

ANTRIM HAZARD MITIGATION PLAN UPDATE 2016

Antrim, New Hampshire



(Photo, Diane Chauncey)

Prepared by the
Antrim Hazard Mitigation Committee and
Southwest Region Planning Commission

FEMA Approval (date)



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Executive Summary

The Antrim Hazard Mitigation Plan serves as a means to reduce future losses from natural or man-made hazard events before they occur. The Plan was developed by the Antrim Hazard Mitigation Committee and contains statements of policy adopted by the Board of Selectmen in Chapter VIII.

Natural hazards are addressed as follows:

- Flooding (Riverine, Ice & Dam Breach)
- Wind (Downburst, Tornado & Hurricane)
- Wildfire
- Extreme Winter Weather
- Extreme Heat/Drought
- Landslide/Erosion
- Hazardous Materials Spills
- Dam Failure
- Lightning Strikes
- Earthquakes

The Antrim Hazard Mitigation Committee, as shown per Chapters III and IV, identified “Critical Facilities” and “Areas at Risk” as follows:

Critical Facilities

- Town Hall
- Schools
- Fire Stations
- Town Garage/Transfer Station
- Fuel Storage Facilities
- Police Station

Areas at Risk

- White Birch Point Road/Gregg Lake Road
- Pierce Lake Road/Franklin Pierce Lake Area
- Willard Pond Road
- Old Hancock Road
- NH Route 9 & Liberty Farm Road Area
- NH Route 202 in Northeast Section of Antrim
- NH Route 31 from N. Whiton Road to West Street
- Intersection of Elm Avenue & Cross Road
- All Churches in Town
- South of Depot Street at the Intersection of US Route 202
- Elderly Population
- Potential Wildfires-Willard Mountain, Robb Mountain, Bald Mountain, Tuttle Hill, Holt Hill & Windsor Mountain
- Gregg Lake Dam
- Mill Pond Dam
- Historic structures
- Town Beach
- MacCabe Forest

The Antrim Hazard Mitigation Committee identified existing hazard mitigation programs as follows:

- Best Management Practices
- School Evacuation Plan
- Town Adopted Building Codes
- Code Enforcement Officer
- Emergency Backup Power Program
- Local Road Design Standards
- Local Bridge Maintenance Program
- Floodplain Development Ordinance
- Mutual Aid
- National Flood Insurance Program
- Fire Pond Management Plan
- Spill Prevention and Counter Measures Plan
- Radiological Evacuation Plan
- Erosion and Sedimentation Plan
- Town Radio System
- Shoreland Protection Act
- Wetlands Protection
- Town Sponsored Safety Awareness Program
- Ambulance Service
- Other Mutual Aid
- Reserve Water Supply
- Tree Maintenance Plan
- Capital Improvements Plan
- Town Master Plan
- Winter Storm Operations Plan
- Town Warning System

The Antrim Hazard Mitigation Committee prioritized newly identified hazard mitigation strategies in the current plan. These need to be reviewed and updated as necessary.

Mitigation Priorities

1. Become a member of Highway Mutual Aid.
2. Update town website: include information about hazard mitigation & emergency preparedness. Include links to NH HSEM and FEMA.
3. Install additional dry hydrants and fire ponds.
4. Add mitigation actions to CIP when appropriate.
5. Provide outreach on NFIP to encourage additional policies.
6. Consider adding the Hazard Mitigation Plan as a chapter or appendix to the Master Plan.
7. Change the location of the EOC to the Police Station.
8. Continue progress of Local Bridge Maintenance Program.
9. Update Local Road Design Standards.
10. Continue public awareness & enforcement of erosion & sediment guidelines/BMPs, and codes.
11. Update the Emergency Operations Plan.
12. Obtain a copy of Antrim Elementary/ Great Brook School Evacuation Plan.
13. Test response times for flood inundation at Highland Lake.
14. Create an automated & centralized warning system.
15. Install generator at the school (for a shelter), the Highway Department, and N. Branch Fire Dept.
16. Find alternatives for emergency shelters.
17. Update list of available resources.
18. Update the Hazardous Materials Plan.
19. Upsize culvert on West Street near Hilton Avenue.
20. Educate the public on codes (building, zoning, etc)
21. Update list of residents with special needs.

CHAPTER I INTRODUCTION

Purpose

The Antrim Hazard Mitigation Plan Update 2016 is a planning tool to be used by the Town of Antrim, as well as other local, state and federal governments, in their efforts to reduce the effects from natural and man-made hazards. By maintaining an updated Hazard Mitigation Plan, the town is eligible to receive grant funding for mitigation projects.

Authority

This Multi-Hazard Mitigation Plan was prepared pursuant to Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Act), herein enacted by Section 104 of the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390). This Act provides new and revitalized approaches to mitigation planning. Section 322 of DMA 2000 emphasizes the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts. The development and periodic update of this plan satisfies the planning requirements of the Disaster Mitigation Act (DMA) of 2000 which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

Funding Source

This Plan was funded by the NH Homeland Security and Emergency Management, with grants from FEMA's Pre-disaster Mitigation Program.

Scope of the Plan

The scope of this Plan includes the identification of past and potential natural and manmade hazards affecting the Town of Antrim, the determination of vulnerability of existing and future structures to the identified potential hazards, and the identification and discussion of new strategies aimed at mitigating the likely effects of potential hazards before they occur.

Methodology

Using the Local Hazard Mitigation Planning Handbook, the Antrim Hazard Mitigation Team developed the content of the Antrim Hazard Mitigation Plan by following the tasks set forth in the handbook. The Team held monthly meetings, open to the public, starting October 20, 2015 through January 19, 2016 in order to develop the plan. On (add date of adoption) the Antrim Board of Selectmen held a public hearing and adopted the plan. Final approval from FEMA was granted on (date).

Tasks to complete the Plan Update

Task 1: Determine the Planning Area & Resources: This task was conducted by town staff and the Regional Planning Commission. The results of this research were shared with the Committee and can be found in Chapter 2, "Community Profile".

Task 2: Building the Planning Team: The Town Administrator contacted town officials, department heads, and residents who might wish to volunteer their time and serve on a committee. The Antrim Board of Selectmen

appointed the committee members.

Task 3: Create an Outreach Program: This task was used throughout the plan and is a vital part of the plan's success. Many of the proposed actions involve a community outreach component for individuals to use as a means to reduce the risk of loss of life and property from future natural and man-made hazards.

Task 4: Review Community Capabilities: The Committee brainstormed on the type of hazards and locations that have sustained or could be susceptible to each hazard within the town. The results were the Hazards Map, which can be found at the end of the Plan.

The Committee then identified and catalogued all of the critical facilities within the town. The result is found in Chapter 6, "Critical Facilities," with a location map at the end of the Plan.

Task 5: Conduct a Risk Assessment: The Committee conducted several assessments to help determine the gaps in coverage. These include Assessing Probability, Severity, and Risk (Chapter 4) and Assessing Vulnerability (Chapter 5). In addition to the assessments, the existing mitigation strategies were reviewed to determine where gaps in coverage exist and areas that need improvement (Chapter 7).

Task 6: Develop a Mitigation Strategy: The Committee identified plans and policies that are already in place to reduce the effects of man-made and natural hazards. Then the Committee evaluated the effectiveness of the existing measures to identify where they can be improved. The results are found in Chapter 8, "Mitigation Strategies." The Committee then developed the Mitigation Action Plan (Chapter 9), which is a clear strategy that outlines who is responsible for implementing each project, as well as when and how the actions will be implemented and the funding source.

Task 7: Keep the Plan Current: It is important to the Town of Antrim that this plan be monitored and updated annually or after a presidentially declared disaster. Chapter 10 addresses this issue.

Task 8: Review & Adopt the Plan: The Committee members reviewed and approved each section of the plan as it was completed. After acceptance by the Committee, the Plan was submitted to the New Hampshire Homeland Security and Emergency Management and the Federal Emergency Agency Region 1 Office, for review. At a public meeting, the Board of Selectmen formally adopted the plan on (add date of adoption). The plan was then granted formal approval by FEMA on (date of FEMA approval).

Task 9: Create a Safe & Resilient Community: The committee discussed the mitigation actions in the Action Plan and the ways in which the implementation of the actions will be beneficial to the community. Annual reviews of the Action Plan by the committee are needed to maintain the timeframes identified for completion of activities. Incorporation of the plan into other land use plans and the Capital Improvement Plan help to ensure that the goals of the plan are met. Implementation of the actions prior to a hazardous event can be funded through a variety of resources found at the end of this plan in Appendix C and D.

Public Committee Meetings:

Working committee meetings held at Antrim Town Office on the following dates:

October 20, November 17, December 15, 2015 and January 19, 2016.

An email was sent to each committee member, prior to each meeting that contained information from the previous meeting, an agenda (Appendix E), and information to be covered. Agendas were posted at the Town Office to encourage public participation.

Public Meetings with the Board of Selectmen:

(adoption date): The Board of Selectmen adopted the Antrim Hazard Mitigation Plan Update 2016 at a public hearing held at Antrim Town Office.

Public Participation:

An email was sent to each committee member, prior to each meeting that contained information from the previous meeting, an agenda, and information to be covered. A copy of the agenda for each meeting was posted at the Municipal Office and on the Town website for public viewing prior to the meeting to encourage public participation.

In addition, an article was printed in the Southwest Region Planning Commission newsletter prior to the first meeting to inform the members of the community as well as surrounding communities and other interested stakeholders in participating in this plan update. Copies of the newsletter were sent to the 34 towns within the region, the Cheshire County Office, businesses, and other interested parties. It is also available on the Southwest Region Planning Commission website. In addition to the SWRPC newsletter and website, an email of the SWRPC Happenings was sent to approximately 430 addresses, including neighboring communities, county, businesses, and academia. The email contains notices of public meetings and events. A copy of this mailing is included in Appendix E.

A copy of the draft plan was made available for public review and input at the Town Office from **(date of viewing period)**. In addition, the draft plan was also available for public viewing on the Town website to reach a broad range of interested parties. A copy of the public notice for the public viewing period is in Appendix E. There were **(# of comments)** from the public received following the public viewing period.

Resources Used in Plan Preparation

In addition to the Handbook that was used as a framework for this plan, additional resources used included the Antrim Hazard Mitigation Plan (2011), Town Master Plan (2010), Town Report (2014), the FEMA Community Information System website (to obtain data about the town's National Flood Insurance Program status), the State of New Hampshire Hazard Mitigation Plan 2013, and a number of the resources identified in **Appendix C**.

Plan Updates

During the planning process, the Committee reviewed relevant portions of the previous hazard mitigation plan and updated those portions accordingly. Unchanged sections were incorporated into the plan while other sections were amended to reflect changes. Particular attention was given to the previous mitigation strategies that have been completed and to give a status update on those that remain on the list. The original plan was used as a base to begin the update. Amendments were made in each Chapter to reflect changes that have occurred during the five year period. Included in the changes were:

- Ch. I- Introduction- updated Methodology, Acknowledgements, etc., and added Plan Updates;
- Ch. II- Community Profile - NFIP policies updated, added Continued Compliance with NFIP;
- Ch. III- Hazard Identification- updated hazards and their location, updated the Hazards Map;
- Ch. IV- Assessing Probability, Severity, and Risk - updated risk assessment;
- Ch. V- Vulnerability Assessment- estimated potential losses;
- Ch. VI- Critical Facilities - updated locations;
- Ch. VII- Existing Mitigation Strategies and Proposed Improvements - updated chart and other data, updated chart for Status of Previous Mitigation Action Items;
- Ch. VIII- Proposed Mitigation Strategies - updated STAPLEE chart;
- Ch. IX- Prioritized Implementation Schedule - updated Action Plan;

Ch. X- Adoption, Implementation, Monitoring and Updates - Adoption certificate, updated information;
Appendices - agendas, resources, public documentation.

This update was prepared with assistance from Planners at Southwest Region Planning Commission trained in Hazard Mitigation Planning. Data and maps used to prepare this plan are available at their office and should be used in preparing future updates.

Acknowledgements

The Antrim Board of Selectmen extends special thanks to the Antrim Hazard Mitigation Committee as follows:

Bob Bethel, *Antrim Emergency Mgmt. Dir.*
Thomas Beaumont, *Antrim Asst. Fire Chief*
Diane Chauncey, *Antrim Town Clerk*
Marshall Gale, *Antrim Fire Chief*
John Giffin, *Antrim Police Department*

Donna Hanson, *Antrim Town Administrator*
Steve MacDonald, *Antrim Resident*
James Plourde, *Antrim Road Agent*
John Robertson, *Antrim Board of Selectmen*

The Antrim Board of Selectmen offers thanks to the New Hampshire Homeland Security and Emergency Management for developing the State of New Hampshire Natural Hazards Mitigation Plan (www.NHHSEM.state.nh.us) which served as a model for this plan. In addition, special thanks are extended to the staff of the Southwest Region Planning Commission for professional services, process facilitation and preparation of this document.

Hazard Mitigation Goals

The Antrim Hazard Mitigation Committee reviewed the goals set forth in the State of New Hampshire Multi-Hazard Mitigation Plan Update 2013. The committee generally concurs with those goals and has amended them to better meet the goals of the town.

1. To improve upon the protection of the general population, the citizens of the Town of Antrim and guests, from all natural and man-made hazards.
2. To reduce the potential impact of natural and man-made disasters on the Town of Antrim's Emergency Response Services, Critical Facilities, and infrastructure.
3. To reduce the potential impact of natural and man-made disasters on the Town of Antrim's economy, natural resources, historic/cultural treasures, and private property.
4. To improve the Town of Antrim's Emergency Preparedness and Disaster Response and Recovery Capability.
5. To reduce the Town of Antrim's risk with respect to natural and man-made hazards through outreach and education.
6. To identify, introduce and implement cost-effective Hazard Mitigation measures so as to accomplish the Town's Goals and Objectives and to raise the awareness of and acceptance of Hazard Mitigation opportunities generally.
7. To address the challenges posed by climate change as they pertain to increasing risks in Antrim's infrastructure and natural environment.
8. To work in conjunction and cooperation with the State of New Hampshire's Hazard Mitigation Goals and with FEMA.

**Resource List for
Hazard Mitigation Team**

Antrim's Emergency Management Director (EMD), or designee, reviewed and coordinated with the following agencies in order to determine if any conflicts existed or if there were any potential areas for cooperation. Training support has been offered by some of those on this resource list.

New Hampshire Homeland Security and Emergency Management: 1-800-852-3792
110 Smokey Bear Boulevard
Concord, NH 03305

Field Representative: Danielle Morse
Mitigation Planner: Parker Moore
Mitigation Officer: Elizabeth Peck

New Hampshire Department of Transportation:

John Kallfelz (District 4) Swanzey, NH 352-2302

Eversource Utility:
Laurel Boivin Keene, NH 357-7309 Ext. 5115
1-800-662-7764

Antrim School Principals:

Jim Elder
Great Brook Middle School Antrim, NH 03440 588-6630

Ann Allwarden
Antrim Elementary School Antrim, NH 03440 588-6371

CHAPTER II COMMUNITY PROFILE

Town Overview

The Town of Antrim is located in the western portion of Hillsborough County, in Southwest New Hampshire. Antrim is bounded on the north side by Windsor and Hillsborough, easterly by Deering, southerly by Bennington and Hancock, and westerly by Stoddard and Nelson. The Town population is 2,637.¹



Location Map of Antrim, NH

The Town of Antrim consists of 36.5 square miles. Antrim has several significant waterbodies, such as Willard Pond, Gregg Lake, Steeles Pond, and Franklin Pierce Lake. Franklin Pierce Lake is primarily located in the neighboring Town of Hillsborough, but a sizeable portion is located in Antrim. Great Brook and the Contoocook River are the two main streams in Antrim. Additionally, Antrim has large amounts of land that have been publicly and privately protected from development. The largest parcel, known as the De Pierrefeu Wildlife Sanctuary, consists of 675 acres of remote, heavily forested upland area.

The topography of Antrim varies significantly, ranging from a series of steep hills such as Bald Mountain, Robb Mountain, Willard Mountain, and Tuttle Hill that comprise a substantial portion of the western section of Antrim, to the flatter stream valleys of the Contoocook River and its North Branch. These hills combine to form a ridgeline that extends from the Hancock Town Line northward to Route 9 and the North Branch of the Contoocook River.

¹ Population data from US Census (2010)

Antrim's climate is temperate. Average summer temperature is 65 degrees Fahrenheit and 20 degrees in the winter. Average annual precipitation is 40 inches and the average annual snowfall is 66 inches.

A three-member Board of Selectmen governs the Town of Antrim. The Town has a full-time Town Administrator, Fire Chief with an on-call Fire Department, and a Water/Sewer Manager. There is a full-time Police Chief and four full-time police officers and a Road Agent. The Monadnock Community Hospital is located in Peterborough, 6 miles south of Antrim.

Disaster Risk

Antrim is prone to a variety of man-made and natural hazards. These include: dam failures, riverine and ice jam flooding, erosion, severe wind events, wildfire, drought, ice storms and severe winter storms.

Flooding, whether from heavy rains or ice jams, carries the greatest risk for Antrim. Seasonal flooding of the many small streams and the Contoocook River floodplain has not been recorded.

Severe wind events, hurricane residuals and downbursts have caused damage to Antrim. Over the years unrecorded wind events have caused large losses of timber on the many high points throughout town. The 1938 hurricane is remembered for structural damage.

Wildfire is a concern due to large tracts of forest areas. Bald Mountain, Robb Mountain, Willard Mountain, and Tuttle Hill are potentially a higher risk due to their geographic orientation and abundant forests.

Winter weather has proven to be a regular hazard throughout the town of Antrim each year. Antrim is susceptible to receiving large volumes of snow from Nor'easters due to its geographical close proximity to the east coast where these storms track. The town has also received a fair share of damage from ice storms in winter months.

Development Patterns

Examination of the Town's existing land use indicates that most of the Town (about 83%) is undeveloped and consists primarily of wooded and brush-covered areas, many of which have substantial development constraints.

Residential uses comprise the most significant amount of developed land in terms of "active" development. Protected lands occupy the largest land area in town and land devoted to farming occupies the third greatest amount of acreage. The pattern of land use has not changed appreciably over the last twenty-five years; the residential uses have merely extended along the road frontages in all sections of town.

Most of Antrim's commercial activity is located in the Downtown. Outside of the village area, most of the commercial uses are scattered along NH 9 and NH 202; these consist, in large part, of small retail businesses, various personal and professional services, and a Christmas Tree Farm. There are several home occupations and home-based businesses located throughout town as well.

The Downtown area has a much greater density of development than exists in the outlying portions of town. This density of development is typical of New England villages, where lots are historically smaller, and the later availability of municipal water and sewer supports this type of development. The Downtown is also the location of most of the Town's public and semi-public uses: the Town Hall, Police Department, Library, Town Park, schools, Post Office, several churches and cemeteries, and the wastewater treatment plant.

Consideration for Development

Several factors have played, and will continue to play, an important role in the development of Antrim. These include: the existing development pattern and availability of land for future development; the present road network; physical factors such as steep slopes, poor soil conditions, land set aside for conservation, the Contoocook River, its tributaries and floodplains; and the availability of utilities such as public water and sanitary sewers. These factors have an impact, both individually and cumulatively, on where and how development occurs.

Population Trends

The following table shows the population in Antrim, Hillsborough County, and the State of New Hampshire between the years of 1970 and 2010 based on US Census data. The most significant growth occurred between 2000 and 2010. The population change from 1970 to 2010 in Antrim was lower than the change in Hillsborough County and the State of New Hampshire.

