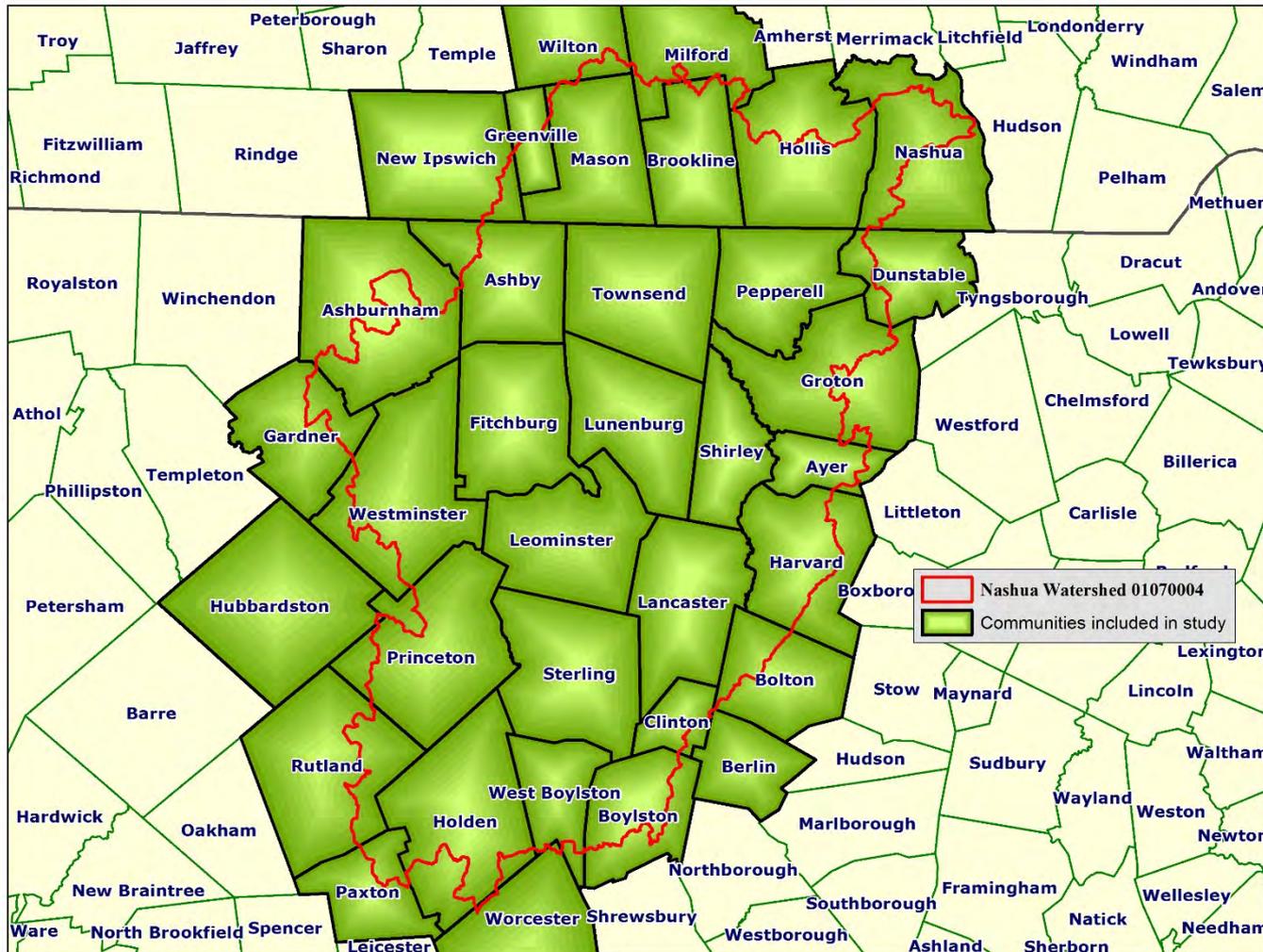


First Order Approximation

FOA Results Much Better than Effective:



Nashua Watershed



Nashua Watershed Rivers

- **Nashua River**
- **North Nashua River**
- **Squannacook River**
- **Nissitissit River**
- **Quinapoxet River**
- **Stillwater River**
- **Whitman River**
- **Catacoonamug Brook**
- **Falulah Brook**
- **Mulpus Brook**
- **Nonacoicus Brook**
- **Phillips Brook**
- **Other smaller rivers and tributaries**

Priority Stream Reaches

- **One goal of Discovery: Coordinate with all watershed stakeholders to select highest-priority reaches for redelineation and/or detailed study**
- **Priority list then used to set scope of revision**

