



Sudbury, MA 2010 Hazard Mitigation Plan Update Public Workshop

Craig Pereira, CFM
Project Manager – Horsley Witten Group

January 29, 2020 6:30 PM
Sudbury Town Hall



Sudbury

Local Hazard Mitigation Committee

- John Whalen, Sudbury Fire Chief
- Beth Suedmeyer, Environmental Planner
- Adam Duchesneau, Director of Planning and Community Development
- Dan Nason, Director of Public Works
- Bill Murphy, Health Director
- Bill O'Rourke, Deputy Director of Public Works
- Bill Barletta, Facilities Director
- Andrew Lewis, Building Inspector
- Vin Roy, Executive Director Sudbury Water District
- Marie Royea, Citizen's Emergency Response Team
- Heather Tecce, Sustainable Sudbury/MEMA
- Jeff Zukowski, MEMA
- Craig Pereira, Project Manager – Horsley Witten Group



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Why Hazard Mitigation Planning

Disaster Mitigation Act of 2000, Interim Final Rule, 44 CFR Parts 201 and 206 states, “All communities must have an approved Multiple Hazards Mitigation Plan in order to qualify for future federal disaster mitigation grants”.

Reduction or elimination of long-term risk to life, property, and the environment.



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Mission Statement

The purpose of the Sudbury Hazard Mitigation Plan is to preserve the quality of life, property values, natural and historic resources by identifying all potential natural hazards impacting the community and mitigating their effects to reduce loss of life, as well as, losses of economic, natural, and historic resources.



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Mitigation Process

- Assess Risks
- Establish Goals
- Identify Projects/Actions
- Update/Maintain Plan



Risk Assessment...Hazards

- Flood-Related
- Winter-Related
- Wind-Related
- Geologic-Related
- Drought-Related
- Urban Fire/Wildfire-Related
- Invasive Species-Related

Climate Change...

As one of the most pressing issues with both direct and indirect impacts on the range of natural hazards the town is vulnerable to, it has been included as a 'climate change impacts on' section to each natural hazard profiled.



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Hazard Index

<i>Natural Hazard</i>	<i>Frequency (i.e. Very Low, Low, Medium, High)</i>	<i>Location (i.e. small/local, medium/regional, large/multiple communities)</i>	<i>Severity (i.e. minor, serious, extensive, catastrophic)</i>	<i>Hazard Index (i.e. ranked by combining frequency and severity; 10 - high, 1 - low)</i>
Flood-Related Hazards				
- Riverine/Flash Flooding	Low	Medium/Regional	Serious	3
- Inland/Urban Flooding/Heavy Rain	High	Medium/Regional	Extensive	7
- Climate Change	Medium	Large/Multiple	Serious	5
- Dam Failures	Low	Small/Local	Serious	4
Winter-Related Hazards				
- Blizzards/Snow/Nor'easter	High	Large/Multiple	Extensive	7
- Ice	Low	Medium/Regional	Serious	4
- Extreme Cold	Low	Medium/Regional	Serious	4
Wind-Related Hazards				
- Hurricanes	High	Large/Multiple	Extensive	7
- Tornadoes*/High Winds	High	Medium/Regional	Serious	6
- Lightning/Thunderstorms	High	Local	Minor	5
- Hail	High	Local	Minor	5
Geologic-Related Hazards				
- Earthquakes	Low	Medium/Regional	Extensive	5
- Landslides	Low	Local	Minor	3
Drought				
- Drought	High	Medium/Regional	Serious	6
- Extreme Heat	Low	Medium/Regional	Serious	4
Urban Fire/Wildfire				
- Urban Fire/Wildfire	Medium	Small/Local	Minor	4
Invasive Species				
- Multiple	Low	Small/Local	Minor	1