Population Trends 1970 to 2010

	1970	1980	1990	2000	2010	% Change 1970-2010
Antrim	2122	2208	2360	2449	2637	24%
Hillsborough County	223,941	276,608	336,073	380,841	400,721	79%
New Hampshire	737,681	920,610	1,109,252	1,235,786	1,316,256	78%

Source: US Census 2010

Population Projections

Population projections are an important component in planning for the future. Projections are beneficial to help communities begin to plan and budget for Capital Improvement Projects. Since population projections are based on a set of assumptions, changes can be significant if the assumptions used in the calculations are not met. For example, a tropical storm that destroys a large employer or causes infrastructure damages to that facility can cause a significant economic hardship to the business that may ultimately result in its closure and loss of jobs. This can then result in an outward migration of residents from the community. Therefore, population projections should only be used as a basis to begin planning for the future. The New Hampshire Office of Energy and Planning (NH OEP) prepares population projections every five years for each community in New Hampshire.

The table below indicates that the population of Antrim is expected to see a steady increase in population during the next thirty years with the highest rate of growth between 2015 and 2020 (a 3.4% increase).

Population Projections 2010 to 2040

	2010	2015	2020	2025	2030	2035	2040	% Change 2010-2040
Antrim	2637	2698	2789	2848	2893	2916	2917	11%
Hillsborough County	400,721	405,380	414,356	423,117	429,776	433,266	433,381	8%
New Hampshire	1,316,256	1,330,834	1,359,836	1,388,884	1,412,041	1,425,357	1,427,098	8%

Source: NH OEP, Municipal Population Projections, Fall 2013 *actual 2010 US Census figure

Current Development Trends

Residential development continues to be the primary (active) land use; recreation and protected lands constitute more land area than does residential development, but the actual use of these lands are of a more passive nature.

Commercial and industrial uses comprise occupy only about 90 acres, or just over 2% of the developed land; and most of that is located in the Downtown and along Route 202. The primary characteristic of these uses is that of small retail, personal and professional services; in addition, there are over a dozen home occupations and home-based businesses that have been identified in town.

Given the predominance of residential over non-residential development in Antrim, a conclusion can be reached that Antrim is essentially a bedroom community for economic centers in Peterborough, Hillsboro, Keene and Concord. This should not, however, underestimate the role that Antrim's vital Downtown plays, not only in the local economy, but the subregion as well. With Routes 202 and 31 serving as Antrim's Main Street, a great deal of through traffic comes into Antrim, allowing these travelers to take advantage of the goods and services offered by the local businesses.

The chart below shows the trend in the number of housing units over the past 40 years based on centennial data. According to the 2010 US Census, the number of housing units in Antrim was 1,329 units which was an increase of 170 units (or approximately 17 housing units per year) from the amount in 2000.

Total Housing Units 1970-2010 by Census Year

	1970	1980	1990	2000	2010	% Change 1970-2010
Antrim	658	779	1152	1160	1329	102%

Source: US Census Data 2010

The data contained in the table below provides a more current perspective of the residential housing trend in Antrim by looking at the number of residential building permits issued since the last census. This table indicates that the trend in the number of units built per year has greatly decreased to an average of 3 housing units per year.

Residential Building Permits Issued 2010 to 2014

Housing Type	Dwelling Units 2010 Census	Residential Building Permits: Net Change of Units					Total Estimated Housing Units
		2010	2011	2012	2013	2014	
Single Family	1046	2	2	5	2	2	1059
Multi-Family	233	0	0	0	0	0	233
Manufactured Housing	49	0	0	0	0	0	49
Total Housing Units	1329	2	2	5	2	2	1342

Source: NH OEP Current Estimates and Trends in New Hampshire's Housing Supply: Update 2015 (December)

Development in Hazard Areas

Hazards identified in this plan are regional risks and, as such, all new development falls into the hazard area. The exception to this is flooding. Currently, there are 115 structures located within the Special Flood Hazard Area (SFHA) in Antrim. According to the Community Information System (CIS) of FEMA, there have been no development permits and no variances granted within the SFHA since 1987, the earliest records kept in the CIS for the Town of Antrim.

National Flood Insurance Program (NFIP)

Antrim has been a participating member of the National Flood Insurance Program since April 1, 1981. Flood Insurance Rate Maps, all bearing the effective date of September 25, 2009, are used for flood insurance purposes and are on file with the Antrim Planning Board. As of July 2015, there are 10 NFIP Policies in Antrim totaling \$20,091,000 and one paid loss of \$5,781. There are currently no “Repetitive Loss Properties” insured under the NFIP within the Town of Antrim.

DRAFT

CHAPTER III HAZARD IDENTIFICATION

Hazard events were researched using a wide variety of sources. Sources and techniques included interviewing long-time residents; gathering information from the State of New Hampshire Hazard Mitigation Plan; and gathering information from governmental and non-profit web sites. The following is a list of natural and manmade disasters, and the areas affected by them, that have or could affect the Town of Antrim. The Past and Potential Hazards Map at the end of this Plan reflects the contents of this list.

Hazard	Date	Location	Description of Areas Impacted
Flooding- Disaster Declarations			
Below is a listing of Disaster Declarations for flooding events within the State of New Hampshire. Several severe events have caused significant damage to structures and roadways within the Southwest Region.			
Flood	1927	Southern NH	Damage to Road Network. Caused many roads to wash out.
Flood	March 11-21, 1936	NH State	Damage to Road Network. Flooding caused by simultaneous heavy snowfall totals, heavy rains and warm weather. Run-off from melting snow with rain overflowed the rivers
Flood/ Severe Storm	August 27, 1986	Cheshire, Hillsborough Counties, NH	FEMA Disaster # 771-DR (Presidentially Declared Disaster) \$1,005,000 in damage
Flood / Severe Storm	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, & Sullivan Counties, NH	FEMA Disaster Declaration # 789- DR (Presidentially Declared Disaster). Flooding of low-lying areas along river caused by snowmelt and intense rain. \$4,888,889 in damage.
Flood	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan Counties, NH	FEMA Disaster Declaration # 876. Flooding caused by a series of storm events with moderate to heavy rains. \$2,297,777 in damage.
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan Counties, NH	FEMA Disaster Declaration # 1144- DR. Flooding caused by heavy rains. \$2,341,273 in damage.
Flood	July 2, 1998	Southern NH	FEMA Disaster Declaration # 1231. Severe storms and flooding
Flood	October 26th 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties, NH	FEMA Disaster Declaration # 1610. Severe storms and flooding.
Flood	October-November 2005	Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR-1144- NH DR-1610
Flood	May 25th, 2006	Belknap, Carroll, Hillsborough, Merrimack, Rockingham, and Strafford Counties, NH	FEMA Disaster Declaration # 1643. Severe storms and flooding.

Hazard	Date	Location	Description of Areas Impacted
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration # 1695. Severe storms and flooding.
Flood	May 26-30, 2011	Coos and Grafton County	FEMA Disaster Declaration # DR-4006; May flood event. No significant local impact.
Flood	May 29-31, 2012	Cheshire County	FEMA Disaster Declaration # 4065; No significant local impact.
Flood	June 26-July 3, 2013	Cheshire, Sullivan, and Grafton Counties	FEMA Disaster Declaration #4139; No significant local impact.

Flooding- Localized- Medium Risk

Below is a list of areas in town that have experienced flooding.

Flooding	Annual Event	White Birch Road/ Gregg Lake Road	Spring runoff and heavy summer/fall rains have caused flooding in the roadway, however no property damage or injuries reported locally. The bridge was replaced and upgraded in 2006-2007.
Flooding	Annual Event	Franklin Pierce Lake area	Spring runoff and heavy summer/fall rains have caused flooding in the roadway. New drainage and culverts done in Hillsborough have benefited this area. No property damage or injuries reported locally.
Flooding	Annual Event	Willard Pond Road	Flooding has occurred in the roadway due to heavy rain and runoff. No property damage or injuries reported locally.
Flooding	Annual Event	Old Hancock Road	Flooding has occurred in the roadway due to heavy rain and runoff. Annual road repair is required. No property damage or injuries reported locally.
Flooding	Annual Event	NH 9/ Liberty Farm Road area	Snow melt and accumulated runoff from heavy rains causes erosion of conveyance ditch and road. Occasional road repair is required. No property damage or injuries reported locally.
Flooding	Annual Event	NH 202	Occasional road repair is required due to spring storm patterns; plugged culverts during spring runoff and mud season. No property damage or injuries reported locally.
Flooding	Annual Event	NH 31 from Whiton Road to West Street	Occasional road repair is required due to spring storm patterns. Flooding is from the intersection of Whiton Road and NH 31 running south along NH 31 to the intersection of West Street. No property damage or injuries reported locally.
Flooding	Annual Event	Intersection of Elm Avenue and Cross Road	Damage to the road has occurred due to accumulation of heavy rain and spring runoff, however no property damage or injuries reported locally.
Flooding	Annual Event	South of Depot Street at intersection of NH 202	Flooding has occurred in the roadway due to heavy rain and runoff. Occasional road repair is required. No property damage or injuries reported locally.

Extreme Heat/ Drought- Low-Medium Risk

Extreme heat is characterized by abnormally high temperatures and/or longer than average time periods of high temperatures. These event conditions are typically infrequent. When they do occur, however, they are usually in late July and August. Extreme heat can be dangerous to those residents with medical conditions and the elderly. It is important to have cooling areas and a good supply of water available. Extreme heat can add to the potential for wildfires and depletes the water supply for firefighting. With the unpredictability and infrequent occurrences of these events, extreme heat is considered a low- medium risk to the town. A greater emphasis is placed on responding to these extreme heat days rather than mitigating for them. Droughts can often occur after periods of extreme heat. Drought can threaten the water supply in wells and can leave many residents without drinking water. The severity of droughts can be found by referring to the Palmer Drought Severity Index used by the Climate Prediction Center and can be viewed at: http://www.cpc.ncep.noaa.gov/products/monitoring_and_data/drought.shtml Antrim has not had experience with severe drought conditions.

Hazard	Date	Location	Description of Areas Impacted
Extreme Heat/ Drought- Low-Medium Risk (cont.)			
Drought	Spring 2012	Statewide	Considered worse than the drought of 1941-42, however no damage or injuries reported locally.
Extreme Heat	Past and potential occurrence	Statewide	Although there have been heat waves annually, these events have caused discomfort to residents but no documented injuries, structural effects or brownouts locally.

Wildfires- Medium Risk

<p>Potential hazard- As timber harvesting is reduced, wood roads close, debris builds up on the ground, the potential for wildfire increases town-wide. The entire town is at risk with minimal forest fire protection. Wildfire are classified according to size: Class A - one-fourth acre or less; Class B - more than one-fourth acre, but less than 10 acres; Class C - 10 acres or more, but less than 100 acres; Class D - 100 acres or more, but less than 300 acres; Class E - 300 acres or more, but less than 1,000 acres; Class F - 1,000 acres or more, but less than 5,000 acres; Class G - 5,000 acres or more. –</p>			
Wildfire	Potential	Townwide	The whole town is at risk with many large blocks of forest and problems accessing remote areas. Bald Mountain, Robb Mountain, Willard Mountain, and Tuttle Hill are a greater concern due to their geographic orientation and abundant forests.

Lightning- Medium Risk

Potential hazard- Lightning is an unpredictable hazard. It could strike anywhere in town and potentially start a forest fire especially in periods of drought. High elevations and areas around waterbodies may be more susceptible to lightning strike incidents. The following have a greater potential of risk of a lightning strike: utility poles, antennas and cell towers, boaters, and hikers. The Table below categorizes lightning hazards according to the Lightning Activity Level (LAL) using cloud conditions and precipitation, and an estimate of lightning strikes per every 15 minutes. The impact of lightning strikes varies based on the object that is struck. Potential impacts include: loss of utilities, fires, death or injury, and road closures.

LAL	Cloud & Storm Development	Lightning Strikes/15 min
1	No thunderstorms.	-
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent and intense.	>25
6	Similar to LAL 3 except thunderstorms are dry.	

Source: NOAA

Lightning Strike	undocumented	Bald Mountain	This area has experienced a higher number of lightning strikes. No reported losses.
Lightning Strike	undocumented	Elm Avenue	A number of lightning strikes have occurred from Smith Road south to NH 202. No structural losses.
Lightning Strike	2013	N. Main Street	Lightning struck a house and caused a structure fire. Mutual aid from Hillsboro, Bennington, Deering, and Stoddard assisted. The road was closed for 2 hours and power was shut off to that residence only. The fire was contained with limited smoke and water damage to the house.

Tornadoes, Downbursts, and Severe Wind -Medium-High Risk

Past and Potential hazard- Town at risk from severe localized blasting winds. Structural damage potential; such events cause small blocks of downed timber. High elevations at greatest risk. Old trees along roads at risk of falling and causing damage to structures during wind events. Potential for loss of electricity. Downbursts are sometimes mistaken for tornadoes and can cause very similar damage.

The **Enhanced Fujita Scale** is used to rate the intensity of a tornado by examining the damage caused by the tornado once it has passed. (see scale below).

EF-Scale Number, Wind Speed, Frequency, and Type of damage

EF-0

Wind Speed: 65-85 mph; Frequency: 53.5%

Minor or no damage. Some damage to gutters, siding and roofs; breaks branches off trees; pushes over shallow-rooted trees.

EF-1

Wind Speed: 86-110 mph; Frequency: 31.6%

Moderate damage. Roofs severely stripped; mobile homes damaged or overturned; windows and glass broken, loss of exterior doors.

EF-2

Wind Speed: 111-135 mph; Frequency: 10.7%

Considerable damage. Roofs torn off well constructed homes; foundations of framed homes shifted; mobile homes demolished; large trees snapped or uprooted; light object missiles generated; cars lifted off of ground.

EF-3

Wind Speed: 136-165 mph; Frequency: 3.4%

Severe Damage. Entire stories of well-constructed houses destroyed; severe damage to large building and malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown.

EF-4

Wind Speed: 166-200 mph; Frequency: 0.7%

Extreme Damage. Well-constructed houses completely leveled; cars thrown and large missiles generated.

EF-5

Wind Speed: >200 mph; Frequency <0.1%

Total Destruction. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; steel reinforced concrete structures are critically damaged; tall buildings collapse.

Source: <http://www.tornadoproject.com/fscale/fscale.htm>

Hazard	Date	Location	Description of Areas Impacted
Tornado	September 15, 1922	Cheshire County	F2
Tornado	September 13, 1928	Cheshire County	F2
Tornado	August 13, 1963	Cheshire County	F2
Tornado	June 6, 1963	Cheshire County	F2
Tornado	1986	Center of Town & North Branch	A tornado touched down in Antrim and caused damage to the school and fire station. No injuries reported locally.
Tornado	July 3, 1997	Cheshire County	An F1 tornado caused severe tree loss in Cheshire County, destroying a building and damaged the stables at the Cheshire Fairgrounds. No significant damage or injuries reported locally.
Tornado	July 3, 1997	Greenfield, NH	An F2 Tornado caused damage to a summer camp, the recycling center and completely destroyed a lumber facility. No significant damage or injuries reported locally.
Tornado	May 23, 1998	Hillsborough County	F2. No significant damage or injuries reported locally.
Tornado	July 24, 2008	Deerfield/Northwood	EF2. No significant damage or injuries reported locally.

Hurricanes (Category given if known) and Tropical Storms- Medium-High Risk

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating system based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures. In the western North Pacific, the term "super typhoon" is used for tropical cyclones with sustained winds exceeding 150 mph.

(<http://www.nhc.noaa.gov/aboutsshws.php>)

Saffir-Simpson Hurricane Wind Scale

Category, Sustained Winds, and Types of Damage

Category 1

Wind Speed: 74-95 mph, 64-82 kts

Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days

Category 2

Wind Speed: 96-110 mph, 83-95 kts

Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.

Category 3

Wind Speed: 111-129 mph, 96-112 kts

Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.

Category 4

Wind Speed: 130-156 mph, 113-136 kts

Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Category 5

Wind Speed: 157 mph or higher, 137 kts or higher

Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months

Source: <http://www.nhc.noaa.gov/aboutsshws.php>

Hazard	Date	Location	Description of Areas Impacted
Hurricane	August, 1635	n/a	
Hurricane	October 18-19, 1778	n/a	Winds 40-75 mph
Hurricane	October 9, 1804	n/a	
Gale	Sept. 23, 1815	n/a	Winds > 50mph
Hurricane	Sept. 8, 1869	n/a	
Hurricane	September 21, 1938	Southern New England	Flooding caused damage to road network and structures. 13 deaths, 494 injured throughout NH. Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Total storm losses of \$12,337,643 (1938 dollars). 186 mph maximum winds.
Hurricane (Carol)	August 31, 1954	Southern New England	Category 3, winds 111-130 mph. Tree and crop damage in NH, localized flooding.

Hurricanes and Tropical Storms--Medium-High Risk (con't)

Hazard	Hazard	Hazard	Hazard
Hurricane (Edna)	September 11, 1954	Southern New England	Category 3 in Massachusetts. This Hurricane moved off shore but cost 21 lives & \$40.5 million/ damages throughout New England.
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Category 3 (Category 1 in NH). Heavy flooding in some parts of the State.
Tropical Storm	October 7, 1962	Coastal NH	Heavy swell and flooding along the coast
Tropical Storm	August 28, 1971	New Hampshire	Center passed over NH resulting in heavy rain and damaging winds
Hurricane (Belle)	August 10, 1976	Southern New England	Primarily rain with resulting flooding in New Hampshire. Category 1
Hurricane (Gloria)	September, 1985	Southern New England	Category 2, winds 96-110 mph. Electric structures damaged; Heavy rains, localized flooding, and minor wind damage in NH
Hurricane (Bob)	August 19, 1991	Southern New England	Structural and electrical damage in region from fallen trees. 3 persons were killed and \$2.5 million in damages were suffered along coastal New Hampshire. Federal Disaster FEMA-917-DR.
Hurricane (Edouard)	September 1, 1996	Southern New England	Winds in NH up to 38 mph and 1 inch of rain along the coast. Roads and electrical lines damaged.
Tropical Storm(Floyd)	September 16-18, 1999	Southern New England	FEMA DR-1305-NH. Heavy Rains.
Hurricane (Katrina)	2005	Gulf Region-Southern US	Caused an estimated \$100 billion in damages.
Tropical Storm (Tammy)	October 5-13, 2005	East Coast of US	Remnants of Tammy contributed to the October 2005 floods which dropped 20 inches of rain in some places in NH.
Tropical Storm (Irene)	2011	New England states	FEMA Disaster Declaration #DR-4026 and EM- 3333. No significant damage recorded locally. No local injuries.
Tropical Storm(Sandy)	October 26-November 8, 2012	Eastern United States	FEMA Disaster Declaration # DR 4095; NH Counties that received the most damage were Belknap, Carroll, Coos, Grafton, Rockingham, and Sullivan. No significant damage recorded locally. No local injuries.