Nashua Watershed Discovery Report

- **Priority reaches selected based on analysis of eleven sources**
 - Coordinated Needs Management Strategy (CNMS)
 - Letters of Map Change (LOMCs) clusters
 - Hydrology comparisons
 - High-water mark (HWM) comparisons
 - First Orders Approximation (FOA)
 - State National Flood Insurance Program (NFIP) Coordinator's annual report
 - NFIP claims clusters
 - Study age
 - Map age
 - Risk
 - Floodplain Boundary Standard (FBS)
- **Last source required to finalize priority list:**
- **STAKEHOLDER INPUT NEEDED! Please tell us your mapping needs.**
 - **Online questionnaire – [please fill out - if you have not already done so](#)**
 - Breakout session today

Discovery Report & Map

- **The final Discovery report and map will be available when the Discovery process is complete**
- **A draft poster with much of the information that will be in the final Discovery report is available today.**

Best Available Data

- **LiDAR (Light Detection And Ranging) elevation data – available for entire study area**
- **U.S. Geological Survey (USGS) regional regression equations for estimating peakflows for selected annual exceedance probabilities will be published in spring 2016 (currently in draft)**
- **Existing Digital Flood Insurance Rate Maps (DFIRMs)**
 - Middlesex County, MA effective in July 2014
 - Worcester County, MA effective in July 2014
 - Hillsborough County, NH effective in April 2011

Level of Study

- Coastal Zones AE and VE **not considered for this study**
- Riverine Zone AE (Detail Study)
- Riverine Zone AE (Limited Detail Study)
- Riverine Zone A (Approximate Study)
- Riverine Zone A (First Order Approximation)
- Redelineation (Zone AE or Zone A)

Level of Study

ZONE AE: Detailed Study

- **Most detailed and most expensive study**
- **Structures and cross-sections are field surveyed**
- **Streamgauge data or regression equations used for hydrology and HEC-RAS modeling used for hydraulics**
- **Floodway Data Table and Flood Profiles included in Flood Insurance Study (FIS)**
- **Mapped:**
 - BFEs – Appeal Eligible
 - Cross Sections
 - Floodway
 - 1% annual exceedance probability(100-yr flood) floodplain
 - 0.2% annual exceedance probability (500-yr flood) floodplain

Level of Study

ZONE AE: Limited Detail Study

- Hydrologic and hydraulic modeling analysis based on new terrain data
- Streamgauge data or regression equations for hydrology and HEC-RAS modeling used for hydraulics
- Basic field survey
- Cross-section values derived from new Light Detection And Ranging (lidar) terrain data
- Mapped: approximate delineation and Base Flood Elevations (BFE) for the 1% annual exceedance probability (100-yr flood) event (appeal-eligible)

Level of Study

ZONE A: Approximate Study

- Hydrologic and hydraulic modeling analysis based on new terrain data
- Streamgauge data or regression equations used for hydrology and HEC-RAS modeling used for hydraulics
- No field survey
- Cross-section values derived from new lidar terrain data
- Mapped: approximate delineation for the 1% annual exceedance probability (100-yr flood) event (appeal-eligible)
- No BFEs

Level of Study

ZONE A: First Order Approximation

- Hydrologic and hydraulic modeling analysis based on new terrain data
- Streamgauge data or regression equations used for hydrology and HEC-RAS modeling used for hydraulics
- No field survey
- Cross-section values derived from new lidar terrain data
- Mapped: approximate delineation for the 1% annual chance event, no BFEs
- Also available: delineations and analysis grids for 10%, 4%, 2%, 1% (+/-), and 0.2% annual chance events

Level of Study

Redelineation

- **No new engineering analysis**
- **Acceptable when effective Base Flood Elevations (BFEs) are considered accurate**
- **Effective elevation data are transferred to new LiDAR terrain data to create new floodplain delineations for FIRMs**
- **Flood Insurance Study (FIS) data: Same as effective study**
- **Eligible for appeal under the Expanded Appeals process**