* Tornadoes not a major issue for Sudbury

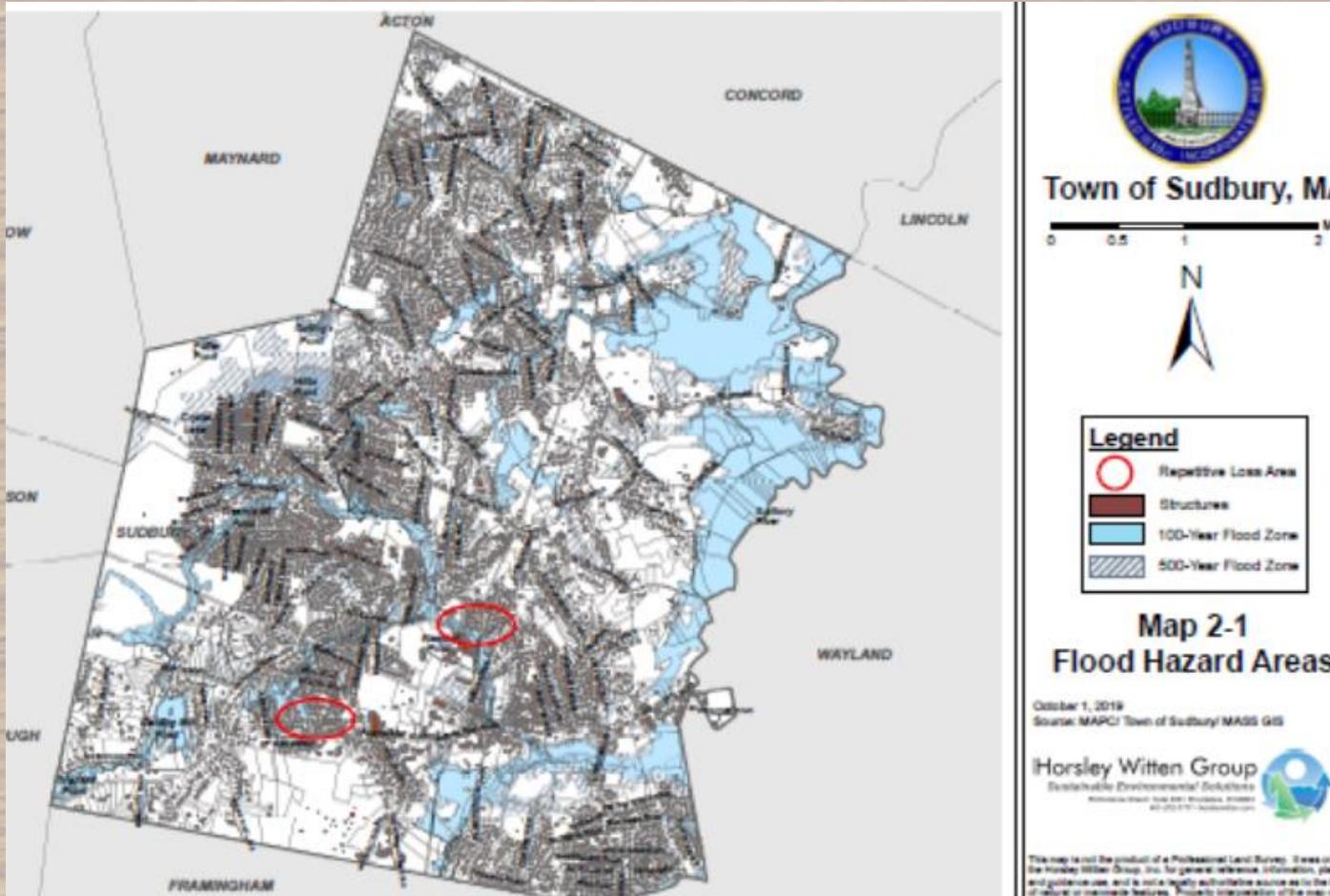
Risk Assessment...Vulnerability

- Economic
- Social
- Environmental

Hazard	Frequency	Severity
Flood-Related Hazards	High	Extensive
Winter-Related Hazards	High	Extensive/Serious
Wind-Related Hazards	High	Extensive/Serious
Geologic-Related Hazards	Low	Extensive
Drought	High	Serious
Urban Fire/Wildfire	Medium	Minor
Invasive Species	Low	Minor



Economic Vulnerability



FEMA 100-Year Flood Zone Impacts

- Number of Parcels: 882
- Economic Impacts: \$566,333,882

FEMA 500-Year Flood Zone Impacts

- Number of Parcels: 1,270
- Economic Impacts: \$795,974,100

Social Vulnerability

- Public Infrastructure and Emergency Lifelines
 - There are a number of public buildings and structures located in the flood plain.
 - Various access roads for these buildings and structures also flood from time to time.
- Evacuation and Population at Risk
 - Fairbank Center: Primary shelter for heating, cooling, phone charging and evacuation point, with capability to provide food services.
 - St. Anselm's Church – Secondary shelter (no generator)
- Town is currently working with Concord and Wayland to develop MOUs for backup shelters (Harvey Wheeler Community Center/Wayland Middle School)



Environmental Vulnerability

Direct Impacts

- Loss of habitat
- Salinization of land and groundwater

Indirect Impacts

- Inland damage to the built environment
- Threats to ecosystems and species
- Contamination of potable water