Earthquakes- Low Risk

Potential hazard- The table below is used to categorize earthquakes using two different scales: Mercalli Scale and Richter Scale. The Richter Scale is more scientific and is based on the magnitude (amplitude of the largest seismic wave). The Mercalli Scale is based on observations by people who experienced the earthquake to describe its intensity. *Source: USGS Hazards Program*

Modified Mercalli Scale vs. Richter Scale		
Mercalli Intensity	Mercalli Observations	Richter Magnitude
I	Not felt by people	1-2
II	Felt by only a few people, especially on upper floors of buildings	3
III	Felt by people lying down, seated on hard surface, or in tall buildings	3.5
IV	Felt indoors by many, dishes and windows rattle	4
V	Generally felt by everyone; may wake from sleep	4.5
VI	Trees sway, objects fall from walls & tables	5
VII	Walls crack, some structural damage	5.5
VIII	Building damage noticeable	6
IX	Some buildings collapse	6.5
X	Ground cracks and landslides	7
XI	Few buildings survive, bridge damage, severe landslide	7.5
XII	Total Destruction, objects thrown into the air	8

Earthquakes- Low Risk (con't)			
Hazard	Date	Location	Description of Areas Impacted
Earthquake	1638	Central New Hampshire	6.5-7
Earthquake	October 29, 1727	Off NH/MA coast	Widespread damage Massachusetts to Maine
Earthquake	December 29, 1727	Off NH/MA coast	Widespread damage Massachusetts to Maine
Earthquake	November 18, 1755	Cape Ann, MA	6.0, much damage
Earthquake	1800s	Statewide New Hampshire	83 felt earthquakes in New Hampshire
Earthquake	1900s	Statewide New Hampshire	200 felt earthquakes in New Hampshire
Earthquake	March 18, 1926	Manchester, NH	Felt in Hillsborough County
Earthquake	December 20 & 24, 1940	Near Ossipee, NH	Both earthquakes of magnitude 5.5, both felt for 400,000 sq miles, structural damage to homes, damage in Boston, MA, water main rupture.
Earthquake	December 28, 1947	Dover-Foxcroft, ME	4.5
Earthquake	June 10, 1951	Kingston, RI	4.6
Earthquake	April 26, 1957	Portland, ME	4.7
Earthquake	April 10, 1962	Middlebury, VT	4.2
Earthquake	June 15, 1973	Near NH Quebec Border, NH	4.8
Earthquake	January 19, 1982	Gaza (west of Laconia), NH	4.5, walls and chimneys cracked, damage up to 15 miles away in Concord
Earthquake	October 20, 1988	Near Berlin, NH	4
Earthquake	January 3, 2011	Northwest of Laconia	2.5. No damage or injuries locally.
Earthquake	August 23, 2011	Travelled up the east coast from Virginia to New Hampshire	5.8. No damage or injuries locally.
Earthquake	September 18, 2012	Southern New Hampshire	1.2. No damage or injuries locally.
Earthquake	October 16, 2012	Felt throughout most of the New England states; centered in Maine	4.0. No damage or injuries locally.
Earthquake	2014	New Hampshire	7 small earthquakes ranging from 1.5 - 2.3. No damage or injuries locally.
Earthquake	Jan.-July 2015	New Hampshire	5 small earthquakes ranging from 1.6 - 2.3. No damage or injuries locally.

Severe Winter Weather- High Risk

Three types of winter events are heavy snow, ice storms and extreme cold. Occasionally heavy snow will collapse buildings. Ice storms have disrupted power and communication services. Extreme cold affects the elderly. These random events make it difficult to set a cost to repair or replace any of the structures or utilities affected.

The chart below is an indicator of the severity of ice storms and can assist emergency management officials in predicting the length of power outages based on wind speed and amount of ice accumulation during the storm. This index is similar to those that are used to predict the severity of tornados and hurricanes. Planning ahead will mitigate the damage and prepare communities for severe ice events days in advance.

The Sperry-Piltz Ice Accumulation Index, or “SPIA Index” – Copyright, February, 2009

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) <small>*Revised-October, 2011</small>	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	< 15	
2	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Severe Winter Weather- Snow, Ice, and Ice Jams High Risk (Con’t...)

Hazard	Date	Location	Description of Areas Impacted
Ice Storm	December 17-20, 1929	New Hampshire	Unprecedented disruption and damage to telephone, telegraph and power system. Comparable to 1998 Ice Storm (see below)
Blizzard	February 14-17, 1958	New Hampshire	20-30 inches of snow in parts of New Hampshire
Snow Storm	March 18-21, 1958	New Hampshire	Up to 22 inches of snow in south central NH
Snow Storm	January 18-20, 1961	New Hampshire	Up to 25 inches of snow in southern NH
Snow Storm	February 2-5, 1961	New Hampshire	Up to 18 inches of snow in southern NH
Snow Storm	January 11-16, 1964	New Hampshire	Up to 12 inches of snow in southern NH
Blizzard	January 29-31, 1966	New Hampshire	Third and most severe storm of 3 that occurred over a 10-day period. Up to 10 inches of snow across central NH
Snow Storm	December 26-28, 1969	New Hampshire	Up to 41 inches of snow in west central NH
Snow Storm	February 18-20, 1972	New Hampshire	Up to 19 inches of snow in southern NH
Snow Storm	January 19-21, 1978	New Hampshire	Up to 16 inches of snow in southern NH
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH

Severe Winter Weather- Snow, Ice, and Ice Jams High Risk (Cont.)			
Hazard	Hazard	Hazard	Hazard
Snow Storm	February, 1979	New Hampshire	President's Day storm
Ice Storm	January 8-25, 1979	New Hampshire	Major disruptions to power and transportation
Snow Storm	April 5-7, 1982	New Hampshire	Up to 18 inches of snow in southern NH
Ice Storm	February 14, 1986	New Hampshire	Fiercest ice storm in 30 yrs in the higher elevations in the Monadnock region. It covered a swath about 10 miles wide from the MA border to New London NH.
Extreme Cold	November-December, 1988	New Hampshire	Temperature was below 0 degrees F for a month.
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH.
Snow Storm	1997	New Hampshire	Power outages throughout New Hampshire due to heavy snowfall
Ice Storm	January 15, 1998	New Hampshire	Federal disaster declaration DR-1199-NH, 20 major road closures, 67,586 without electricity, 2,310 without phone service, \$17+ million in damages to Public Service of NH alone.
Snow Storm	February 2006	New Hampshire	Trees down and power outages throughout town due to heavy snowfall.
Ice Storm	December 8, 2008	New Hampshire	Downed trees and power lines, power outages up to 1 Month; Some residents were without power for 2-3 weeks.
Snow Storm	October 29-30, 2011	New Hampshire	FEMA Disaster Declaration # DR-4049 (Hillsborough and Rockingham Counties). Severe snowstorm event. Snowfall 34" in a 24 hour period. Minimal impact locally. No local injuries reported.
Snow Storm	February 8-10, 2013	New Hampshire	February Blizzard "Nemo", exceeded previous snow fall amounts; category B Declaration # DR4105. Minimal impact locally. Few reported electrical outages locally. No local injuries reported.
Snow Storm	November 2014	New Hampshire	"Thanksgiving Storm"- was declared the 4 th largest power outage in NH history. Many communities received over 12" of snow. Some local power outages lasted 2 days. No local injuries reported.
Snow Storm	January 2015	New Hampshire	Several successive snow storms that dumped in excess of 10" each. No serious impact to Town residents except several days of school closures.

Erosion/Landslide-Low Risk

There are no documented landslide or erosion events, however, the potential exists and it remains as a hazard in this plan. Some steep slopes exist that have the potential for erosion or minor landslides. Slopes in excess of 25% are susceptible to landslides, especially where soils are thin or highly erodible. Maintaining vegetation on slopes and avoiding clearcutting of trees on steep grades will reduce the severity of erosion and landslide during heavy rain events. The extent of landslides occurs over time and is exacerbated by heavy rains. Road embankments may experience erosion during heavy rain events which could undermine the road and cause damage to the surface leaving the road to be impassable. If information becomes available regarding vulnerable risk locations or landslide occurrences, the plan will be amended accordingly.

Hazardous Materials Spills- Low-Medium Risk

Public transportation of chemicals and bio-hazardous materials through town on NH 9 and NH 202 by truck is a concern. There is no history of hazardous materials spills in Antrim. The severity of such an event greatly varies depending on the type of hazardous material, location, and response time, as well as other contributing factors such as wind and rain. Hazardous spills can contaminate the air, land, and water and cause serious health hazards or death.

Dam Breach/Failure- Medium Risk

Potential hazard- The Table below shows the dams in Antrim that are registered with the State of New Hampshire.

The State of New Hampshire classifies dams into the following four categories:

NM – Non-menace	S – Significant hazard	Blank- Non-Active
L – Low hazard	H – High Hazard	

Detailed description of classification terms:

Non-Menace structure means a dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is:
Less than six feet in height if it has a storage capacity greater than 50 acre-feet; less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.

Low Hazard structure means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

No possible loss of life; low economic loss to structures or property; structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services; the release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course; and reversible environmental losses to environmentally-sensitive sites.

Significant Hazard structure means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

No probable loss of lives; major economic loss to structures or property; structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services; major environmental or public health losses, including one or more of the following:

- Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.
- The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more.
- Damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.

High Hazard means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of:

Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions; water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot; structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services; the release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII; any other circumstance that would more likely than not cause one or more deaths.

Generally, all Class H dams need to have Emergency Action Plans, and most Class S dams also require them. According to the Department of Environmental Services Dam Bureau, there is one Class S dam and one Class H dams in Antrim.

DAM	HAZ CL	STATUS	NAME	RIVER	HEIGHT	IMPND	DAM OWNER
D009001	NM	ACTIVE	LOVEREN DAM	NO. BRANCH CONTOOCCOOK R.	12	2.5	MR STANLEY C OLSON
D009002	L	ACTIVE	STEELS POND DAM	NO. BRANCH CONTOOCCOOK R.	20	36	NH DES WATER DIVISION
D009003	H	ACTIVE	GREGG LAKE DAM	GREAT BROOK	11.5	201	TOWN OF ANTRIM

DAM	HAZ CL	STATUS	NAME	RIVER	HEIGHT	IMPND	DAM OWNER
D009004	NM	ACTIVE	GREAT BROOK DAM	GREAT BROOK	14	0.5	MR GILBERT SARNO
D009005		RUINS	HOLT MILL DAM	GREAT BROOK	12		MR HARRY PAGE
D009006		EXEMPT	GREAT BROOK DAM	GREAT BROOK	4	0.78	TOWN OF ANTRIM
D009007		RUINS	BLACKSMITH SHOP DAM	GREAT BROOK	8		TOWN OF ANTRIM
D009008		RUINS	ABBOTT MILL DAM	GREAT BROOK	11		NANCY & TERRY BENDA
D009009		RUINS	REEL SHOP DAM	GREAT BROOK	11		MR GUY HULLET
D009010		RUINS	PAIGE MILL DAM	GREAT BROOK	5		MR BURT PAGE
D009011	NM	ACTIVE	SILK MILL DAM	GREAT BROOK	6	0.5	GOODELL COMPANY
D009012	L	ACTIVE	SUMMER STREET DAM	GREAT BROOK	10	2.4	TOWN OF ANTRIM
D009013		RUINS	POORE DAM	GREAT BROOK	10		GOODELL COMPANY
D009014	L	ACTIVE	GREAT BROOK HANDLE SHOP DAM	GREAT BROOK	15	0.13	MR WALTER NEFF
D009015		RUINS	SAW MILL DAM	GREAT BROOK	24		GOODELL COMPANY
D009016		RUINS	THOMPSON DAM	GREAT BROOK	8		GOODELL COMPANY
D009017	L	ACTIVE	CAMPBELL POND DAM	COCHRAN BROOK	6.5	16.6	TOWN OF ANTRIM
D009018		RUINS	WILSON DAM	GREAT BROOK			MR H W WILSON
D009019	L	ACTIVE	WILLARD POND DAM	TR MOOSE BROOK	8	108	AUDUBON SOCIETY OF NH
D009020		RUINS	WILLARD POND BROOK DAM	TR MOOSE BROOK	6		UNKNOWN
D009021		RUINS	ANTRIM ROD & GUN CLUB FISH POND	NATURAL SWALE	4		MR CHARLES PHELPS
D009022		RUINS	GREAT BROOK DAM	GREAT BROOK	9		MR GEORGE CAUGHEY
D009023	NM	ACTIVE	ANDERSON DAM	TR N BR CONTOOCCOOK R.	6	2.83	MS SONJA M MCKINLAY
D009024	L	ACTIVE	KARSTEN WILDLIFE POND DAM	TR N BR CONTOOCCOOK R.	10	7	MS CAROL KARSTEN
D009025		EXEMPT	INTERLOCKEN DAM	NO. BRANCH CONTOOCCOOK R.	5	2.5	INTERLOCKEN CAMP
D009026	S	ACTIVE	ANTRIM SEWAGE LAGOONS	(adjacent to) CONTOOCCOOK R.	13	2.63	TOWN OF ANTRIM

Source: Department of Environmental Services Dam Bureau- 2015

*After careful review of the historical natural disasters in and near the Town of Antrim, the committee determined that the risk of **radon** and **snow avalanches** do not pose enough of a risk to include in this plan.*

CHAPTER IV

ASSESSING PROBABILITY, SEVERITY AND RISK

The Committee members completed a Risk Assessment all of the types of hazards identified in Chapter III. **Appendix B** provides a detailed methodology for the Risk Assessment. The process involved assigning Low, Medium, or High values (numerically 1, 2 or 3) to each hazard type for its possible impact to Human, Property, and Business factors (vulnerability). To assess probability, a 1, 2, or 3 value was assigned to each hazard type with respect to the probability that the hazard would occur in the next 25 years. The *severity* was calculated by determining the average of the human, property, and business impacts. *Risk* was calculated by multiplying severity by probability and factored into the scale shown below.

0-1.9- Low 2.0-3.9- Low-Med 4-5.9- Med 6-7.9- Med-High 8-9- High

	Human Impact Probability of death or injury 0=NA 1=Low 2=Medium 3=High	Property Impact Physical losses and damages 0=NA 1=Low 2=Medium 3=High	Business Impact Interruption of service 0=NA 1=Low 2=Medium 3=High	Probability Likelihood this will occur in 25 years 0=NA 1=Low 2=Medium 3=High	Severity Average of human, property, business impacts	Risk Severity x Probability	Risk Level Low Med. High
Flooding	1.5	2	2.5	3	2	5	Med.
Extreme Heat/Drought	1	1	1.5	2	1.2	2.4	Low-Med
Wild Fire	1	2	1.5	3	1.5	4.5	Med.
Lightning	1	2	2	3	1.7	5.1	Med.
Tornado	2	2	3	3	2.3	6.9	Med-High
Hurricane	2	3	3	3	2.3	6.9	Med-High
Earthquake	1	1	1	1	1	1	Low
Extreme Winter Weather	2	3	3	3	2.7	8.1	High
HazMat Spills	1	1	3	2	1.7	3.4	Low-Med
Dam Failure	2	2	3	2	2.3	4.6	Med.
Erosion/Landslide	1	1	1	1	1	1	Low

CHAPTER V
VULNERABILITY ASSESSMENT; IDENTIFYING POTENTIAL HAZARDS
AFFECTING STRUCTURES; ESTIMATING POTENTIAL LOSSES

The following is a list of natural and manmade disasters, and the areas affected by them, that have or could affect the Town of Antrim. The Past and Potential Hazards Map at the end of this Plan reflects the contents of this list.

In order to determine estimated losses due to natural and man-made hazards in Antrim, each hazard area was analyzed with results shown below. Human losses are not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. According to the Antrim Town records, the value of all structures, including exempt structures such as schools and churches, is \$160,380,300 as of January 26, 2016 and the median value of a home is \$196,900. The data below was calculated using FEMA's Understanding Your Risks: Identifying Hazards and Estimating Losses. In addition, the Committee completed the Vulnerability Assessment Worksheet which provided more data to estimate the potential losses. Since hazard vulnerability assessment is dependent on a range of variables, such as the type, magnitude and precise location of a future hazard, these assessments are far from an exact science. Therefore, it is understood that the monetary values arrived at through this assessment represent gross estimates.

Riverine Flooding - Medium Risk

White Birch Point Road/Gregg Lake Road - Low Risk - \$5,316,300 Approximately 27 structures have been affected or have the potential to be affected by flood waters in this area. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$5,316,300.

- Annual event - some flooding in floodplain from both spring runoff and heavy summer/fall rains.
- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.
- Bridge was replaced and upgraded in 2006-2007.

Pierce Lake Road/Franklin Pierce Lake Area - Low Risk - \$4,922,500 There are 25 residences located around Franklin Pierce Lake that have been affected or have the potential to be affected by flood waters. Most of these homes are assessed at three to four times the median value according to the 2000 Census. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$4,922,500.

- Annual event - some flooding in floodplain from both spring runoff and heavy summer/fall rains.
- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.
- New drainage and culverts done in Hillsborough have benefited this area.

Willard Pond Road - Low Risk - \$1,772,100: There are 9 residences located in this area that have been affected or have the potential to be affected by flood waters. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$1,772,100.

- Annual event - This area is not within a FEMA mapped 100-year flood zone, but it does flood due to heavy rains and runoff.
- Flooding of road - due to accumulation of heavy rain and runoff.
- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.

Old Hancock Road - Low Risk - \$787,600: There are 4 residences located in this area that have been affected or have the potential to be affected by flood waters. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$787,600. This area is not within a FEMA mapped 100-year flood zone, but it does flood due to heavy rains and runoff.

- Flooding of road - due to accumulation of heavy rain and runoff.
- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.

- Snow melt and accumulated runoff from heavy rains causes erosion of conveyance ditch and road.

NH 9 & Liberty Farm Road Area - Low Risk - Flooding of the North Branch of the Contoocook River has occurred in this area due to accumulation of heavy rain and runoff. There are about 15 residences in this area whose access would be cut off in the event of the bridge being flooded out, but no damage to homes.

- Flooding of road - due to accumulation of heavy rain and runoff.
- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.
- Snow melt and accumulated runoff from heavy rains causes erosion of conveyance ditch and road along NH 9 and Liberty Farm Road.

NH 202 in Northeast Section of Antrim - Medium Risk - \$4,725,600: There are 24 residences located in this area that have been affected or have the potential to be affected by flood waters. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$4,725,600. This area is not within a FEMA mapped 100-year flood zone, but it does flood due to heavy rains and runoff.

- Flooding of road - due to accumulation of heavy rain and runoff.
- Damage/repair to the road surface. Occasional road repair is required due to spring storm patterns, plugged culverts during spring runoff and mud season.
- Snow melt and accumulated runoff from heavy rains causes erosion of conveyance ditch and road.

NH 31 from N. Whiton Road to West Street - Medium Risk - \$1,181,400: There are 6 residences located in this area that have been affected or have the potential to be affected by flood waters. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$1,181,400. This area is not within a FEMA mapped 100-year flood zone, but flooding of Great Brook which flows into the Contoocook River has occurred in this area due to accumulation of heavy rain and runoff. The extent of the flooding is from the intersection of Whiton Road and NH 31 running south along NH 31 to the intersection of West Street.

- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.
- Damage/repair to the road surface. Occasional road repair is required due to spring storm patterns, plugged culverts during spring runoff and mud season.
- Snow melt and accumulated runoff from heavy rains causes erosion of conveyance ditch and road along NH 31.

Intersection of Elm Avenue/Cross Road - Medium Risk - \$150,000: Road and Culvert repair. This area is not within a FEMA mapped 100-year flood zone, but it does flood due to heavy rains and runoff.

- Flooding of road - due to accumulation of heavy rain and runoff
- There is a potential for disruption of services, and damage to roads and bridges.
- Elm Street was rebuilt in 2013-2014.

South of Depot Street at the Intersection of NH 202 - Medium Risk - \$1,772,100: There are 7 residences and 2 commercial buildings located in this area that have been affected or have the potential to be affected by flood waters. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be \$1,772,100. This area is not within a FEMA mapped 100-year flood zone, but it does flood due to heavy rains and runoff.

- Damage/repair to the road surface. Occasional road repair is required due to spring storm patterns, plugged culverts during spring runoff and mud season.
- The bridge was replaced in 2013-2014.
- There is a potential for loss of life and property, disruption of services, and damage to roads and bridges.

Extreme Heat/Drought – Low-Medium Risk - No Record of Cost: Extreme heat is characterized by abnormally high temperatures and/or longer than average time periods of high temperatures. These event conditions are typically infrequent. When they do occur, however, they are usually in late July and August. Extreme heat can be dangerous to those residents with medical conditions and the elderly. It is important to have cooling areas and a good supply of water available. Extreme heat can add to the potential for wildfires and depletion of the water supply for firefighting. A greater emphasis is placed on responding to these extreme heat days rather than mitigating for them. Outreach and education on methods of dealing with extreme heat are important.

Antrim has not had experience with severe drought conditions. Drought will increase the risk of wildfire, especially in areas of high recreational use and as more timberland is set aside as non-harvested timberland, the potential for the risk of wildfire will increase.

- A drought could dry up wells, leaving residents with no drinking water;
- Extreme heat could cause brownouts due to the excessive use of electricity;
- This would be a Townwide occurrence.
- Need to consider areas for residents to go to seek relief such as the Town Hall or Library

Wildfire - Medium Risk - Approximately \$1,000/acre: As timber harvesting is reduced, wood roads close, debris builds up on the ground, potential for wildfire increases town-wide. Downed timber from the 2008 ice storm and other severe weather events adds a fire danger risk for wooded areas.