Flood Risk Products

Changes Since Last Map

- Shows areas of change
- Improved outreach

Legend

SFHA

-  SFHA Added
-  SFHA Removed
-  SFHA Unchanged

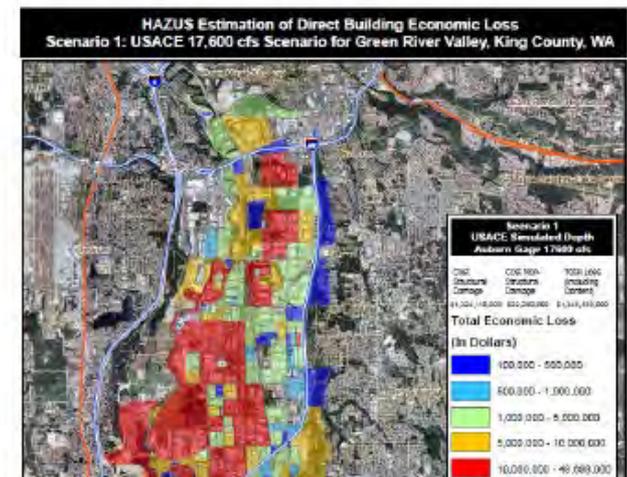
Structures

-  Now In SFHA
-  In SFHA
-  No Longer in SFHA
-  Not In SFHA



HAZUS Risk Assessment & National Flood Risk Layer

Enables communities to understand risk by reference to existing structure loss





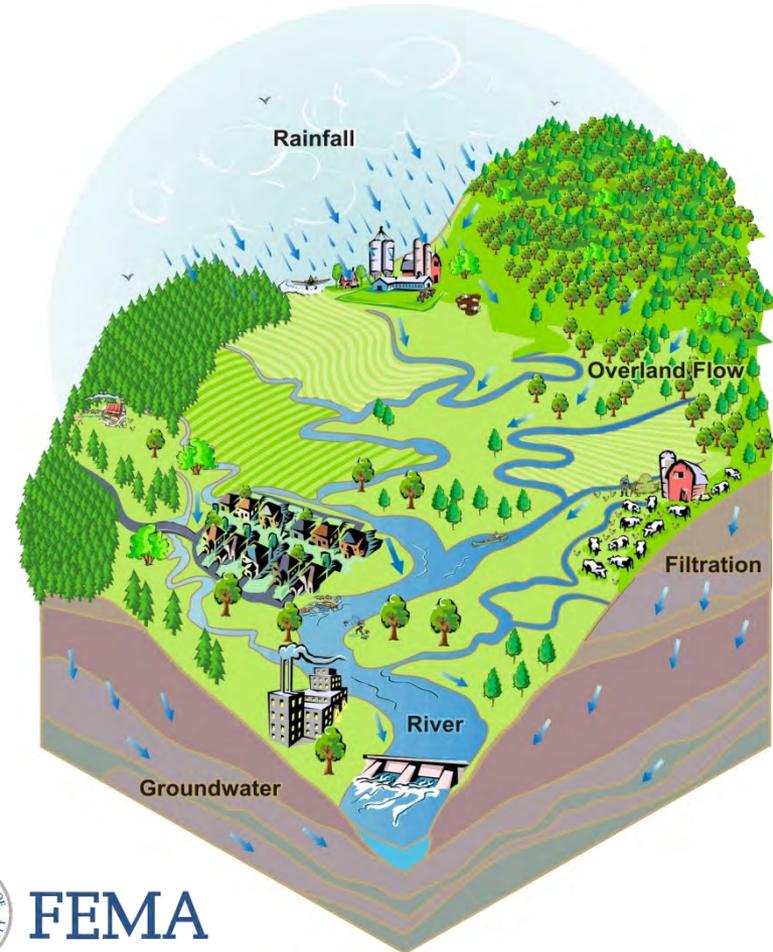
FEMA

Watershed Flood Risk Report

- Changes Since Last Map
- HAZUS Risk Assessment

RiskMAP
Increasing Resilience Together

Nashua Watershed Flood Risk Report



FEMA

Nashua Watershed Timeline

- Activities
- Project Timeline
- Products

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COMMUNITY ENGAGEMENT

MITIGATION PLANNING SUPPORT

Discover the Watershed Communities

Understand local interest, issues, capabilities of communities

- Status of Mitigation Plans
- Communication desire, skills, resources
- Interest in and resources for mitigation
- Experience with flood disasters and recovery
- Floodplain administration
- Mitigation support needs and interests

Nashua Watershed

Hazard Mitigation Plan Status

Please see handout

Discover FEMA Programs

Flood Mitigation Assistance – annual funding to reduce risk to NFIP-insured structures

Hazard Mitigation Grant Program – declared disaster funding for long-term hazard mitigation measures

Pre-Disaster Mitigation Program – annual funding for hazard mitigation planning and implementation

Community Rating System – proactive communities receive insurance discounts for residents

National Dam Safety Program – dam safety standards

Communication

- **Communication, data sharing, and feedback**
- **Role of each community in keeping their communities informed of**
 - Their flood risk
 - Steps they can take to protect themselves and their property
 - Study progress
- **Communication tools available to help communities communicate about risk and projects**



Community Outreach Plan Template

COMMUNITY LETTERHEAD

COMMUNICATIONS PLAN OBJECTIVES

To support the communications goal, this section of the Plan will describe up to five objective statements to which measures can be applied to evaluate whether the objective is met. In addition, all communications activities (tools/tactics) undertaken by the community need to accomplish one or more of the objectives defined in this section. It is recommended that no outreach activities are conducted that do not meet at least one of the Plan objectives.