Capability Assessment

- Planning and Regulatory
 - Sudbury Master Plan, Open Space and Recreation Plan, Subdivision Regulations, Stormwater Management Bylaw, Flood Plain Overlay District, Wetlands Protection Bylaw and State Building Code
- Administrative and Technical
 - Local Emergency Planning Committee, Medical Reserve Corps, Community Emergency Response Team, Comprehensive Emergency Management Plan, Municipal Staff/Website, MVP Working Group, coordination with neighboring communities and the Sudbury/Assabet/Concord River Watershed Cooperative Invasive Species Management Association
- Financial (grants)
 - Federal/State opportunities



Goals

- Protect the public's health, safety and welfare.
- Reduce property damages caused by hazard impacts.
- Minimize social distress and economic losses/business disruption.
- Provide an ongoing forum for the education and awareness of natural hazard mitigation issues, programs, policies, projects and resources.



Mitigation Strategy

- Carry Over from Existing Plan
- MVP Process
- Regulatory Review Process
- LHMC Actions



Prioritization of Actions...STAPLEE

- **Social**...is the action socially acceptable?
- **Technical**...is the action technically feasible and provide appropriate level of protection?
- **Administrative**...does the Town have the capability to complete the action?
- **Political**...will the Town support or oppose the project?
- **Legal**...does the Town have the legal authority to complete the action?
- **Economic**...is the action cost-effective?
- **Environmental**...will the action affect the natural environment?



Mitigation Actions

Categories

- Public Education and Awareness
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Planning and Prevention



Mitigation Actions

Time Frames

- Short Term: 0 – < 6 months
- Medium Term: > 6 – < 18 months
- Long Term: 18 months – 5 years

Cost Ranges

- Staff Time: Municipal personnel time
- Minimal: < \$5,000
- Moderate: > \$5,000 but < \$25,000
- Significant: > \$25,000



Mitigation Actions

PROPERTY PROTECTION

Action #1

Incorporate design standards for earth removal into the Zoning Bylaw (strengthen Earth Removal Bylaw) and Subdivision Rules and Regulations (Site Plan Review) to minimize vegetation, slope and land disturbance.

Incorporate design standards into the Zoning Bylaw and Subdivision Rules and Regulations that limit the area of alteration, prohibit alteration of steep slopes, and limit the removal of existing vegetation or trees on a site.

Action Type: Planning, Pre-Disaster

Priority Score: 23...2010 HMP/2019 MVP Code Review



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Mitigation Actions

NATURAL RESOURCE PROTECTION

Action #2

Incorporate new regulations for runoff (roof) and hardscape (sidewalk) recharge into the Zoning Bylaw/Water Resource Protection District regulations.

Roof Runoff Recharge:

Require roof runoff to be recharged within the Zone II.

Hardscape (Sidewalk) Recharge:

Allow sidewalks in the Village Business District to be constructed of pervious/porous materials.

Action Type: Planning, Pre-Disaster

Priority Score: 20...2010 HMP/2019 MVP Code Review



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Mitigation Actions

NATURAL RESOURCE PROTECTION

Action #3

Devote more resources to monitoring privately-owned drainage facilities

Action Type: Planning, Pre-Disaster

Priority Score: 4...2010 HMP



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Mitigation Actions

NATURAL RESOURCE PROTECTION

Action #4

Incorporate latest science and climate change projections as a consideration into existing regulations to reduce flooding and water quality impacts, in addition to protecting water supply during periods of drought.

Stormwater Bylaw

Investigate options for increasing design volumes for stormwater practices/conveyances design.

Outdoor Water Use Bylaw

Limit non-essential outdoor water use during periods of drought.

Action Type: Planning, Pre-Disaster

Priority Score 5...2019 MVP/MVP Code Review



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Mitigation Actions

NATURAL RESOURCE PROTECTION

Action #5

Incorporate standards for tree preservation into the Zoning Bylaw (Tree Preservation Bylaw) and Subdivision Rules and Regulations (Site Plan Review) to maximize tree preservation/limit site disturbance and character throughout the community.

Establish a Tree Preservation Bylaw - an effective mechanism to regulate tree preservation on both public property as well as private property.

Action Type: Planning, Pre-Disaster

Priority Score 9...2019 MVP Code Review



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Mitigation Actions

NATURAL RESOURCE PROTECTION

Action #6

Develop a Tree Maintenance and Forest Management Plan.

Given the projected increase in severe weather events due to climate change, and the existing amount of natural tree coverage, a plan for regular tree trimming, dead tree removal and re-forestation plan is needed.