- Increasing risk exists for most of the western portion of town with the higher elevations to include Willard Mountain, Robb Mountain, Bald Mountain, Tuttle Hill, Holt Hill, and Windsor Mountain;
- Entire town - minimal forest fire protection (dependent on on-call firefighters and problems with accessibility).

Earthquake - Low Risk- \$32,076,060: Standard construction practices in Antrim do not require focused attention to seismic events. Assuming an estimated loss of 20% of town assessed structures, the estimated cost is \$32,076,060.

- There is a potential of disruption of services such as power and phone;
- There is a potential for collapse of structures, roads and bridges;
- There is a potential for injury or death;
- This could occur Townwide.

Tornado/Downburst/Severe Wind – Medium-High Risk - \$3,207,606: Tornadoes and downbursts rarely occur in this part of the country; therefore, assessing damages is difficult. Buildings have not been built to Zone 2, Design Wind Speed Codes. Estimated damages to 10% to structures with 20% damages \$3,207,606.

- There is a potential for loss of life and property;
- Potential for damage to structures, roads and bridges;
- This could occur Townwide.

Hurricane/Tropical Storm - Medium-High Risk - \$4,009,508: Antrim's location in southwestern New Hampshire reduces the risk of extremely high winds that are associated with hurricanes. The Town has experienced small blocks of downed timber and uprooting of trees onto structures. Hurricanes can and do create flooding. Estimated wind damage to 5% of the structures with 10% damage \$801,902. Estimated flood damage 10% of the structures with 20% damage \$3,207,606.

- River corridor at risk, Contoocook River
- There is a potential of disruption of services such as power and phone;
- There is a potential for downed trees onto structures and roads.
- There is a potential for loss of life and property;

- This could occur Townwide.

Lightning Strikes - Medium Risk: No record of loss of life or property from lightning strikes. Bald Mountain in the southwest section of town has experienced higher numbers of lightning strikes than other parts of town. A higher number of lightning strikes have also occurred along Elm Avenue from the intersection of Smith Road south to NH 202.

- There is a potential of disruption of services such as power and phone;
- Lightning strikes could start a fire;
- There is a potential for injury or death;
- This could occur Townwide.

Extreme Winter Weather - High Risk - No Record of Cost: Three types of winter events are heavy snow, ice storms and extreme cold which cause concern. Occasionally heavy snow years will collapse buildings. Ice storms have disrupted power and communication services. Timberland has been severely damaged. Extreme cold affects the elderly. Antrim's recent history has not recorded any loss of life due to the extreme winter weather. These random events are difficult to set a cost to repair or replace any of the structures or utilities affected.

- There is a potential of disruption of services such as power and phone;
- There is a potential for loss of life and property;
- Potential for damage to structures, roads and bridges;
- This could occur Townwide.

Man-Made Hazards - Hazardous Materials - Low Risk - No Record of Cost: Antrim's Hazmat Plan needs to be updated. Public transportation of chemicals and bio-hazardous materials through town on NH 9, NH 31, and US 202 by truck is a concern.

Man-Made Hazards - Dams - Low-Medium Risk - No Record of Cost: The Past and Potential Hazards Map depicts the location of several dams within the Town of Antrim.

Erosion and Landslide - Low to Medium Risk

Erosion and Landslide hazard events usually affect infrastructure such as roads and bridges, but they can also affect individual structures and businesses. Since this hazard can occur in isolated parts of town, damages from this hazard could be expected to range from a few thousand dollars to a few million dollars, depending on the severity of the event and infrastructure impacted. The extent of landslides occurs over time and is exacerbated by heavy rains. Road embankments may experience erosion during heavy rain events which could undermine the road and cause damage to the surface leaving the road to be impassable.

- There is a potential for mud and debris to enter the streams, thereby reducing water quality;
- There is a potential for mud and debris onto roads causing road closures.

(Past and Potential Hazards Map Located In Back of Plan)

CHAPTER VI CRITICAL FACILITIES

A Critical Facility is defined as a building, structure, or location which:

- Is vital to the hazard response effort
- Maintains an existing level of protection from hazards for the community
- Would create a secondary disaster if a hazard were to impact it

Critical Facilities within Hazard Areas

Hazards identified in this plan are regional risks and, as such, all critical facilities fall into the hazard area. The exception to this is flooding. There are no identified critical facilities that fall within the 100-year floodplain.

The Critical Facilities List for the Town of Antrim has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. Antrim's Hazard Mitigation Committee has broken up this list of facilities into four categories. The first category contains facilities needed for Emergency Response in the event of a disaster. The second category contains Non-Emergency Response Facilities that have been identified by the Team as non-essential. These are not required in an emergency response event, but are considered essential for the everyday operation of Antrim. The third category contains Facilities/Populations that the Committee wishes to protect in the event of a disaster. The fourth category contains Potential Resources, which can provide services or supplies in the event of a disaster. The Critical Facilities Map at the end of this Plan identifies these facilities.

Category 1 - Emergency Response Services:

The Town has identified the Emergency Response Facilities and Services as the highest priority in regards to protection from natural and man-made hazards.

1. Emergency Operations Center

Antrim Town Hall - US 202 (66 Main St.)

2. Fire Station

Antrim Central Fire Station - NH 31 (86 Clinton Road)

North Branch Fire Station - NH 9

3. Police Station

61 Main Street in Antrim Village

4. Emergency Fuel Facilities

Hillsborough, NH 9

5. Emergency Electrical Power Facility

Water/sewer facility (2 portables)

Highway Department (2 portables)

Police Department

Fire Department

Town Hall

School

6. Emergency Shelters

Town Hall

7. Dry Hydrants - Fire Ponds - Water Sources

Dry Hydrants - numerous locations, see Critical Facilities Map at back of Plan

8. Evacuation Routes

NH Route 9
NH Route 31
US Route 202

9. Bridges/ Culverts Located on Evacuation Routes

NH Route 9/Loveren Mill Road Bridge, Liberty Farm Road
NH Route 31/Cemetery Road Bridge
NH Route 31/Congreves Road Bridge
NH Route 31/Buttercup Lane Bridge
West Street Bridge (Legion)
NH Route 202/Clinton Road Bridge
NH Route 31/North Branch
West Street near Hilton

10. Town Garage/Transfer Station - Goodell Road

11. Communications

Telephone Crossbox - US Route 202 (Main St.)
Old North Branch Road
Gregg Lake Road
Elm Avenue

Category 2 - Non Emergency Response Facilities:

The town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Antrim.

1. Water Supply

Water Tower located at intersection of Pleasant Street/Greystone Road
Water Tower located near intersection of Stacey Hill Road/NH Route 31
Water Pump Station in Bennington
Public Water Supply Wells - numerous locations, see Critical Facilities Map at back of Plan

2. Problem Culverts

Intersection of Buttercup Lane and Clinton Road
West Street -west of NH 31

Category 3 - Facilities/Populations to Protect:

The third category contains people and facilities that need to be protected in event of a disaster.

1. Special Needs Population - identified by confidential survey administered by Emergency Medical Services.

Oxygen-dependent people	Mentally challenged
People on a lifeline	Elderly - on Main Street in Antrim Village
People assisted by Home Health	Hearing impaired
Shut-ins and disabled	Sight impaired
Group Homes	

2. Recreation Areas

Harbor Camp LLC at Gregg Lake
Hosmer Lot Wildlife Management Area - Near Willard Pond
Playground Facilities at Schools

MaCabe Forest off of US Route 202
Town Beach-Gregg Lake

3. Schools

Antrim Elementary School - School Street
Great Brook Middle School - School Street

4. Churches

Antrim Baptist Church - Main Street in Antrim Village
Church of Christ - Main Street in Antrim Village
First Presbyterian Church - Main Street in Antrim Village

5. Historic Buildings/Sites

Presbyterian Church	Maplehurst
Baptist Church	Antrim Mills (Goodell Building)
Church of Christ	Flint Mansion on North Branch Road – (<i>National Register of Historic Places</i>)
5 Cemeteries	Soldier Statue
Antrim Town Hall	Cannon
Tuttle Library	

Category 4 - Potential Resources:

Contains facilities that provide potential resources for services or supplies.

1. Food/Water

T-Bird Convenience Store - Intersection of US Route 202/NH Route 31
Food Pantry at the Antrim Baptist Church
Antrim Market Place at intersection of US Route 202/NH Route 31
Grocery Stores Located in Hillsborough, Keene & Peterborough

2. Hospitals/Medical Supplies

Medical Facilities Located in Keene, Peterborough, and Concord
Medical Office at intersection of Elm Street/NH Route 31
Dental Office at intersection of Elm Street/NH Route 31

3. Gravel Pits

Gravel Pit at intersection of Old Hancock Road/Boutman Road (abandoned)
Gravel Pit on N. Branch Road (Steel Pond Pit)
Gravel Pit on Elm Avenue (Zeke and Mack's)
Gravel Pit on Clinton Road/NH Route 31 (S.R.Jones)
Gravel Pit in the town of Bennington (Tri-town Pit)
Gravel Pit on Clinton Road/Cemetery Road (Landsite, LLC)

4. Miscellaneous Resources

Emergency Broadcast & Television: WMUR

Transportation: Buses – First Student in Keene and Hillsborough
 STA in Peterborough

Trucks – Town of Antrim, Local Contractors, National
Guard in Keene & Hillsborough

Beds, Cots, Blankets:
Red Cross

National Guard

Heavy Equipment:

Steve Jones - NH Route 31

Scott Burnside/Landsite - NH Route 31

Antrim Lumber - Smith Road

Edmund's Hardware - Main Street in Antrim Village

Robblee Tree Service

PB&H Equipment- NH 9

(Critical Facilities Map Located In Back of Plan)

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CHAPTER VII

EXISTING MITIGATION STRATEGIES & PROPOSED IMPROVEMENTS

Description of Existing Programs

- **Best Management Practices** are used as provided by the State to prevent non-point sources from affecting the local waterways.
- **National Flood Insurance Program** - A federally backed program that encourages communities to enact and enforce floodplain regulations.
- **School Evacuation Plan** - Designated plan to evacuate the Middle and Elementary schools in the event of an emergency or disaster addressing bussing, transportation routes (primary and alternative), traffic & crowd control, end destination and parental notification. The Antrim Fire, Police, and School Departments are responsible for implementing this plan.
- **Town-Adopted Building Code** - Antrim maintains a building inspector and has adopted provisions of the NHLife Safety Code and the NH State Building Code. The current program is working.
- **Code Enforcement Officer** - Enforces building and zoning ordinances and reviews permit applications.
- **Emergency Back-up Power Program** - The Town has emergency generators at the water and sewer plant (2), Town Hall, Police Department, Fire Department, and the school. There are also 2 portables at the Highway Garage.
- **Local Road Design Standards** - Standards set by the town and the Highway Department to ensure a constant construction benchmark.
- **Local Bridge Maintenance Program** - Guidelines and schedules for Annual upkeep of local town bridges and culverts. The Town has established a capital reserve fund for bridge maintenance and repair since 1997.
- **Local Road Maintenance Program** - Antrim allocates funding each year to various roadway projects, such as resurfacing, culvert replacement and repair.
- **Floodplain Development Ordinance** - An ordinance has been adopted as part of the Town's Land Use Plan to control development in the 100-year floodplain.
- **Winter Storms Operations Plan** - is designed as a set of guidelines for the Highway Department and town personnel to follow during times of extreme winter weather.
- **Town Master Plan (2010)**- A Guidance document to ensure that overall development in town is sustainable, meeting the needs of the citizens by setting forth steps and guidelines for a sound living environment through intelligent growth. The Planning Board is currently updating the plan..
- **Mutual Aid** - Provides assistance to all aspects of Antrim's Emergency Management Services in town. Southwest New Hampshire Fire Mutual Aid (SWNHFMA) and the Hillsborough Emergency Dispatch provide mutual aid to Antrim.
- **Fire Pond Management Plan** - This designates a maintenance schedule to the local ponds and dry hydrants used by the Fire Department for water supply for fire prevention and suppression. Additional fire ponds and dry hydrants are needed for better coverage.
- **Spill Prevention Control and Counter Measures Plan** - This plan is maintained at the Fire Department in the event that there is a spill. Personnel in the Fire Department are being trained in how to handle hazardous materials spills. SWNHFMA is called upon in the event of a major spill
- **Town Warning System** - Town implements a limited warning system utilizing vehicle mounted bullhorns.

- **Radiological Evacuation Plan** - Actions to follow in the event of a radiological disaster. Refer to the Emergency Operations Plan.
- **Erosion and Sedimentation Plan** - E&S plans are established by the state for erosion and sediment control. A Soil Erosion and Sedimentation Control Plan is required by the Town for all major subdivisions and site plans.
- **Town Radio System** - The existing system has a lot of dead spots in town due to antenna placement.
- **Shoreland Protection Act** - Designates a protective buffer along all surface waters in town. The local ordinance is stricter than the State's Shoreland Protection Act in that it requires a 100 foot primary structure setback.
- **Wetlands Protection** - The Town has adopted a Wetlands Ordinance that requires a 25 foot setback for all structures.
- **Town-Sponsored Safety Awareness Program** - Town provides safety and liability training for all town personnel.
- **Ambulance Service** - Ambulance service is provided to the neighboring towns of Bennington and Stoddard.
- **Other Mutual Aid** - Antrim has an agreement with its neighboring towns to share equipment and services other than Police, Fire, and Highway Department.

Existing Protection Matrix

The Antrim Hazard Mitigation Committee has developed the summary matrix of existing hazard mitigation strategies presented on the following pages. This matrix, a summary of the preceding information, includes the hazard type (Column 1), the existing strategy (Column 2), a description of the existing protection or area covered (Column 3), the responsible local agent (Column 4), the effectiveness and or enforcement of the strategy (Column 5), the identified improvements or comments (Column 6). Items that need improvements as noted in Column 6 will be considered for mitigation priorities in the next chapter.

Existing Protection Matrix

Hazard Type	Existing Protection	Description/Area Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Comments/Recommended Changes
Flood & Erosion	Floodplain Development Ordinance	Reduce Building in the 100-year Floodplain	Building Inspector	Good	Maintain good practices/enforcement
All Hazards	School Evacuation Plan	Fire Evacuation and Intruder Evacuation Plan	Fire, Police, & School Departments	Good	Need to obtain a copy of Antrim Elementary/Great Brook Plan.
Wildfire	Fire Pond Management Plan for Antrim Fire Dept.	Location and Maintenance of Dry Hydrants & Ponds	Fire Chief	Good	Additional fire ponds & dry hydrants needed. Work with the Planning Board to encourage installation with new developments.
All Hazards	Town Warning System	Vehicle Mounted Bullhorns	Police Department	Poor	Need automated centralized warning system.
Flood	Local Road Design Standards	Design Specs/Dead End & Cul de Sacs/Town Trench Permit	Hwy Dept., Code Enforcement Officer, & Planning Board	Good	Reviewed annually.
Flood	Local Bridge Maintenance Program	Town does the work	Hwy Dept. & NH DOT	Good	State inspects all bridges annually
Erosion	Erosion & Sedimentation Control Plans	State & local guidelines for roads and soil erosion	State, Planning Board, & Conservation Commission	Good	Continue public awareness / enforcement when needed
Erosion	Best Management Practices	Plan developed to reduce non-point source pollutants from entering waterways	State, HWY Dept., Planning Board, & Conservation Commission	Good	Highway Department uses BMPs on all projects
Severe Wind & Winter Weather	Emergency Power Back-up Program	25 KW generators: 1 in Central Fire Station, 1 in Police Department, 1 in Town Hall (EOC)	Fire Chief & Town Administrator	Good	Install permanent generator in School for Shelter Status and one at the Highway Dept.

Existing Protection Matrix

Hazard Type	Existing Protection	Description/Area Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Comments/Recommended Changes
Erosion & Flood	Wetlands Protection	Town Wide	Building Inspector, Planning Board	Good	Increase setback requirement to 50'.
All Hazards	Safety Awareness Program	All Town personnel /Whole Town	Town Administrator	Good	Program works good and should continue as training is needed.
All Hazards	Ambulance Service	Provides ambulance service/Towns of Antrim, Bennington, & Stoddard	Fire Department	Good	Ongoing
All Hazards	Codes and Ordinances	Enforces Building and Fire Codes and Zoning Ordinance/Whole Town	Code Enforcement Officer and Fire Department	Good	Increase public awareness of codes
Man-Made Disasters	Septic systems and wells	Inspects Failed Septic Systems, Wells, etc.	Building Inspector	Good	State established guidelines.
All Hazards	Emergency Operations Plan (2008)	Whole Town	Emergency Management Director	Good	Last update done in 2008.
Flood & Erosion	Shoreland Protection Program	Designates a protective buffer along the shoreline of all surface waters	Building Inspector, DES, & Conservation Commission	Good	Town has adopted zoning ordinances to coincide with the Shoreland Protection Act
Winter Weather	Winter Storms Operations Plan	Covered by Highway Department/town roads	Road Agent	Good	Updated List of available resources should be done.
Man-Made Disasters	Spill Prevention Control and Counter Measures Plan	Fire Dept./Highway Garage	Fire Chief & Highway Department	Average	Construction in accordance with BMP's.
Flood	National Flood Insurance Program	Flood Hazard Areas	EMD	Poor	Encourage participation in program.
All Hazards	Town Radio System	Townwide Frequency	Police, Fire, and Highway	Good	Fire and Police Departments have digital radios/ Highway Dept. has updated system.

Existing Protection Matrix

Hazard Type	Existing Protection	Description/Area Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Comments/Recommended Changes
Severe Wind & Winter Weather	Tree Maintenance Program	Utility Companies/ Localized areas	Highway Department	Good	No changes needed.
All Hazards	Town Capital Improvements Plan	Each Dept. has own reserve fund	Planning Board	Good	CIP is updated annually. Has been in effect since 2006.
All Hazards	Mutual Aid	Provides assistance to all aspects of Emergency Management Services/ Highway Department	Fire Chief, Police Chief, Emergency Management Director, Highway Dept. and Selectmen	Good	Join Highway Mutual Aid.
Erosion & Flooding	Town Master Plan (2010)	Town Wide	Planning Board	Good	Currently updating. Should consider adding this plan to the Master Plan.

STATUS OF PREVIOUS PRIORITY MITIGATION ACTIONS

The following table provides a status update for the Priority Mitigation Actions identified in the original *Plan*. Previously identified mitigation actions are noted as completed, deleted, or deferred to the updated *Plan*'s new mitigation strategies list.

MITIGATION ACTION	STATUS	EXPLANATION OF STATUS
Highway Department Needs New Radio Equipment	Completed	Radios have been upgraded.
Better communication system between Police, Fire, Highway, and Emergency personnel	Completed	Interoperability has been upgraded.
Upsize culvert on West Street (west of NH 31)	Completed	The culvert has been upsized to a bridge.
Consider Alternative to Emergency Shelters	Completed*	Alternatives have been considered. Continue as a new mitigation action.
Additional Generators Needed	Completed*	Some added but additional generators are still needed. Continue action.
Acquire Citizen Two-Way Radios for Emergency Volunteers	Deleted	Not a mitigation action.
Public Outreach & Education Needed for Floodplain Development Ordinance	Completed*	The Planning Board does this with new applications. Continue efforts.
NFIP Education and Outreach for Public	Completed*	This is done through property sales. Continue to provide outreach material.
Continue Progress of Local Bridge Maintenance Program	Completed*	Progress continues. This is an ongoing action.
Update CIP Annually	Completed*	This is an ongoing action.
Update Hazardous Materials Plan	Completed*	Actions have been taken to update the plan. Continue efforts.
Educate Public on Codes (building, zoning, etc.)	Completed*	This is an ongoing action. Continue.
Increase Volunteer/ Contractor support for Winter Storm Operations (plowing)	Completed	Contractors are in place to assist.
Update List of Available Resources	Completed*	Completed and ongoing. Continue.
Update List of Residences with Special Needs	Deferred*	This needs to be updated. Continue.