The following are example objective statements:

- Increase understanding of flood risk by 50 percent among homeowners in high-risk flood areas.
- Increase awareness of flood risk by 30 percent among insurance agents in [Community Name].
- Ensure that all information sent to target audiences contains at least one key message about flood risk.

The following are the community's objective statements for this Plan:

1. _____
2. _____
3. _____
4. _____
5. _____

Community Outreach Plan Template

KEY MESSAGES

Provided in this section of the Plan are the primary and secondary key messages that the community will convey in all information products about flood risk and the Risk MAP project. Primary messages convey broader, less detailed information, and secondary messages include more detailed information in support of the primary message. *[Appendix B provides a list of key messages for consideration.]*

The following is an example of a primary message and supporting secondary messages:

The new maps that result from our Risk MAP project will help us better understand which parts of our community are at a greater risk of flooding.

- The new maps were prepared using information from storms and flood events that happened since the previous flood risk maps were developed.
- The high-risk flood areas on the new maps are an *indication* of where flooding will occur.
- Flooding can occur outside of these high risk zones, depending on the unique characteristics of a storm or flood event.

Each Risk MAP information product that a community prepares should include at least one of the key messages described below.

The following are the community's primary and secondary messages for this Plan:

Points of Contact Nashua Watershed

▪ **MA State Contacts**

- Joy Duperault, NFIP Coordinator, MA DCR

joy.duperault@state.ma.us

▪ **NH State Contacts**

- Jennifer Gilbert, NFIP Coordinator, NH O OEP

jennifer.gilbert@nh.gov

▪ **FEMA Regional Service Center**

- Alex Sirotek, RSC Lead, Compass PTS

sirotekar@cdmsmith.com

▪ **USGS Contacts**

- Scott Olson, Project Manager, USGS

solson@usgs.gov

- Greg Stewart, Project Manager, USGS

gstewart@usgs.gov

▪ **FEMA Contacts**

- Kerry Bogdan, Project Manager and Senior Engineer, FEMA Region I

Kerry.Bogdan@fema.dhs.gov

- Marilyn Hilliard, Risk Analysis Branch Chief, Mitigation Division, FEMA Region I

Marilyn.Hilliard@fema.dhs.gov

- Julie Grauer, Floodplain Management & Insurance Branch, FEMA Region I

Julie.Grauer@fema.dhs.gov

- Brigitte Ndikum-Nyada, Floodplain Management & Insurance Branch, FEMA Region I

Brigitte.Ndikum-Nyada@fema.dhs.gov

- National Flood Insurance Program, iService Team, Tom Young, Manager, Region I New England

tyoung@nfip-iservice.com

General Points of Contact

- For general FEMA mapping and Letter of Map Change (LOMC) questions contact FEMA's Map Information Exchange (FMIX): 1-877-FEMA MAP (1-877-336-2627) or email a Map Specialist: FEMAMapSpecialist@riskmapcds.com
- Map Service Center (MSC): where you can view effective maps online for free <http://www.msc.fema.gov/>
- To learn more about the National Flood Insurance Program (NFIP): <http://www.floodsmart.gov/floodsmart/> or call 1-888-379-9531

Data Request

- **Names, titles, roles, addresses, emails, and numbers of community officials involved in NFIP program, floodplain management, etc.**
- **Desired study reaches**
- **Existing data studies**
- **Available funding or data to contribute to a potential study**
- **Areas of Mitigation Interest**
- **Existing, proposed, or altered dams and levees**
- **Past mitigation successes, future mitigation goals**
- **Environmentally sensitive areas**
- **Community-level flood hazard, risk, or general GIS data**
- **Outreach or training methods, goals, and needs**

See questionnaire, and/or provide information whenever possible

Optional Breakout Session

**Optional Breakout Session for
community specific questions**

(5-30 minutes):

**To discuss Study Areas and
Data Availability on a
Community and Watershed
Basis**

QUESTIONS??



Nashua Watershed Timeline

- Activities
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- Products

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