Action Type: Planning, Pre-Disaster

Priority Score 12...2010 HMP/2019 MVP



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Mitigation Actions

STRUCTURAL PROJECTS

Action #7

Elevate the grade of Concord Road two feet in three separate locations:

Water Row Road (Concord Road between Lincoln Rd. and Old Sudbury Rd.):

The project would require an initial compensatory storage study as wetland resources near Lincoln Road and Route 27 would be impacted, in addition to the actual elevation of Water Row itself.

Eastern end of Concord Road:

Sheet flow back up may be related to water releases at DFW Pantry Brook Dam.

Near Nashawtuc Country Club:

Flooding occurs once every five years on average and impacts the country club area.

Action Type: Mitigation, Pre-Disaster

Priority Score: 8...2010 HMP



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Mitigation Actions

STRUCTURAL PROJECTS

Action #8

Evaluate the potential removal of Pantry Brook Dam first, then, if not deemed appropriate, complete repairs and develop an Operations & Management Plan.

Owned and operated by Mass Fish and Wildlife, the structure is in need of repairs and the establishment of a regular maintenance program.

Action Type: Planning, Pre-Disaster

Priority Score: 2...2010 HMP



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Mitigation Actions

STRUCTURAL PROJECTS

Action #9

Improve/Upgrade drainage infrastructure and capacity.

The Department of Public Works has developed a Culvert Capital Improvement Plan to address deficient drainage systems throughout the town. The Town should consider Low Impact Development (LID) and Green Infrastructure (GI) techniques when implementing this plan.

Action Type: Planning, Pre-Disaster

Priority Score: 13...2010 HMP/2019 MVP



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Mitigation Actions

EMERGENCY SERVICES

Action #10

Install generators at Lincoln-Sudbury High School to include heating capability.

Reconfigure generators at Lincoln-Sudbury High School to include heating. Fit all school buildings with stationary, multi-fuel generators to allow for emergency use as evacuation shelters.

Action Type: Mitigation, Pre-Disaster

Priority Score: 15...2010 HMP



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Mitigation Actions

EMERGENCY SERVICES

Action #11

Install a large-capacity, multi-fuel generator at the Curtis Middle School.

Install a large capacity, multi-fuel generator at the Curtis Middle School, to serve as an additional Emergency Evacuation Center.

Action Type: Mitigation, Pre-Disaster

Priority Score: 21...2010 HMP



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Mitigation Actions

EMERGENCY SERVICES

Action #12

Improve emergency response planning and communication.

- Increase capacity and support for Citizen's Emergency Response team (CERT) and Medical Reserve Corps (MRC) recruitment
- Training and communication protocol of hospitals and healthcare agencies
- Educate community on Reverse 911
- Assess needs of vulnerable populations to understand sheltering needs (Know Your Neighbor)
- Maintain database of vulnerable populations and address data privacy/sharing challenges

Action Type: Mitigation, Pre-Disaster

Priority Score: 14...2019 MVP



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Mitigation Actions

EMERGENCY SERVICES

Action #13

Strengthen Emergency Shelters (Schools, Libraries, Community Center).

- Install air conditioning
- Install charging stations (cell phones)

Action Type: Mitigation, Pre-Disaster

Priority Score: 21...2019 MVP



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Mitigation Actions

EMERGENCY SERVICES

Action #14

Address the necessary expansion/improvements of Fire Stations No. 2 and No. 3.

- Existing stations do not fit modern fire trucks
- Apparatus bays are too narrow to maneuver
- Existing design does not permit housing both genders
- A 15% increase in calls

Action Type: Planning, Pre-Disaster

Priority Score: 15...2019 MVP



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Mitigation Actions

PLANNING AND PREVENTION

Action #15

Relocate overhead electrical/cable lines underground.

Complementing the need for a Tree Maintenance/Forest Management Plan, the Town should consider relocating overhead electrical and cable lines underground.

Action Type: Mitigation, Pre-Disaster

Priority Score: -3...2010 HMP/2019 MVP



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Mitigation Actions

PLANNING AND PREVENTION

Action #16

Conduct feasibility study to investigate options for all public buildings to be earthquake proof.

Action Type: Mitigation, Pre-Disaster

Priority Score: 5...2010 HMP



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Project Schedule

Draft Update available for public comment – **February 2020**

Draft Update to MEMA – **March 2020**



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Contact Us...

Questions and/or comments about the Hazard Mitigation Plan Update, please contact:

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Thank You!



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