Conduct Public Class on Generator Use & Chainsaw Use	Deleted	It was determined that this is not needed.
Outreach & Education on Emergency Preparedness	Deferred*	Need to add website link to FEMA and NHHSEM information.
Prepare Action Plan to Establish Campbell Pond as an Emergency Water Supply	Deleted	This is not a feasible water supply.
Additional Fire Ponds & Dry Hydrants	Deferred*	Continue this action.
Town Warning System Needs Improvement	Deferred*	This is currently being discussed. Continue efforts.
Assess the Need to Establish a Full-Time Ambulance Service	Deleted	Not a mitigation action.
Update Local Road Design Standards	Deferred*	This is ongoing. Standards should be updated as technology changes.
Need Centralized Dispatch Center for Mutual Aid	Deleted	Not a mitigation action.

*These actions will be added to the new Action Plan.

CHAPTER VIII

POTENTIAL AND PROPOSED MITIGATION STRATEGIES

The following programs and activities are aimed at mitigating the effects of the identified potential hazards. As more information becomes available for other hazards that may have the potential to impact the town of Antrim, additional strategies will be added to the Hazard Mitigation Plan Update 2016. The identified strategies are not only meant to address reducing the effects of hazards on existing buildings and infrastructure, but also to address reducing the effects of hazards on new buildings and infrastructure.

As the population continues to grow, new development has been outside of the flood prone areas which has helped to protect the residents from any increase in vulnerability of flood hazards. As the intensity of storms continues to increase though, it is important to review the existing programs and strategies, and improve upon areas that are needed.

New Programs or Activities: Identifying Gaps in Coverage

In addition to the programs and activities that Antrim is currently undertaking to protect its residents and property from natural and manmade disasters, a range of additional mitigation strategies were identified by the Hazard Mitigation Committee for consideration. The process of compiling a comprehensive list of all mitigation strategies currently in place throughout the town helped the committee to identify gaps in the existing coverage and improvements which could be made to the existing strategies.

Potential mitigation strategies were identified and considered for each general hazard type.

Flooding

- Provide information to residents about the National Flood Insurance Program and how to get flood insurance.
- Continue storm drain maintenance.
- Perform a culvert inventory and upsize culverts where needed.
- Use best management practices including E&S plan, river stewardship, tree inventory, & stream maintenance.
- Inspect dams and notify DES of possible problem dams.
- Continue to enforce both the adopted FEMA Digital Flood Insurance Rate Maps/FIS and floodplain ordinance to ensure the NFIP requirements are maintained and implemented.
- Update Local Emergency Operations Plan.
- Develop a Town Warning System such as E911 or Code Red.
- Host a public meeting with FEMA or NHHSEM to promote the importance of NFIP policies, and homeowner hazard mitigation, preparedness, and response.
- Continue to check dams and problem culverts prior to heavy rain event for debris.

Drought/Extreme Heat

- Develop a Town Warning System such as E911 or Code Red.
- Increase number of mobile generators.
- Provide outreach & education on ways to mitigate the effects of drought and extreme heat conditions.
- Host a workshop on water conservation methods such as rain gardens and homeowners stormwater management.

Wildfire

- Increase number of mobile generators.
- School Evacuation Plan development and practice.
- Update Local Emergency Operations Plan.
- Develop a Town Warning System such as E911 or Code Red.
- Maintain access to Fire Ponds and Dry Hydrants.

- Determine potential sites for additional dry hydrants, cisterns, and fire ponds. Install where possible.

Lightning Strikes

- Install grounding devices on public and historic buildings.
- Increase number of mobile generators.
- Provide outreach & education on safety & prevention of lightning strikes.

Tornadoes/Downbursts/Severe Wind

- Develop a Town Warning System such as E911 or Code Red.
- Increase number of mobile generators.
- School Evacuation Plan development and practice.
- Update Local Emergency Operations Plan.

Hurricanes/ Tropical Storms

- Increase number of mobile generators.
- Best management practices-E&S plan, river stewardship, tree inventory, & stream maintenance.
- School Evacuation Plan development and practice.
- Update Local Emergency Operations Plan.
- Develop a Town Warning System such as E911 or Code Red.
- Consider requirement for new construction to withstand severe wind speeds.
- Provide outreach & education on ways to mitigate the effects of severe wind events and hurricanes.

Earthquake

- Increase number of mobile generators.
- School Evacuation Plan development and practice.
- Update Local Emergency Operations Plan.
- Develop a Town Warning System such as E911 or Code Red.
- Provide outreach & education on ways to mitigate the effects of earthquakes.
- Adopt stricter building codes to mitigate the effects of an earthquake.

Extreme Winter Weather

- Increase number of mobile generators.
- Best management practices-E&S plan, river stewardship, tree inventory, & stream maintenance.
- School Evacuation Plan development and practice.
- Update Local Emergency Operations Plan.
- Develop a Town Warning System such as E911 or Code Red.
- Tree maintenance- Cut branches away from powerlines.
- Disseminate information to residents about proper use of generators and the importance of maintaining the heating system.

Erosion/Landslide

- Increase vegetative buffers along waterbodies.
- Provide information to the public about clearcutting on steep slopes.

Man-made Hazards (Dams, Hazard materials spills, Technological hazards)

- Increase number of mobile generators.
- School Evacuation Plan development and practice.

- Update Local Emergency Operations Plan.
- Develop a Town Warning System such as E911 or Code Red.
- Host a workshop to promote well testing and ways to protect the aquifer. Provide other means of outreach & education.

All Hazards

- Add information on Town website about mitigation and preparedness for all hazards.
- Establish a Town Warning System.
- Update the Emergency Operations Plan.
- Determine projects that should be added to the Capital Improvement Plan.
- Incorporate this Hazard Mitigation Plan as a chapter or appendix of the Master Plan.

Location Specific Programs or Activities

In addition to the mitigation strategies proposed generally for each hazard type as indicated above, the Committee brainstormed actions for specific potential hazard areas identified in Section III. In these cases, the Committee felt that the risk to the location was so great, mitigation actions could be geared directly to mitigating hazards at that location.

Prioritizing Proposed Mitigation Actions

Each proposed mitigation strategy identified in the previous section was ranked in order to determine a prioritized list of strategies to implement. The method of ranking used for this Hazard Mitigation Plan was the STAPLEE method.

STAPLEE is an acronym for a general set of criteria common to public administration officials and planners. It stands for the Social, Technical, Administrative, Political, Legal, Economic and Environmental criteria for making planning decisions. Questions to ask about suggested actions include:

- **Social:** Is the proposed action socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- **Technical:** Will the proposed action work? Will it create more problems than it solves?
- **Administrative:** Can the community implement the action? Is there someone to coordinate and lead the effort?
- **Political:** Is the action politically acceptable? Is there public support both to implement and to maintain the project?
- **Legal:** Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity?
- **Economic:** What are the costs and benefits of this action? Does the cost seem reasonable for the size of the problem and the likely benefits?
- **Environmental:** How will the action impact the environment? Will the action need environmental regulatory approvals?

Preliminary Prioritization

The Antrim Hazard Mitigation Team assigned a score (Good=3, Average=2, Poor=1) to each strategy for its effectiveness related to the critical evaluation factors listed above. The values were totaled and the mitigation priorities were listed according to the scores.

Proposed Mitigation Actions

Mitigation Strategy	Is it Socially acceptable?	Is it Technically feasible and potentially	Is it Administratively workable?	Is it Politically acceptable?	Is there Legal authority to implement?	Is it Economically beneficial?	Is it Environ-mentally beneficial?	Total Score
Become a member of Highway Mutual Aid.	3	3	3	3	3	3	3	21
Update town website: include information about hazard mitigation & emergency preparedness. Include links to NH HSEM and FEMA.	3	3	3	3	3	3	3	21
Install additional dry hydrants and fire ponds.	3	3	3	3	3	3	3	21
Add mitigation actions to CIP when appropriate.	3	3	3	3	3	3	3	21
Provide outreach on NFIP to encourage additional policies.	3	3	3	3	3	3	3	21
Change the location of the EOC to the Police Station.	3	3	3	3	3	3	3	21
Consider adding the Hazard Mitigation Plan as a chapter or appendix to the Master Plan.	3	3	3	3	3	3	3	21
Continue progress of Local Bridge Maintenance Program.	3	3	3	3	3	3	3	21
Update Local Road Design Standards.	3	3	3	3	3	3	3	21
Continue public awareness & enforcement of erosion & sediment guidelines/BMPs, and codes.	3	3	3	3	3	3	3	21
Update the Emergency Operations Plan.	3	3	3	3	3	3	3	21
Obtain a copy of Antrim Elementary/ Great Brook School Evacuation Plan.	3	3	3	3	3	3	3	21
Test response times for flood inundation at Highland Lake.	3	3	3	3	3	3	3	21
Create an automated & centralized warning system.	3	3	3	3	3	3	3	21
Install generator at the school (for a shelter), the Highway Department, and N. Branch Fire Dept.	3	3	3	3	3	3	3	21
Find alternatives for emergency shelters.	3	3	3	3	3	3	3	21
Update list of available resources.	3	3	3	3	3	3	3	21
Update the Hazardous Materials Plan.	3	3	3	3	3	3	3	21
Upsize culvert on West Street near Hilton Avenue.	3	3	3	2.5	3	3	3	20.5
Educate the public on codes (building, zoning, etc)	3	3	3	2.5	3	3	3	20.5
Update list of residents with special needs.	2	3	3	2	3	3	3	19

CHAPTER IX

PRIORITIZED IMPLEMENTATION SCHEDULE AND ACTION PLAN

The result of the STAPLEE exercise has been analyzed and prioritized according to the scores represented in the chart. The Antrim Hazard Mitigation Committee created a prioritized schedule for implementation by asking the following questions:

Who? Who will lead the implementation efforts? Who will put together funding requests and applications?

When? When will these actions be implemented, and in what order?

How? How will the community fund these projects? How will the community implement these projects? What resources will be needed to implement these projects?

As additional information becomes available regarding project leadership, timeline, funding sources, and cost estimates, the Plan will be reviewed and amended accordingly.

The Committee created a prioritized schedule for implementation of the plan. The following terms are used to provide a general timeframe to complete the actions: Short term: 1-2 years; Mid-term: 3-4 years; Long term: 4-5 years. Some actions do not have a completion date and are considered to be ongoing actions that will continue through the duration of the plan.

Antrim Hazard Mitigation Action Plan

Mitigation Action	Who (Leadership)	When (Deadline)	How (Cost/Funding Source)
Become a member of Highway Mutual Aid.	Road Agent	Short-term	Town budget \$25
Update website to include information about hazard mitigation and preparedness. Include links to NH HSEM and FEMA.	Town Administrator	Short-term	Town budget Under \$500
Install additional dry hydrants and fire ponds.	Fire Chief	Mid-term	Town budget \$5,000-\$50,000
Add mitigation actions to CIP when appropriate.	Department Heads	Ongoing	Town budget Under \$500
Provide outreach on NFIP to encourage additional policies.	EMD /Town Administrator	Ongoing	Town budget/grants under \$200
Change the location of the EOC to the Police Station.	EMD/ Fire Chief/Police Chief	Short-term	Town budget/ EMPG grant \$5000-\$10,000
Consider adding the Hazard Mitigation Plan as a chapter or appendix to the Master Plan.	Planning Board	Short-term	Town budget under \$100
Continue progress of Local Bridge Maintenance Program.	Road Agent/ Board of Selectmen	Ongoing	Town budget \$100,000- \$1,000,000
Update Local Road Design Standards.	Road Agent	Mid-term	Town budget under \$500

Mitigation Action	Who (Leadership)	When (Deadline)	How (Cost/Funding Source)
Continue public awareness & enforcement of erosion & sediment guidelines/BMPs, and codes.	Town Administrator	Ongoing	Town budget under \$500
Update the Emergency Operations Plan.	Emergency Management Director	Short-term	FEMA grant \$5000
Obtain a copy of Antrim Elementary/ Great Brook School Evacuation Plan.	Fire Chief	Short-term	Town budget under \$500
Test response times for flood inundation at Highland Lake.	Fire Chief	Short-term	Mutual Aid under \$100
Create an automated & centralized warning system.	Police Chief/Fire Chief	Mid-term	Town budget \$2,000-\$20,000
Install generator at the school (for a shelter), the Highway Department, and N. Branch Fire Dept.	Emergency Management Director	Mid-term	Town budget/grants \$10,000-\$100,000
Find alternatives for emergency shelters.	Emergency Management Director	Mid-term	Town budget Under \$1000
Update list of available resources.	Road Agent	Ongoing	Town budget Under \$500
Update the Hazardous Materials Plan.	Emergency Management Director	Long-term	Town budget Under \$5000
Upsize culvert on West Street near Hilton Avenue.	Road Agent	Mid-long term	Town budget/grants \$100,000-\$200,000
Educate the public on codes (building, zoning, etc).	Building Inspector	Ongoing	Town budget \$5000
Update list of residents with special needs.	Emergency Management Director	Mid-term	Town budget Under \$500

SECTION X

ADOPTION, IMPLEMENTATION, MONITORING & UPDATE

ADOPTION

The Antrim Board of Selectmen adopted the Antrim Hazard Mitigation Plan on (add adoption date). A copy of the resolution can be found at the end of this chapter. Adopted policy addresses the actions for implementation set forth in the prioritized implementation schedule (action plan) in the previous chapter and in the “Monitoring & Updates” subsection contain in this Chapter. All other sections of this Plan are supporting documentation for information purposes only and are not included as the statement of policy.

A copy of the public hearing notice for the Board of Selectmen meeting at which the plan was adopted is included in **Appendix E**. The plan was available to the public via a hard copy at the town offices and on the Town website prior to the Selectmen meeting. Any comments were considered and addressed prior to adoption of the plan.

IMPLEMENTATION

The top priority mitigation strategies that were identified by the committee will be implemented through the Board of Selectmen with assistance from the Emergency Management Coordinator, to ensure that the appropriate person or group (that was identified in the plan in Section IX) succeeds in the implementation of the activity. These activities will be reviewed to ensure that they correspond to the existing programs and land use regulations. This will ensure that the actions taken are done in the best interest of the town and in conformance with the Master Plan and land use regulations of the town.

MONITORING & UPDATES

Recognizing that many mitigation projects are ongoing, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail altogether, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the plan where necessary.

In order to track progress and update the Mitigation Strategies identified in the Action Plan (Section IX), it is recommended that the Town revisit the Antrim Hazard Mitigation Plan Update 2016 annually, or after a hazard event. The Emergency Management Director is responsible for initiating this review and needs to consult with the Board of Selectmen and other key local officials. Changes should be made to the plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with the timeframe, the community’s priorities, and funding resources. Priorities that did not make the implementation list, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this plan to determine feasibility of future implementation. In keeping with the process of adopting the Antrim Hazard Mitigation Plan Update 2016, a public hearing to receive public comment on plan maintenance and updating should be held during the annual review period and the final product adopted by the Board of Selectmen appropriately.

The local jurisdiction is required by 44 CFR §201.6(d)(3) to review and revise its plan, and resubmit it for approval within **5 years** in order to continue to be eligible for mitigation project grant funding. This update was prepared with assistance from Planners at Southwest Region Planning Commission trained in Hazard Mitigation Planning. Data and maps used to prepare this plan are available at their office and should be used in preparing future updates.

IMPLEMENTATION OF THE PLAN THROUGH EXISTING PROGRAMS

In addition to work by the Hazard Mitigation Committee and town departments, several other mechanisms exist which will ensure that the Antrim Hazard Mitigation Plan receives the attention it requires for satisfactory use.

Capital Improvements Program

The Capital Improvements Program (CIP) is reviewed and updated annually by the CIP Committee. Each town department refers to the CIP when developing its annual budget. Strategies or purchases requiring capital improvements from the Antrim Hazard Mitigation Plan Update 2016 will be inserted into the Capital Improvements Program. A Capital Reserve Fund for Hazard Mitigation Program Projects will be established to set aside funding for the projects identified in the Antrim Hazard Mitigation Plan Update 2016. The Local Hazard Mitigation Committee will oversee the process to begin working with the CIP Committee to incorporate the various projects into the yearly CIP. Projects that have a substantial cost, such as bridges, culverts and road work will be included in the CIP. One project from the Antrim Hazard Mitigation Plan Update 2010 was included in the CIP and has now been completed: the culvert on West Street (east of Rte. 202) was upsized to a bridge in 2014.

Master Plan

Implementation of the Master Plan has been ongoing since its most recent adoption in 2010. It is an intention of this plan that the Planning Board considers incorporation into its Master Plan. The Local Hazard Mitigation Committee will oversee the process to begin working with the Planning Board to encourage that the Antrim Hazard Mitigation Plan Update 2016 is adopted as a chapter or appendix in the Master Plan.

Zoning Ordinance and Regulations

Some of the implementation strategies proposed involve revisions to the Subdivision Regulations and/or the Site Plan Review Regulations as well as the Zoning Ordinance. The Local Hazard Mitigation Committee will oversee the process to begin working with the Planning Board to develop appropriate language for the recommended modifications.

Continued Public Involvement

On behalf of the Hazard Mitigation Committee, the Emergency Management Director (EMD), under direction of the Board of Selectmen, will be responsible for ensuring that town departments and the public have adequate opportunity to participate in the planning process. Administrative staff may be utilized to assist with the public involvement process. For the yearly update process, potential techniques for public involvement include:

- Provide personal invitations to CIP Committee members;
- Provide personal invitations to town department heads;
- Post notices of meetings at the Town Office, Library, and Town website;
- Post flyers of the project at the Town Office, Library, and local businesses; and
- Submit newspaper articles for publication to local newspapers.

A number of Implementation Action items which will be undertaken relate to public education and involvement. Additionally, the public will be invited to participate in the yearly process of updating the Antrim Hazard Mitigation Plan. These outreach activities will be undertaken during the Plan's annual review and during any Hazard Mitigation Committee meetings the Board of Selectmen calls to order. For all meetings regarding the Hazard Mitigation Plan, the public will be noticed per New Hampshire's Right-to-Know Law, RSA 91-A, and the meetings will be open to the public.

The Town of Antrim, NH Hazard Mitigation Plan must be reviewed, revised as appropriate, and resubmitted to FEMA for approval every **five years** in order to maintain eligibility for all Hazard Mitigation Assistance (HMA) funding. Approval of this plan was granted by FEMA on **(add approval date)**.

CERTIFICATE OF ADOPTION

ANTRIM, NEW HAMPSHIRE

BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE

ANTRIM HAZARD MITIGATION PLAN UPDATE 2016

WHEREAS, the Town of Antrim has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2016 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between October 20, 2015 and January 19, 2016 regarding the development and review of the Antrim Hazard Mitigation Plan Update 2016; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedure for the Town of Antrim; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Antrim, with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Town of Antrim eligible for funding to alleviate the impacts of future hazards; now therefore be it **RESOLVED** by the Board of Selectmen:

1. The Plan is hereby adopted as an official plan of the Town of Antrim;
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Antrim this ---th day of _____, **2016**

Antrim Board of Selectmen Chairman

Board of Selectmen

Board of Selectmen

ATTEST _____

DRAFT

APPENDICES

Appendix A: Hazard Descriptions

The following list describes hazards that have occurred or have the potential to occur in the Town of Antrim. The descriptions provided are those used in the State of NH Hazard Mitigation Plan.

Flooding

Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges. Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of the year. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to go.

100-year Floodplain Events

- Floodplains are usually located in lowlands near rivers, and flood on a regular basis. The term 100- year flood does not mean that a flood will occur once every 100 years. Rather, it is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase “1% annual chance of flood.” What this means is that there is a 1% chance of a flood of that size happening in a year.

Rapid Snow Pack Melt

- Warm temperatures and heavy rains cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

River Ice Jams

- Rising waters in early spring breaks ice into chunks, which float downstream and often pile up, causing flooding. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice collecting in river bends and against structures presents significant flooding threats to bridges, roads, and the surrounding lands.

Severe Storms

- Flooding associated with severe storms can inflict heavy damage to property. Heavy rains during severe storms are a common cause of inland flooding.

Beaver Dams and Lodging

- Flooding associated with beaver dams and lodging can cause road flooding or flooding damage to property.

Drought

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are rare in New Hampshire. They generally are not as damaging and disruptive as floods and are more difficult to define. The effect of droughts is indicated through measurements of soil moisture, groundwater levels, and stream-flow. However, not all of these indicators will be minimal during a drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground-water levels or increasing stream-flow. Low stream-flow correlates with low ground-water levels because ground-water discharge to streams and rivers maintains stream flow during extended dry periods. Low stream-flow and low ground-water levels commonly cause diminished water supply.

Extreme Heat

Extreme heat is characterized by abnormally high temperatures and/or longer than average time periods of high temperatures. These event conditions may impact the health of both humans and livestock.

Wildfire

Wildfire is defined as an uncontrolled and rapidly spreading fire. A forest fire is an uncontrolled fire in a

Woody area. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. Grass fires are uncontrolled fires in grassy areas.

Earthquake

New England is considered a moderate risk earthquake zone. An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric, water and phone lines, and often cause landslides, flash floods, fires, and avalanches. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale and Mercalli scale.

Tornado

A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great thermal instability, high humidity, and the convergence of warm, moist air at low levels with cooler, drier air aloft. Most tornadoes remain suspended in the atmosphere, but if they touch down they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of 280 mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be in excess of one mile wide and 50 miles long. Violent winds and debris slamming into buildings cause the most structural damage.

The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. A tornado is usually accompanied by thunder, lightning, heavy rain, and a loud "freight train" noise. In comparison to a hurricane, a tornado covers a much smaller area but can be more violent and destructive.

Hurricane

A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. The eye of the storm is usually 20-30 miles wide and may extend over 400 miles. High winds and flooding are primary causes of hurricane-inflicted loss of life and property damage.

Severe Wind

Significantly high winds occur especially during tornadoes, hurricanes, winter storms and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during severe wind occurrences.

A downburst is a severe, localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Downbursts fall into two categories:

- Microburst, which covers an area less than 2.5 miles in diameter, and
- Macrobust, which covers an area at least 2.5 miles in diameter.

Lightning

Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the sun. Fires are a likely result of lightning strikes, and lightning strikes can cause death, injury, and property damage.

Extreme Winter Weather

Ice and snow events typically occur during the winter months and can cause loss of life, property damage and tree damage.

Heavy Snow Storms

- A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding, wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

Ice Storms

- An ice storm involves rain, which freezes on impact. Ice coating at least one-fourth inch of thickness is heavy enough to damage trees, overhead wires and similar objects. Ice storms often produce widespread power outages.

Nor'easter

- A Nor'easter is a large weather system traveling from South to North passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas from a Northeasterly direction. The sustained winds may meet or exceed hurricane force, with larger bursts, and may exceed hurricane events by many hours (or days) in terms of duration.

Man-Made Hazards

Hazardous Materials

- Hazardous materials spills or releases can cause damage or loss to life and property. Short or long-term evacuation of local residents and businesses may be required, depending on the nature and extent of the incident.

Dam Breach and Failure

- Dam failure results in rapid loss of water that is normally held by the dam. These kinds of floods are extremely dangerous and pose a significant threat to both life and property.

Appendix B: Risk Assessment

The following terms are used to analyze the hazards considered. High, Medium and Low are synonymous with 3, 2 and 1, respectively.

VULNERABILITY- An adjective description (High, Medium, or Low) of the potential impact a hazard could have on the town relating to human, business and property impacts. It is the ratio of population, property, commerce, infrastructure and services at risk relative to the entire town. Vulnerability is an estimate generally based on a hazard's characteristics, information obtained by the various town departments.

HIGH: The total population, property, commerce, infrastructure and services of the town are uniformly exposed to the effects of a hazard of potentially great magnitude. In a worse case scenario there could be a disaster of major to catastrophic proportions.

MEDIUM: (1) The total population, property, commerce, infrastructure and services of the town are exposed to the effects of a hazard of moderate influence; or (2) the total population, property, commerce, infrastructure and services of the town are exposed to the effects of a hazard, but not all to the same degree; or (3) an important segment of population, property, commerce, infrastructure or service is exposed to the effects of a hazard. In a worse case scenario there could be a disaster of moderate to major, though not catastrophic, proportions.

LOW: A limited area or segment of population, property, commerce, infrastructure or service is exposed to the effects of a hazard. In a worse case scenario there could be a disaster of minor to moderate proportions.

PROBABILITY OF OCCURRENCE - An adjective description (High, Medium, or Low) of the probability of a hazard impacting the town within the next 25 years. Probability is based on a limited objective appraisal of a hazard's frequency using information provided by relevant sources, observations and trends.

HIGH: There is great likelihood that a hazardous event will occur within the next 25 years (1-2 events each year).

MEDIUM: There is moderate likelihood that a hazardous event will occur within the next 25 years (1-2 events each 5-10 years).

LOW: There is little likelihood that a hazardous event will occur within the next 25 years (1 event in 25 years).

SEVERITY - Calculated by taking the average of the vulnerability for human, business and property impacts of each hazard type.

RISK - An adjective description (High, Medium, or Low) of the overall threat posed by a hazard over the next 25 years. It is calculated by multiplying the probability of occurrence and vulnerability.

HIGH: (1) There is strong potential for a disaster of major proportions during the next 25 years; or (2) history suggests the occurrence of multiple disasters of moderate proportions during the next 25 years. The threat is significant enough to warrant major program effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be a major focus of the town's emergency management training and exercise program.

MEDIUM: There is moderate potential for a disaster of less than major proportions during the next 25 years. The threat is great enough to warrant modest effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be included in the town's emergency management training and exercise program.

LOW: There is little potential for a disaster during the next 25 years. The threat is such as to warrant no special effort to prepare for, respond to, recover from, or mitigate against this hazard. This hazard need not be specifically addressed in the town's emergency management training and exercise program except as generally dealt with during hazard awareness training.

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Appendix C: Resources

Resources Used in the Preparation of this Plan

NH HSEM's *State of New Hampshire Natural Hazards Mitigation Plan* (2013)
 FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses*
 FEMA's *Local Multi-Hazard Mitigation Planning Guidance*
 Antrim Town Report 2014
 Antrim Master Plan 2010

Agencies

New Hampshire Homeland Security and Emergency Management (HSEM)	271-2231
Field Representative Hillsborough County	271-2231
Field Representative Cheshire County	271-2231
Preparedness Planner:	271-2231
Federal Emergency Management Agency (FEMA)	877-336-2734
NH Regional Planning Commissions:	
Central NH Regional Planning Commission	226-6020
Lakes Region Planning Commission	279-8171
Nashua Regional Planning Commission	424-2240
North Country Council	444-6303
Rockingham Planning Commission	778-0885
Southern New Hampshire Planning Commission	669-4664
Southwest Region Planning Commission	357-0557
Strafford Regional Planning Commission	994-3500
Upper Valley Lake Sunapee Regional Planning Commission	448-1680
NH Executive Department:	
Governor's Office of Energy and Community Services	271-2611
NH Department of Cultural Resources:	271-2540
Division of Historical Resources	271-3483
NH Department of Environmental Services:	271-3503
Air Resources	271-1370
Air Toxins Control Program	271-0901
Asbestos Program	271-1373
Childhood Lead Poisoning Prevention Program	271-5733
Environmental Health Tracking Program	271-4072
Environmental Toxicology Program	271-3994
Health Risk Assessment Program	271-6909
Indoor Air Quality Program	271-3911
Occupational Health and Safety Program	271-2024
Radon Program	271-4764
Geology Unit	271-3503
Pollution Preventive Program	271-6460
Waste Management	271-2900
Water Supply and Pollution Control	271-3414
Rivers Management and Protection Program	271-8801
NH Office of Energy & Planning (OEP)	271-2155
Jennifer Gilbert, State Coordinator, Floodplain Management	271-1762
NH Municipal Association	224-7447
NH Fish and Game Department	271-3421
Region 1, Lancaster	788-3164
Region 2, New Hampton	744-5470
Region 3, Durham	868-1095
Region 4, Keene	352-9669
NH Department of Resources and Economic Development:	271-2411

Economic Development	271-2629
Travel and Tourism	271-6870
Division of Forests and Lands	271-2214
Division of Parks and Recreation	271-3556
Design, Development, and Maintenance	271-2411
NH Department of Transportation	271-3734
Northeast States Emergency Consortium, Inc. (NESEC)	(781) 224-9876
US Department of Commerce:	(202) 482-2000
NOAA: National Weather Service; Taunton, Massachusetts	(508) 824-5116
US Department of the Interior:	202-208-3100
US Fish and Wildlife Service	225-1411
US Geological Survey	225-4681
US Army Corps of Engineers	(978) 318-8087
US Department of Agriculture:	
Natural Resource Conservation Service	868-7581
Cheshire County, Walpole	756-2988
Sullivan County, Newport	863-4297
Hillsborough County, Milford	673-2409 Ext. #4

Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP)	NH Homeland Security and Emergency Management
406 Public Assistance and Hazard Mitigation	NH Homeland Security and Emergency Management
Community Development Block Grant (CDBG)	NH HSEM, NH OEP, also refer to RPC
Dam Safety Program	NH Department of Environmental Services
Emergency Generators Program by NESEC*	NH Homeland Security and Emergency Management
Emergency Watershed Protection (EWP) Program	USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP)	NH HSEM, NH OEP
Flood Plain Management Services (FPMS)	US Army Corps of Engineers
Mitigation Assistance Planning (MAP)	NH Homeland Security and Emergency Management
Mutual Aid for Public Works	NH Municipal Association
National Flood Insurance Program (NFIP) †	NH OEP, NH HSEM
Power of Prevention Grant by NESEC‡	NH Homeland Security and Emergency Management
Project Impact	NH Homeland Security and Emergency Management
Roadway Repair & Maintenance Program(s)	NH Department of Transportation
Section 14 Emergency Stream Bank Erosion & Shoreline Protection	US Army Corps of Engineers
Section 103 Beach Erosion	US Army Corps of Engineers
Section 205 Flood Damage Reduction	US Army Corps of Engineers
Section 208 Snagging and Clearing	US Army Corps of Engineers
Shoreline Protection Program	NH Department of Environmental Services
Various Forest and Lands Program(s)	NH Department of Resources and Economic Development
Wetlands Programs	NH Department of Environmental Services

*NESEC - Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NH HSEM for more information or visit the Consortium's website at <http://www.nesec.org/index.cfm>.

† Note regarding **National Flood Insurance Program (NFIP)** and **Community Rating System (CRS)**:

The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. The NH Office of Energy & Planning can provide additional information regarding participation in the NFIP-CRS Program.

FEMA REGION I MITIGATION PLANNING WEBLIOGRAPHY

Hazard Mitigation is sustained action taken to reduce or eliminate risk to people and their property from natural hazards over the longest possible term.

REGULATORY INFORMATION

Final Rule

44 CFR 201.6

<http://www.fema.gov/pdf/help/fr02-4321.pdf>

Disaster Mitigation Act of 2000 (DMA 2K)

<http://www.fema.gov/library/viewRecord.do?id=1935>

DISASTERS AND NATURAL HAZARDS INFORMATION

FEMA-How to deal with specific hazards

<http://www.ready.gov/natural-disasters>

Natural Hazards Center at the University of Colorado

<http://www.colorado.edu/hazards>

National Oceanic and Atmospheric Administration (NOAA): Information on various projects and research on climate and weather.

<http://www.websites.noaa.gov>

National Climatic Data Center active archive of weather data.

<http://lwf.ncdc.noaa.gov/oa/ncdc.html>

Northeast Snowfall Impact Scale

<http://www.erh.noaa.gov/rnk/Newsletter/Fall%202007/NESIS.htm>

Weekend Snowstorm Strikes The Northeast Corridor Classified As A Category 3 "Major" Storm

<http://www.publicaffairs.noaa.gov/releases2006/feb06/noaa06-023.html>

FLOOD RELATED HAZARDS

FEMA Coastal Flood Hazard Analysis & Mapping

<http://www.fema.gov/national-flood-insurance-program-0/fema-coastal-flood-hazard-analyses-and-mapping-1>

Floodsmart

<http://www.floodsmart.gov/floodsmart/>

National Flood Insurance Program (NFIP)

<http://www.fema.gov/nfip>

Digital quality Level 3 Flood Maps

<http://msc.fema.gov/MS/statemap.htm>

Flood Map Modernization

<http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization>

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Reducing Damage from Localized Flooding: A Guide for Communities, 2005 FEMA 511

<http://www.fema.gov/library/viewRecord.do?id=1448>

FIRE RELATED HAZARDS

Firewise

<http://www.firewise.org>

NOAA Fire Event Satellite Photos

<http://www.osei.noaa.gov/Events/Fires>

U.S. Forest Service, USDA

<http://www.fs.fed.us/land/wfas/welcome.htm>

Wildfire Hazards - A National Threat

<http://pubs.usgs.gov/fs/2006/3015/2006-3015.pdf>

GEOLOGIC RELATED HAZARDS

USGS Topographic Maps

<http://topomaps.usgs.gov/>

Building Seismic Safety Council

<http://www.nibs.org/?page=bssc>

Earthquake hazard history by state

<http://earthquake.usgs.gov/earthquakes/states/>

USGS data on earthquakes

<http://earthquake.usgs.gov/monitoring/deformation/data/download/>

USGS Earthquake homepage

<http://quake.wr.usgs.gov>

National Cooperative Geologic Mapping Program (NCGMP)

<http://ncgmp.usgs.gov/>

Landslide Overview Map of the Conterminous United States

<http://landslides.usgs.gov/learning/nationalmap/>

Kafka, Alan L. 2008. Why Does the Earth Quake in New England? Boston College, Weston

Observatory, Department of Geology and Geophysics

http://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html

Map and Geographic Information Center, 2010, "Connecticut GIS Data", University of Connecticut

http://magic.lib.uconn.edu/connecticut_data.html

2012 Maine earthquake

http://www.huffingtonpost.com/2012/10/17/maine-earthquake-2012-new-england_n_1972555.html

WIND-RELATED HAZARDS

ATC Wind Speed Web Site

<http://www.atcouncil.org/windspeed/index.php>

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U.S. Wind Zone Maps

<http://www.fema.gov/safe-rooms/wind-zones-united-states>

Tornado Project Online

<http://www.tornadoproject.com/>

National Hurricane Center

<http://www.nhc.noaa.gov>

Community Hurricane Preparedness Tutorial

<http://meted.ucar.edu/hurrican/chp/hp.htm>

National Severe Storms Laboratory, 2009, "Tornado Basics",

http://www.nssl.noaa.gov/primer/tornado/tor_basics.html

DETERMINING RISK AND VULNERABILITY

HAZUS

<http://www.hazus.org>

FEMA Hazus Average Annualized Loss Viewer

<http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cb8228309e9d405ca6b4db6027df36d9&extent=-139.0898,7.6266,-48.2109,62.6754>

Vulnerability Assessment Tutorial: On-line tutorial for local risk and vulnerability assessment

<http://www.csc.noaa.gov/products/nchaz/htm/mitigate.htm>

Case Study: an example of a completed risk and vulnerability assessment

<http://www.csc.noaa.gov/products/nchaz/htm/case.htm>

GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND MAPPING

The National Spatial Data Infrastructure & Clearinghouse (NSDI) and Federal Geographic Data Committee (FGDC) Source for information on producing and sharing geographic data

<http://www.fgdc.gov>

The OpenGIS Consortium Industry source for developing standards and specifications for GIS data

<http://www.opengis.org>

Northeast States Emergency Consortium (NESEC): Provides information on various hazards, funding resources, and other information

<http://www.nesec.org>

US Dept of the Interior Geospatial Emergency Management System (IGEMS) provides the public with both an overview and more specific information on current natural hazard events. It is supported by the Department of the Interior Office of Emergency Management.

<http://igems.doi.gov/>

FEMA GeoPlatform: Geospatial data and analytics in support of emergency management

<http://fema.maps.arcgis.com/home/index.html>

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DATA GATHERING

National Information Sharing Consortium (NISC): brings together data owners, custodians, and users in the fields of homeland security, public safety, and emergency management and response. Members leverage efforts related to the governance, development, and sharing of situational awareness and incident management resources, tools, and best practices

<http://nisconsortium.org/>

The Hydrologic Engineering Center (HEC), an organization within the Institute for Water Resources, is the designated Center of Expertise for the US Army Corps of Engineers

<http://www.hec.usace.army.mil/>

National Water & Climate Center

<http://www.wcc.nrcs.usda.gov/>

WinTR-55 Watershed Hydrology

<http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&cid=stelprdb1042901>

USACE Hydrologic Engineering Center (HEC)

<http://www.hec.usace.army.mil/software/>

Stormwater Manager's Resource Center SMRC

<http://www.stormwatercenter.net>

USGS Current Water Data for the Nation

<http://waterdata.usgs.gov/nwis/rt>

USGS Water Data for the Nation

<http://waterdata.usgs.gov/nwis/>

Topography Maps and Aerial photos

<http://www.terraserver.com/view.asp?tid=142>

National Register of Historic Places

<http://www.nps.gov/nr/about.htm>

National Wetlands Inventory

<http://www.fws.gov/wetlands/> ICLUS Data for Northeast Region

http://www.epa.gov/ncea/global/iclus/inclus_nca_northeast.htm

PLANNING

American Planning Association

<http://www.planning.org>

PlannersWeb - Provides city and regional planning resources

<http://www.plannersweb.com>

FEMA RESOURCES

Federal Emergency Management Agency (FEMA)

www.fema.gov

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National Mitigation Framework

<http://www.fema.gov/national-mitigation-framework>

Federal Insurance and Mitigation Administration (FIMA)

<http://www.fema.gov/fima>

Community Rating System (CRS)

<http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-rating-system>

FEMA Building Science

<http://www.fema.gov/building-science>

National Flood Insurance Program (NFIP)

<http://www.fema.gov/national-flood-insurance-program>

Floodplain Management & Community Assistance Program

<http://www.fema.gov/floodplain-management>

Increased Cost of Compliance (ICC): ICC coverage allows homeowners whose structures have been repeatedly or substantially damaged to cover the cost of elevation and design requirements for rebuilding with their flood insurance claim up to a maximum of \$30,000.

<http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage>

National Disaster Recovery Framework

<http://www.fema.gov/national-disaster-recovery-framework>

Computer Sciences Corporation: contracted by FIMA as the NFIP Statistical Agent, CSC provides information and assistance on flood insurance to lenders, insurance agents and communities

www.csc.com

Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan: A Guidebook for Local Governments

<https://www.fema.gov/ar/media-library/assets/documents/89725>

Mitigation Best Practices Portfolio

<http://www.fema.gov/mitigation-best-practices-portfolio>

FEMA Multi-Hazard Mitigation Planning Website <http://www.fema.gov/multi-hazard-mitigation-planning>

FEMA Resources Page <http://www.fema.gov/plan/mitplanning/resources.shtm>

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Local Mitigation Plan Review Guide <http://www.fema.gov/library/viewRecord.do?id=4859>

Local Mitigation Planning Handbook complements and liberally references the Local Mitigation Plan Review Guide above

<http://www.fema.gov/library/viewRecord.do?id=7209>

HAZUS

<http://www.fema.gov/protecting-our-communities/hazus>

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards

<http://www.fema.gov/library/viewRecord.do?id=6938>

Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials

<http://www.fema.gov/library/viewRecord.do?id=7130>

IS-318

Mitigation Planning for Local and Tribal Communities

Independent Study Course

<http://training.fema.gov/EMIWeb/IS/is318.asp>

REGION I MITIGATION PLANNING CONTACTS

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Senior Planner

Phone: (617) 956-7536

Email: marilyn.hilliard@fema.dhs.gov

Josiah (Jay) Neiderbach

FEMA Region I – Mitigation Division

Phone: 617-832-4926 desk / 202-285-7769 cell

Email: josiah.neiderbach@fema.dhs.gov

OTHER FEDERAL RESOURCES

U.S. Army Corps of Engineers: Provides funding for floodplain management planning and technical assistance and other water resources issues.

www.nae.usace.army.mil

Natural Resources Conservation Service: Technical assistance to individual land owners, groups of landowners, communities, and soil and water conservation districts.

www.nrcs.usda.gov

NOAA Coastal Services Center

<http://www.csc.noaa.gov/>

Rural Economic and Community Development: Technical assistance to rural areas and smaller communities in rural areas on financing public works projects.

www.rurdev.usda.gov

Farm Service Agency: Manages the Wetlands Reserve Program (useful in open space or acquisition projects by purchasing easements on wetlands properties) and farmland set aside programs

www.fsa.usda.gov

National Weather Service: Prepares and issues flood, severe weather and coastal storm warnings. Staff hydrologists can work with communities on flood warning issues; can give technical assistance in preparing flood-warning plans.

www.weather.gov

Economic Development Administration (EDA): Assists communities with technical assistance for economic development planning

www.osec.doc.gov/eda/default.htm

National Park Service: Technical assistance with open space preservation planning; can help facilitate meetings and identify non-structural options for floodplain redevelopment.

www.nps.gov

Fish and Wildlife Services: Can provide technical and financial assistance to restore wetlands and riparian habitats.

www.fws.gov

Department of Housing & Urban Development

www.hud.gov

Small Business Administration: SBA can provide additional low-interest funds (up to 20% above what an eligible applicant would qualify for) to install mitigation measures. They can also loan the cost of bringing a damaged property up to state or local code requirements.

www.sba.gov/disaster

Environmental Protection Agency

www.epa.gov

[SUSTAINABILITY/ADAPTATION/CLIMATE CHANGE](#)

Why the Emergency Management Community Should be Concerned about Climate Change: A discussion of the impact of climate change on selected natural hazards

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<http://www.cna.org/sites/default/files/research/WEB%2007%2029%2010.1%20Climate%20Change%20and%20the%20Emergency%20Management%20Community.pdf>

Resilient Sustainable Communities: Integrating Hazard Mitigation& Sustainability into Land Use

<http://www.earth.columbia.edu/sitefiles/file/education/documents/2013/Resilient-Sustainable-Communities-Report.pdf>

U.S. EPA

<http://www.epa.gov/climatechange/>

NOAA National Ocean Service (NOS)

<http://oceanservice.noaa.gov/>

The Northeast Climate Research Center (NRCC) folks were heavily involved in climate data in the NCA, below. They have a wealth of historic climate data and weather information, trends, etc.
<http://www.nrcc.cornell.edu/>

NOAA RISA for the Northeast (Regional Integrated Sciences and Assessments)

<http://ccrun.org/home>

Community and Regional Resilience: Perspectives from hazards, disasters, and emergency management

http://www.resilientus.org/library/FINAL_CUTTER_9-25-08_1223482309.pdf

National Fish, Wildlife and Plants Climate Adaptation Strategy www.wildlifeadaptationstrategy.gov

ICLEI Local Governments for Sustainability

<http://www.icleiusa.org/>

Kresge Foundation Survey

<http://www.kresge.org/news/survey-finds-communities-northeast-are-trying-plan-for-changes-climate-need-help-0>

New England's Sustainable Knowledge Corridor

<http://www.sustainableknowledgecorridor.org/site/>

The Strategic Foresight Initiative (SFI)

http://www.fema.gov/pdf/about/programs/oppa/findings_051111.pdf

Northeast Climate Choices

http://www.climatechoices.org/ne/resources_ne/nereport.html

Northeast Climate Impacts Assessment

<http://www.northeastclimateimpacts.org/>

Draft National Climate Assessment Northeast Chapter released early 2013

<http://ncadac.globalchange.gov/>

Northeast Chapter of the National Climate Assessment of 2009:

<http://www.globalchange.gov/images/cir/pdf/northeast.pdf>

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NEclimateUS.org

ClimateNE

www.climate-northeast.com

Scenarios for Climate Assessment and Adaptation

<http://scenarios.globalchange.gov/>

Northeast Climate Science Center

<http://necsc.umass.edu/>

FEMA Climate Change Adaptation and Emergency Management

<https://www.llis.dhs.gov/content/climate-change-adaptation-and-emergency-management-0>

Climate Central

<http://www.climatecentral.org>

OTHER RESOURCES

New England States Emergency Consortium (NESEC): NESEC conducts public awareness and education programs on natural disaster and emergency management activities throughout New England. Resources are available on earthquake preparedness, mitigation, and hurricane safety.

www.nesec.org

Association of State Floodplain Managers (ASFPM): ASFPM has developed a series of technical and topical research papers, and a series of Proceedings from their annual conferences.

www.floods.org

National Voluntary Organizations Active in Disaster (VOAD) is a non-profit, nonpartisan membership organization that serves as the forum where organizations share knowledge and resources throughout the disaster cycle—preparation, response, recovery and mitigation.

<http://www.nvoad.org/>

Appendix D: Hazard Mitigation Resource Profiles

The following are fact sheets about the various hazard mitigation grant program.

U.S. Army Corps of Engineers

Contacts:

John Kennelly, Chief, Special Studies Section (for Flood Plain Management Services activities),
Phone: (978) 318-8505, Fax: (978) 318-8080, E-mail: John.R.Kennelly@usace.army.mil

Mike Keegan, Chief, Project Planning Section (for Section 14, 103, and 205 authorities),
Phone: (978) 318-8087, Fax: (978) 318-8080, E-mail: Michael.F.Keegan@usace.army.mil

Address: US Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Description and Mission:

The Corps of Engineers is a multi-disciplinary engineering and environmental organization that has been identifying and meeting the water resources needs of the nation. These needs have been in the areas of flood damage reduction, flood plain information and management, navigation, shore protection, environmental restoration, water supply, streambank protection, recreation, and fish and wildlife resources conservation, as well as technical assistance in other water resources areas.

The New England District (NAE) of the Corps of Engineers is responsible for managing the Corps' civil responsibilities in a 66,000 square-mile region encompassing the [six New England states](#) east of the Lake Champlain drainage basin. The District and its [leadership](#) are headquartered in Concord, Massachusetts. The missions of the New England District are many and varied. They include:

- flood damage reduction
- navigation improvements and maintenance
- natural resource management
- streambank and shoreline protection
- disaster assistance
- environmental remediation and engineering
- engineering and construction management support to other agencies

Flood Mitigation Involvement:

As a result of the catastrophic floods in 1936, 1938 and 1955, the Corps was called upon to undertake a comprehensive flood damage reduction program. Since then the Corps has built many flood control structures throughout New England. These include 35 dams and reservoirs, five

hurricane protection barriers (two are operated by the Corps) and approximately 60 local flood protection projects. The New England District has also completed two nonstructural projects involving the relocation of flood prone property and the acquisition of natural flood storage areas. The Corps also provides technical assistance to states and municipalities in locally constructed flood damage mitigation projects and to promote wise and informed use of floodplain and natural retention areas in order to minimize potential future flood damages.

Mitigation Goals and Objectives:

The New England District has two primary mitigation objectives with respect to flood damage reduction. The first objective is the operation and maintenance of the 35 flood control reservoirs and two hurricane barriers that provide protection to the Connecticut, Merrimack, Thames, Naugatuck, and Blackstone River Basins. The second objective is to continue to work with the states and communities in New England to address flooding problems affecting the region.

Projects Desired: The Corps of Engineers has several programs available under its Civil Works authorities to address flooding problems. These programs provide assistance either through the construction of structural and nonstructural projects to mitigate the flooding problem or by providing technical information to assist mitigation performed at the state or local level. Flood damage reduction projects constructed by the Corps of Engineers must demonstrate, based on current Federal guidelines, that the flood damages prevented by the project's construction exceed its total cost. The Corps must also demonstrate that the 10-year frequency flood discharge at the point of concern is equal to or greater than 800 cubic-feet per second (cfs). Technical assistance provided by the Corps does not need to meet the above criteria.

COE Resources with Respect to Hazard Mitigation:

The New England Division assists in meeting national, regional and local needs through a variety of means. Congressionally authorized water resources investigations have resulted in the planning, design and implementation of many flood control and flood damage reduction projects. Work conducted under a Congressional authorization can be extensive and there is currently no monetary limit of funding. Typically there is a 1-2 year minimum delay in the identification of a proposed investigation and the funding of that work. The first phase of study, the Reconnaissance investigation, is 100 percent Federally funded and must be completed within twelve months. The second phase, the Feasibility investigations, must be cost-shared with a local sponsor where the sponsor provides 50 percent of the cost of the feasibility study. Congress in a Water Resources Development Act must specifically authorize construction of any project resulting from a General Investigation study. The cost of implementation for flood damage reduction projects is generally 65 percent Federal and 35 percent non-Federal.

Through the Continuing Authorities Programs of the Corps many structural and non-structural local protection project reducing or eliminating damages from flooding have been constructed. Investigations initiated under the Corps Continuing Authorities do not require specific congressional authorization are initiated simply with a request from the State or community to the New England District. The following is a list of Continuing Authorities applicable to flood mitigation:

Section 14 - Emergency Stream Bank & Shoreline Protection: This work consists of evaluating alternatives to provide emergency protection to public facilities, such as highways and bridges that are threatened due to erosion. The current Federal limit on Section 14 projects is \$500,000. The local sponsor is required to provide 25 percent of the cost of developing plans and specifications and of construction.

Section 103 - Beach Erosion: Investigations conducted under this authority are to determine methods of protecting public facilities that have been threatened by beach erosion. Currently there is a Federal limit of \$2,000,000 and the local sponsor is required to contribute 35 percent of plans, specifications and construction. The local sponsor is also required to cost-share equally the cost of the feasibility investigation that exceeds \$100,000. The first \$100,000 is at full Federal expense.

Section 205 - Flood Damage Reduction: Investigations are conducted under this program to assist local communities to identify flooding problems and to formulate and construct alternatives for flood damage reduction. The local sponsor is required to cost-share equally in the cost of the feasibility investigation that exceeds \$100,000 and the Federal limit is \$5,000,000. The local sponsor is required to contribute 25 percent of the cost of plans, specifications and construction.

Section 208 - Snagging and Clearing: This emergency program is designed to reduce flood damage potential by identifying and removing obstructions that contribute to flooding by causing higher flood stages in the floodways. The Federal limit under this program is \$500,000 and the local sponsor is required to contribute 25 percent of the cost of plans, specifications and construction.

The New England Division also has two Planning Assistance Programs, which provide opportunities for the States to obtain assistance in addressing water resource issues. These programs are the Section 22, Planning Assistance to the States (PAS) program and the Section 206, Flood Plain Management Services (FPMS) program.

Planning Assistance to States Program (PAS): The Planning Assistance to States Program is designed to assist the States in developing comprehensive plans to meet State planning goals. The program is extremely flexible in the type and the methodology of investigations. Studies conducted under the PAS program require a 50/50 cost share with a local sponsor. The existing funding limits are \$300,000 per state and a national budget not to exceed \$5,000,000.

Flood Plain Management Services (FPMS): The FPMS Program is designed for the Corps to assist States and local communities improve management of flood plains by performing technical assistance and conducting special investigations. Cost recovery has been implemented in this program effective in FY 1991. Under cost recovery, assistance provided to Federal agencies and private interests must be fully reimbursed by those customers. States and local communities are still provided technical assistance at 100 percent Federal cost. One of the major efforts being conducted under the FPMS program at this time is the preparation of Hurricane Evacuation Studies. These studies are jointly funded with the Federal Emergency Management Agency.

Ice Engineering Research Division U.S. Army Cold Regions Research and Engineering Laboratory

Contact:

Dr. J-C Tatinclaux, Chief, Ice Engineering Research Division

Phone: (603) 646-4187 Fax: (603) 646-4477

E-mail: Jean-Claude.Tatinclaux@cr102.usace.army.mil

Website: <http://www.crrel.usace.army.mil/ierd/>

Address: US Army Cold Regions Research and Engineering Laboratory
Ice Engineering Research Division
72 Lyme Road
Hanover, NH 03755-1290

Description and Mission:

The US Army Cold Regions Research and Engineering Laboratory (CRREL) is a Corps of Engineers' research laboratory that is dedicated to multi-disciplinary engineering and research that addresses the problems and opportunities unique to the world's cold regions. CRREL exists largely to solve the technical problems that develop in cold regions, especially those related to construction, transport, and military operations. Most of these problems are caused by falling and blowing snow, snow on the ground, ice in the air and in the ground, river ice, ice on seas and lakes, and ice affects on manmade materials. CRREL serves the Corps of Engineers and its clients in three main areas:

- Traditional military engineering, which deals with problems that arise during conflict;
- Military construction and operations technology, i.e., the building and maintenance of military bases, airfields, roads, ports, and other facilities; and
- Civil works, which involves the Corps in such things as flood protection, navigation on inland waterways and coastal engineering.

CRREL also deals with cold regions problems for the other defense services, for civilian agencies of the federal government, and to some extent for state agencies, municipalities, and private industry.

CRREL's Ice Engineering Research Division (IERD) was created to research, analyze and solve ice problems in and around water bodies, including ice jam flooding and ice accumulation in lock chambers, to ice buildup at water intakes and the destructive forces that moving ice exerts on riverine or coastal structures. In cooperation with the New England District (NAE) of the Corps of Engineers (located in Concord, MA), IERD personnel provide technical assistance before, during, and after ice jam flood emergencies. IERD research has resulted in the design and construction of a number of low-cost ice control structures as well as nonstructural mitigation measures. IERD also provides instruction on dealing with river ice problems to local emergency management agencies.

Flood Mitigation Involvement:

IERD is frequently called upon by the various Corps Districts to provide technical assistance to states and municipalities in the form of emergency mitigation. IERD is also involved with Corps and local agencies in developing locally constructed flood damage mitigation projects and promoting wise and informed use of floodplain areas in order to minimize potential future flood damages.

Mitigation Goals and Objectives:

The IERD has two primary mitigation objectives with respect to flood damage reduction. The first objective is to work with the Corps and other federal, state, and local agencies to design and implement ice control methods to reduce ice-related flood potential. The second is to work with the states and communities in nationwide as well as in New England to address ice-related emergency flooding problems affecting the region.

Projects Desired: CRREL and IERD are a national resource ready to apply our unique facilities and capabilities to solve problems and conduct innovative, state-of-the-art research and technical support. There are a number of mechanisms that enable IERD and the rest of CRREL to partner with various Federal, non-DoD and private sector entities. The Federal Technology Transfer Act of 1986 (15 USC 3710a) allows CRREL to collaborate with any non-Federal partner on research and technical support consistent with the mission of the laboratory. The Intergovernmental Cooperation Act (31 USC 6505) lets CRREL work with state and local governments on a broad range of reimbursable projects. Under the "Authority to Sell" (10 USC 2539b), CRREL can provide test and evaluation services to the states and the private sector. This includes the testing and evaluation of materials, equipment, models, computer software, and other items. The laboratory can also provide support to other Federal agencies via the Economy in Government Act (31 USC 1535) through MOUs/MOAs that establish a framework for the partnership and provide a concise description of the planned work. CRREL's 35 active Cooperative Research and Development Agreements (CRADAs) with industry and academia and 17 Intergovernmental Cooperation Agreements with states and local governments in 1998 demonstrate a robust program in this area and the relevance of CRREL's research to many segments of American society beyond DoD.

The Corps of Engineers has several programs available under its Civil Works authorities to address flooding problems. These programs provide assistance either through the construction of structural and nonstructural projects to mitigate the flooding problem or by providing technical information to assist mitigation performed at the state or local level. Flood damage reduction projects constructed by the Corps of Engineers must demonstrate, based on current Federal guidelines, that the flood damages prevented by the project's construction exceed its total cost. The Corps must also demonstrate that the 10-year frequency flood discharge at the point of concern is equal to or greater than 800 cubic-feet per second (cfs). Technical assistance provided by the Corps does not need to meet the above criteria. Through the Corps, IERD has been involved in Section 205 Flood Damage Reduction program, Section 22 Planning Assistance to States Program (PAS)) projects, the Section 206 Flood Plain Management Services (FPMS) program funded jointly with FEMA, and numerous instances of technical assistance.

CRREL IERD Resources with Respect to Hazard Mitigation:

Corps: CRREL works jointly with the Corps' New England Division to address regional and local ice-related hazard mitigation needs through a variety of means. Congressionally authorized water resources investigations have resulted in the planning, design and implementation of many flood control and flood damage reduction projects. Work conducted under a Congressional authorization can be extensive and there is currently no monetary limit of funding. Typically there is a 1-2 year minimum delay in the identification of a proposed investigation and the funding of that work. The first phase of study, the Reconnaissance investigation, is 100 percent Federally funded and must be completed within twelve months. The second phase, the Feasibility investigations, must be cost-shared with a local sponsor where the sponsor provides 50 percent of the cost of the feasibility study. Congress in a Water Resources Development Act must specifically authorize construction of any project resulting from a General Investigation study. The cost of implementation for flood damage reduction projects is generally 65 percent Federal and 35 percent non-Federal.

Through the Continuing Authorities Programs of the Corps many structural and non-structural local protection project reducing or eliminating damages from flooding have been constructed. Investigations initiated under the Corps Continuing Authorities do not require specific congressional authorization are initiated simply with a request from the State or community to the New England District. The following is a list of Continuing Authorities applicable to flood mitigation:

Section 205 - Flood Damage Reduction: Investigations are conducted under this program to assist local communities to identify flooding problems and to formulate and construct alternatives for flood damage reduction. The local sponsor is required to cost-share equally in the cost of the feasibility investigation that exceeds \$100,000 and the Federal limit is \$5,000,000. The local sponsor is required to contribute 25 percent of the cost of plans, specifications and construction.

Section 22 - Planning Assistance to States Program (PAS): The Planning Assistance to States Program is designed to assist the States in developing comprehensive plans to meet State planning goals. The program is extremely flexible in the type and the methodology of investigations. Studies conducted under the PAS program require a 50/50 cost share with a local sponsor. The existing funding limits are \$300,000 per state and a national budget not to exceed \$5,000,000.

Section 206 - Flood Plain Management Services (FPMS): The FPMS Program is designed for the Corps to assist States and local communities improve management of flood plains by performing technical assistance and conducting special investigations. Cost recovery has been implemented in this program effective in FY 1991. Under cost recovery, assistance provided to Federal agencies and private interests must be fully reimbursed by those customers. States and local communities are still provided technical assistance at 100 percent Federal cost. One of the major efforts being conducted under the FPMS program at this time is the preparation of Hurricane Evacuation Studies. These studies are jointly funded with the Federal Emergency Management Agency.

Personnel:

IERD was created to research, analyze and solve ice problems in and around water bodies. The technical experience of the staff and their in-depth research and field capabilities combine with CRREL's unique Ice Engineering Facility to form one of the premier ice engineering organizations in the world. IERD has a staff of 15 engineers and technicians experienced in technical analyses, methods, and engineering solutions to ice problems -- that is, any situation where the effects of ice cause flooding, increase operational and maintenance requirements of water control projects, impede navigation, or adversely impact the environment in cold regions.

Equipment and Facilities:

The Ice Engineering Facility was built to increase the research capabilities of the U.S. Army Cold Regions Research and Engineering Laboratory. It is a two-story building approximately 160 by 210 feet containing three primary cold spaces: the test Basin, Flume, and Research Area. We have recently designed and built a new Wind Tunnel Facility. In addition there is a machine room in the basement, an instrumentation corridor separating the flume and test basin spaces, a shop/storage area, and one sample-storage cold room.

The Test Basin was designed primarily for large-scale work on ice forces on structures, such as drill platforms and bridge piers, and for tests using model icebreakers. The Basin is 30 feet wide, 8 feet deep and 120 feet long. The room is designed to operate at any temperatures between +65°

and -10°F with very even temperature distribution, which results in uniform ice thickness. Other studies conducted in the Test Basin concern the formation of ice pressure ridges, ice problems in and around navigation locks, and vertical uplift forces.

The Flume is situated in a room where the temperature can be regulated between +65° and -20° F. The Flume is 2 by 4 feet in cross section and 120 feet long. It can tilt from +2° to -1° slope, have a flow capacity of nearly 14 cubic feet per second and have a refrigerated bottom. Some other studies conducted in the Flume are the formation of ice covers and frazil ice, the hydraulics of ice-covered rivers, the formation of ice jams, and the effect of ice covers on sediment transport and scour.

Possibly the most versatile portion of the Ice Engineering Facility is the Research Area. This room is 80 by 160 feet clear span and has a temperature range of +65° to -10°F. Piping capable of providing a flow of 1, 2, 4 or 8 cubic feet per second is located on one side of the room, and a large drain trough is on the other. The floor is designed for loads up to 400 pounds per square foot. Models of reaches can be constructed in this area to test ways to alleviate ice jams through channel modification. Tests of the bearing capacity of large ice sheets and cold-testing of vehicles and structures are a few of the other potential uses of this space. Tests conducted in this room will help to alleviate much of the flooding caused by ice jams.

USDA, Natural Resources Conservation Service

Contacts:

Gerald J. Lang, Technology Leader; Phone: (603) 868-7581, Fax: (603) 868-5301

E-mail: gerald.lang@nh.usda.gov

Edward Hansalik, Civil Engineer; Phone: (603) 868-7581, Fax: (603) 868-5301

E-mail: ehansalik@nh.usda.gov

Address: Federal Building
2 Madbury Road
Durham, NH 03824

Description and Mission:

The Natural Resources Conservation Service (NRCS) is a Federal agency within the US Department of Agriculture. The mission of the NRCS is to help people conserve, improve and sustain our natural resources and environment. NRCS, formerly the Soil Conservation Service, is the lead federal agency for conservation on private land. NRCS provides conservation technical assistance through local conservation districts and Resource Conservation and Development (RC&D) Councils to individuals, communities, watershed groups, tribal governments, federal, state, and local agencies, and others. NRCS has an interdisciplinary staff of professional engineers, planners, biologists, foresters, agronomists, and soil scientists working together to provide the necessary technical assistance to solve resource or environmental problems. NRCS products typically include conservation plans, study reports, engineering designs, and resource maps.

Authorities and Funding:

NRCS state and field offices derive funding from two possible sources, direct Federal appropriations and reimbursable agreements with agencies and units of government. NRCS manages several programs; Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetland Reserve Program (WRP), Forestry Incentives Program (FIP), and Farmland Protection Program (FPP) which provide cost-share assistance to landowners and users (primarily agricultural or forestry land) to install conservation practices to restore and protect natural resources. NRCS can also provide technical assistance ranging from preliminary reviews to complete detail designs to landowners/users solving resource problems even if financial assistance is not being provided for the installation of conservation practices. This assistance is dependant on staff availability and priorities.

NRCS also manages the Emergency Watershed Protection (EWP) program, which can provide financial and technical assistance to units of government and groups to repair damages sustained from a natural disaster (flood, fire, hurricane, tornado) creating an imminent hazard to life and property. The restoration efforts must be environmentally and economically cost effective and typically includes clearing debris from clogged stream channels, stabilizing eroded stream banks and restoring vegetation for stabilization purposes. NRCS can also provide technical assistance to watershed associations or groups to develop comprehensive plans for improving or protecting the watershed environment (water quality, flood reduction, wildlife habitat).

Mitigation Involvement:

The NRCS can provide technical assistance to conduct inventories, to complete watershed or site-specific plans, or to develop detail engineering and construction designs for conservation applications that will help reduce future damages from natural disasters. Some examples of past mitigation efforts include: floodplain management studies for towns, site assessments of stream flow impairments, stabilization designs to protect structures which could sustain severe damages from another storm event, and small watershed plans addressing flooding problems. Some of these products can be provided through other conservation assistance efforts. However, the major jobs would require a reimbursable agreement with the state or towns to complete the work.

Mitigation Goals and Objectives:

With respect to hazard mitigation, the goal of the NRCS in New Hampshire is to meet the needs of the State and local governments by providing timely technical assistance to support recovery and restoration efforts. NRCS can contribute this technical assistance by interacting directly with NHHSEM at the state level and having our field staff working directly with Town Emergency Management officials at the local level. Short-term goals are to establish contacts with local officials and the conservation districts at the field office level to facilitate quicker response times. Intermediate and long-term objectives are to improve the cooperative efforts of working with NHHSEM and establish additional contacts for providing timely technical assistance at the local level.

Projects/Planning Desired:

NRCS would like to work with local watershed associations to develop comprehensive plans addressing resource and environmental needs and opportunities in the priority watersheds as identified in the Unified Watershed Assessment. These plans can provide the basis for targeting and requesting special funding to meet the needs of the local watershed association. Technical assistance for planning and designing along with public information dissemination are the typical activities our agency can provide in this effort.

NRCS Resources with respect to Hazard Mitigation

Personnel:

NRCS in New Hampshire has a workforce of 45 staff members along with 5 multi-state staff members. Approximately 22 staff members consisting of engineers, biologists, foresters, conservation planners, and technicians are available to provide some assistance in mitigation efforts. Support staff of a GIS specialist, computer specialist, and public information specialist could assist in providing information for public outreach. This staff is available to provide limited assistance under our present program funding authorities. However, larger projects would require reimbursement for planning and design assistance.

Equipment, Physical Facilities and Other Capabilities:

All of our field offices and State office have computers and access to the internet. All of the field offices have survey equipment and all engineers have the use of CADD software. All field offices have access to small meeting rooms and access to the Federal Telecommunications System. Government vehicles are located at all field offices for use by government employees and could be made available in emergencies.

Northeast States Emergency Consortium (NESEC)

Contacts:

Edward S. Fratto, Executive Director: Phone: (781) 224-9876, Fax: (781) 224-4350
E-Mail: www.nesec.org

Address: Northeast States Emergency Consortium
1 West Water Street, Suite 205
Wakefield, MA 01880

Organization Description:

The Northeast States Emergency Consortium, Inc. (NESEC) is a 501(c)(3) not-for-profit natural disaster mitigation and emergency management organization, located in Wakefield, Massachusetts. NESEC is the only multi-hazard consortium of its kind in the country and is supported and funded by the Federal Emergency Management Agency (FEMA). The

eight Northeast States of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont form the consortium. NESEC has a full-time Executive Director, and Assistant. It is governed by a Board of Directors. The Board is comprised of the Directors of the State Emergency Management Agencies from each of the six New England States and the States of New York and New Jersey.

Organization Mission:

NESEC works in partnership with government and private organizations to reduce losses of life and property from natural disasters in the Northeast United States. The Northeast States are vulnerable to most of the natural hazards, including hurricanes, earthquakes, coastal and inland flooding, tornadoes and micro-bursts, forest fires, drought, lightning, blizzards and other forms of severe weather. Our developed urban areas and the desire to build and live on waterfront property have increased our degree of risk from natural hazards.

Mitigation Programs:

Grants: NESEC raises funds from government and private sources to support local mitigation projects. These funds are awarded on a competitive basis in the form of grants in the range of \$500-5,000. The name of this program is called the ***Power of Prevention***. This program was funded at about \$50,000 in 1998 and \$35,000 in 1997. NESEC is pursuing 1999 funding. The program is presently unfunded. All grant programs are administered in cooperation with the New Hampshire Office of Emergency Management (NHHSEM). Communities interested in participating should contact NHHSEM.

HAZUS: NESEC assists FEMA PROJECT IMPACT Communities in the use of HAZUS as a planning platform for incorporating multi-hazard disaster prevention initiatives. NESEC can produce a HAZUS report using default data for each of the initial PROJECT IMPACT Communities. Priority is given to PROJECT IMPACT communities, however assistance may be provided to other communities as resources allow. This report provides an excellent starting point for communities wishing to utilize HAZUS to identify potential hazards. The NESEC HAZUS Report is multi-hazard and usually contains information on earthquakes, tornadoes, flood and wind.

There is no fee or charge for producing the default HAZUS Report and meeting with the community to discuss the results. All HAZUS support is arranged in cooperation with the New Hampshire Office of Emergency Management (NHHSEM). Communities interested in participating should contact NHHSEM.

Emergency Generators: NESEC assists communities to establish a partnership with their electric utilities and service companies. The partnership would conduct an energy efficiency audit of the community, recommend cost saving measures, and implement a cost saving plan. Monthly savings could be used to fund emergency generator(s) for local critical facilities. The utility or energy service company could then lease, install, and maintain generator(s) in a community.

The community would pay a monthly charge for the lease agreement. This charge would not exceed the savings derived through energy efficiency measures, so there would be no

capital outlay or additional cost to the community. In fact, some communities may be able to reduce their monthly electric bills in an amount that exceeds the cost of the generator(s) lease agreement.

Monthly savings and utility participation will vary from state to state and community-to-community depending on present electric power usage and efficiency measures and deregulation. There is no fee or charge for assisting communities in establishing partnerships with electric utilities. NESEC assistance will be provided as resources allow. All emergency generator support is arranged in cooperation with the New Hampshire Office of Emergency Management (NHHSEM). Communities interested in participating should contact NHHSEM.

Federal Mitigation Grant Programs

I. Pre-Disaster Mitigation Grant Program

The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.

<http://www.fema.gov/government/grant/pdm/index.shtm>

II. Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

<http://www.fema.gov/government/grant/hmgrp/index.shtm>

III. Flood Mitigation Assistance (FMA) Program

The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the [National Flood Insurance Program](#) (NFIP).

FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.

<http://www.fema.gov/government/grant/fma/index.shtm>

APPENDIX E
DOCUMENTATION OF THE PLANNING PROCESS

Antrim Hazard Mitigation Plan Update

Meeting #1

AGENDA

October 20, 2015

8:30 a.m.

**Antrim Town Hall
Antrim, NH 03440**

- 1. Introduction**
- 2. Status of Previous Hazard Mitigation Actions**
 - a. Review the Action Plan from the existing Hazard Mitigation Plan to determine what has been completed, deleted, or deferred to the updated plan.
- 3. Identify Past and Potential Hazards**
 - a. Review each hazard type on the “Identifying Hazards” chart
 - b. Add any new hazards that have occurred since the existing plan was adopted
 - c. Add any “potential hazard” concerns
- 4. Critical Facilities**
 - a. Review and update the Critical Facilities listed in the existing plan
- 5. Assessing Probability, Severity and Risk**
 - a. Estimate probability, severity, and risk for each potential hazard
- 6. Existing Mitigation Strategies and Proposed Improvements**
 - a. Review list of strategies and programs found in the existing plan
- 7. Next Meeting- TBD**

Antrim Hazard Mitigation Plan Update

Meeting #2

AGENDA

November 17, 2015

8:30 a.m.

Antrim Town Hall

Antrim, NH 03440

- 1. Assessing Probability, Severity and Risk**
 - b. Estimate probability, severity, and risk for each potential hazard
- 2. Existing Mitigation Strategies and Proposed Improvements**
 - a. Review list of strategies and programs found in the existing plan
- 3. Hazard Mitigation Goals**
 - a. Determine the goals for the updated hazard mitigation plan.
- 4. Identify Gaps in Coverage**
- 5. Next Meeting- TBD**

Antrim Hazard Mitigation Plan Update

Meeting #3

AGENDA

December 15, 2015

8:30 a.m.

Antrim Town Hall

Antrim, NH 03440

- 1. Identify Gaps in Coverage**
- 2. Identify and Prioritize Mitigation Actions for Each Hazard**
 - a. Identify specific locations that should be added to the Action Plan.
 - b. Use the STAPLEE Chart to identify and rank actions for each hazard.
- 3 Prepare an Action Plan**
 - a. Determine the Who, When, and Funding Source for each action identified in the STAPLEE Chart.
- 4. Next Meeting:** Potential Date- January 19th

Antrim Hazard Mitigation Plan Update

Meeting #4

AGENDA

January 19, 2016

8:30 a.m.

Antrim Town Hall

Antrim, NH 03440

- 1. Review Draft Plan**
- 2. Discuss Ways in Which Plan Was Integrated Into Other Documents**
- 3. FEMA Submittal Process**

**ANTRIM HAZARD MITIGATION
MEETING # 1**

October 20, 2015
SIGN – IN SHEET

NAME	AFFILIATION or DEPARTMENT	CONTACT INFORMATION
Bob Bethel	Emergency Management Director	nbr@tds.net
Thomas Beaumont	Assistant Fire Chief	Tbeau02@yahoo.com
John Giffin	Antrim Police	jgiffin@antrimpolice.com
Jim Plourde	Road Agent	antrimhwy@tds.net
Diane Chauncey	Town Clerk	antrimatc@tds.net
Donna Hanson	Town Administrator	antrimbiz@tds.net
Steve MacDonald	Citizen	sfmac313@yahoo.com
John Robertson	Board of Selectmen	jrobertson@mcttelecom.com
Lisa Murphy	SWRPC	lmurphy@swrpc.org

**ANTRIM HAZARD MITIGATION
MEETING # 2**

November 17, 2015
SIGN – IN SHEET

NAME	AFFILIATION or DEPARTMENT	CONTACT INFORMATION
John Giffin	Antrim Police	jgiffin@antrimpolice.com
Steve MacDonald	Citizen	sfmac313@yahoo.com
John Robertson	Board of Selectmen	jrobertson@mcttelecom.com
James Plourde	Road Agent	antrimhwy@tds.net
Thomas Beaumont	Assistant Fire Chief	Tbeau02@yahoo.com
Bob Bethel	Emergency Management Director	nbr@tds.net
Lisa Murphy	SWRPC	lmurphy@swrpc.org

**ANTRIM HAZARD MITIGATION
MEETING # 3**

December 15, 2015

SIGN – IN SHEET

NAME	AFFILIATION or DEPARTMENT	CONTACT INFORMATION
Marshall Gale	Fire Chief	
John Giffin	Antrim Police	jgiffin@antrimpolice.com
Jim Plourde	Road Agent	antrimhwy@tds.net
Diane Chauncey	Town Clerk	antrimatc@tds.net
Steve MacDonald	Citizen	sfmac313@yahoo.com
John Robertson	Board of Selectmen	jrobertson@mcttelecom.com
Danielle Morse	NHHSEM Field Representative	Danielle.morse@dos.nh.gov
Lisa Murphy	SWRPC	lmurphy@swrpc.org
Bob Bethel*	Emergency Management Director	nbr@tds.net

*Reviewed by email

**ANTRIM HAZARD MITIGATION
MEETING # 4**

January 19, 2016

SIGN – IN SHEET

NAME	AFFILIATION or DEPARTMENT	CONTACT INFORMATION
John Giffin	Antrim Police	jgiffin@antrimpolice.com
Steve MacDonald	Citizen	sfmac313@yahoo.com
John Robertson	Board of Selectmen	jrobertson@mcttelecom.com
Diane Chauncey	Town Clerk	antrimatc@tds.net
Danielle Morse	NHHSEM Field Representative	Danielle.morse@dos.nh.gov
Jim Plourde	Road Agent	antrimhwy@tds.net
Thomas Beaumont	Assistant Fire Chief	Tbeau02@yahoo.com
Lisa Murphy	SWRPC	lmurphy@swrpc.org
Bob Bethel*	Emergency Management Director	nbr@tds.net

*Reviewed by email

This is a sample of the e-mail newsletter that is sent to approximately 350 addresses within the region and state. Recipients include Town officials and staff within the Southwest Region of New Hampshire, businesses, county departments, academic institutions, stakeholder organizations, and interested individuals. Notice of the Antrim Hazard Mitigation Committee meetings were included in the publication prior to each meeting (October 16, November 13, December 4, and January 15th editions).

In This Issue

[Citizens' Climate Lobby Conference and Teach-In in Nashua](#)

[Updated NH Wildlife Action Plan](#)

[NH Food Alliance Statewide Gathering in Amherst](#)

[NHMA 74th Annual Conference](#)

Upcoming Meetings

November 16

The **Southwest Region Planning Commission Natural Resources Advisory Committee** will meet at 3:30 p.m. at 37 Ashuelot Street in Keene, NH. This meeting will include a presentation on the NH Wildlife Action Plan Update. The public is welcome to attend. For additional information and to register, please see event post.

November 17

The **Antrim Hazard Mitigation Committee** will meet at 8:30 a.m. at the Antrim Town Hall. Antrim residents, members of neighboring communities, and other interested parties are welcome to attend. For additional information, please contact [Lisa Murphy](#).

November 17



November 13, 2015

Dear Friends,

This periodic e-communication is intended to keep you apprised of happenings in and around our region related to planning, land use, and community. You are welcome to participate in these meetings, workshops, and other activities. We encourage you to share this newsletter with others who may be interested. For additional information on any of these events or notices, please contact us at Southwest Region Planning Commission at 357-0557 or admin@swrpc.org.

Sincerely,

Tim Murphy
Executive Director

Citizens' Climate Lobby Conference and Teach-In in Nashua



Citizens' Climate Lobby

The Citizens' Climate Lobby Northeast Region is holding a regional conference and public teach-in Saturday and Sunday, **November 14-15** at the Courtyard Marriott, 2200 Southwood Drive in Nashua. The theme of the combined events is "Making Climate Change THE Issue in 2016." The event will feature nationally recognized speakers such as Dr. James Hansen, the former Director of the NASA Goddard Institute for Space Studies, and Steve Curwood, Host and Executive Director of PRI's Living on Earth radio program. For more details or to register, please click [here](#).

Updated NH Wildlife Action Plan

The SWRPC Natural Resources Advisory Committee is hosting a session with Emily Preston, Wildlife Biologist, NH Fish and Game to

The **Monadnock Regional Coordinating Council for Community Transportation** will meet at 1:00 p.m. at 37 Ashuelot Street in Keene, NH. For additional information, please contact [J.B. Mack](#).

November 18

The **Surry Hazard Mitigation Committee** will meet at 6:30 p.m. at the Surry Town Offices. Surry residents, members of neighboring communities, and other interested parties are welcome to attend. For additional information, please contact [Lisa Murphy](#).

November 30

The **Chesterfield Hazard Mitigation Committee** will meet at 4:00 p.m. at the Chesterfield Town Offices. Chesterfield residents, members of neighboring communities, and other interested parties are welcome to attend. For additional information, please contact [Lisa Murphy](#).

hear about the updated NH Wildlife Action Plan. This meeting is open to the public and will be held on **November 16th** at 3:30 p.m. at 37 Ashuelot Street in Keene, NH.

The 2015 Wildlife Action Plan contains the most up-to-date research on New Hampshire's wildlife features. It contains a full analysis of the state's species of greatest conservation need, and the important habitats that maintain these species. There are summaries of actions that we all can take to help mitigate pressures that have negative impacts on New Hampshire's wildlife and habitats. This plan will serve as a guide for New Hampshire for the next ten years.

This meeting will be an interactive session to help attendees understand ways in which communities can use the information contained within the plan. There is no fee for this session, however registration is required. Please register by contacting Lisa Murphy at (603) 357-0557 or lmurphy@swrpc.org.

NH Food Alliance Statewide Gathering in Amherst

The NH Food Alliance will host a statewide gathering on **November 17th** from 10:00 a.m. to 3:00 p.m. at the Labelle Winery in Amherst, NH. The topic of the gathering is the Farm, Fish, and Food Enterprise Visibility Initiative. NH Food Alliance network partners, stakeholders, food system professionals, and interested members of the general public are welcome to attend. For more information, please click [here](#).



Appendix F: Project Status Sheet

The following form can be used to keep track of projects identified in the hazard mitigation plan that are in progress or that have been completed.

MITIGATION ACTION	STATUS	EXPLANATION OF STATUS