

Town of Sanbornton, New Hampshire Hazard Mitigation Plan Update, 2014

Prepared by the:

Sanbornton Hazard Mitigation Update Committee



Third Alarm Fire in Franklin, April 2009

(Month of FEMA Approval) 2014

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Town of Sanbornton, New Hampshire Hazard Mitigation Plan Update

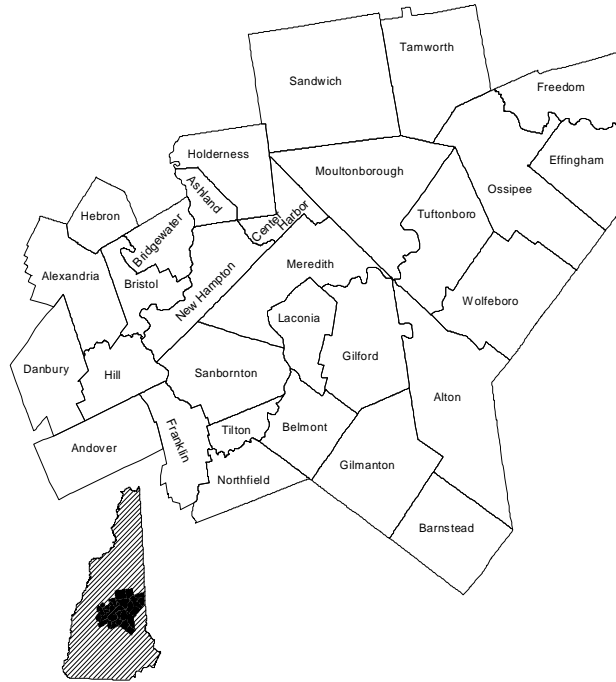
(Month of FEMA Approval), 2014

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THE LAKES REGION PLANNING COMMISSION



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EXECUTIVE SUMMARY

The *Sanbornton Hazard Mitigation Plan Update* (the 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 Sanbornton Hazard Mitigation Planning Update Committee (the Committee) with assistance from the Lakes Region Planning Commission, and contains statements of policy adopted by the Board of Selectmen in Chapter VI.

The Committee agreed that the hazards identified in the 2008 Plan continue today; with the addition of wildfire and earthquake, along with the expansion of types of severe wind hazards, changing epidemic to health hazards, and consolidating most winter hazards. The Committee determined those natural and human-related hazards which pose at least a moderate risk, based on a rating system detailed in Chapter III, are shown below:

Flooding	Severe Wind (Tornado/Downburst, Hurricane)	Severe Winter Weather
Lightning	Wildfire	Earthquake
Health Hazards		Hazardous Materials in Transport

There have been a few minor changes to the list of Critical Facilities. The Committee identified numerous existing programs related to hazard mitigation including the following:

Existing Plans, Regulations and Practices Supporting Hazard Mitigation	
Hazard Mitigation Plan 2008	Subdivision Regulations
Code Enforcement	Site Plan Review Regulations
Zoning Ordinance	Master Plan
Flood Plain Ordinance	School Emergency Operation Plan
Emergency Power Generation	Emergency Response Training and Drills
Mutual Aid Agreements	

Forty percent of the Actions from the 2008 Plan have either been completed or are no longer pertinent. In its effort to further reduce the vulnerability of the town to future hazards, the committee developed a list of 42 general and hazard-specific mitigation actions. These actions were prioritized based on local criteria. Discussions were held regarding how implementation might occur over the next five years. The results of these discussions are summarized in Table 19: Implementation Schedule for Mitigation Actions.

CHAPTER I: PLANNING PROCESS

A. BACKGROUND

In order to be eligible to receive disaster related Federal Emergency Management Agency (FEMA) grant funding to be used for hazard mitigation projects and actions that will ultimately reduce and mitigate future losses from natural or human hazard events, FEMA has required that all communities within the state of New Hampshire establish local hazard mitigation plans. In response to this requirement, the NH Department of Safety's Division of Homeland Security and Emergency Management (HSEM) and the nine regional planning commissions in the state entered into agreements to aid communities with plan development and update. The plan development process generally followed the steps outlined in FEMA's *Local Mitigation Planning Handbook (2013)*

B. AUTHORITY

The town of Sanbornton Hazard Mitigation Plan was prepared pursuant to Section 322, Mitigation Planning of the Robert T Stafford Disaster Relief and Emergency Assistance Act and Section 104 of the Disaster Mitigation Act (DMA) of 2000. Section 322 of DMA 2000 emphasizes the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts.

C. FUNDING SOURCE

The New Hampshire Department of Safety's Homeland Security and Emergency Management (NH HSEM) funded the Plan with matching funds from the Lakes Region Planning Commission.

D. PURPOSE

The Sanbornton Hazard Mitigation Plan is a planning tool to be used by the town of Sanbornton, as well as other local, state, and federal government entities, in their efforts to reduce the negative effects from natural and human-related hazards. The Plan contains statements of policy as outlined in the [Implementation Schedule for Mitigation Actions](#) and in [Chapter VI: Plan Adoption and Monitoring](#). All other sections of this plan are support and documentation for informational purposes only and are not included as a statement of policy.

E. SCOPE OF PLAN

The scope of this Plan includes the identification of natural hazards affecting the town of Sanbornton, as identified by the Committee. The hazards were initially reviewed under the following categories:

- I. **Flood, Wild Land Fire, Drought** (Flood, Dam Failure, Ice Jam, Wildfire, Drought)
- II. **Geological Hazards** (Earthquake, Radon, Landslide)
- III. **Severe Wind** (Tornado/Downburst, Hurricane, Thunderstorm/Lightning, Hail)
- IV. **Winter Weather** (Blizzard/Snow Storm, Ice Storm, Nor'easter, Avalanche).
- V. **Other Hazards** (Epidemic, Fire and Hazardous Materials, Terrorism)

During the update process New Hampshire's 2013 Update to the *Multi-Hazards Mitigation Plan* was adopted and approved. Where possible, an effort has been made to reflect the information of the

state's 2013 Update without detracting from Committee discussions and local concerns and priorities. The list of hazards in New Hampshire's *Multi-Hazards Mitigation Plan Update, 2013* includes most of those listed above except for Ice Jam, Thunderstorm, and Hail. Blizzard/Snow Storm/Ice Storm/Nor'easter are now considered as Severe Winter Weather.

F. METHODOLOGY

The Lakes Region Planning Commission (LRPC) corresponded with the Sanbornton Emergency Management Director (EMD) in early 2013 to initiate the hazard mitigation update process in the town of Sanbornton. The EMD established the Sanbornton Hazard Mitigation Planning Update Committee in March 2013 for the purpose of updating a long-range plan for hazard mitigation. The Committee consisted of representatives from the departments of Police, Fire, and Public Works, the Town Administrator, a member of the Board of Selectmen, a Planning Board member, and a member of the public. All meetings were open to the public.

Using FEMA's *Local Mitigation Plan Review Guide (2011)*, *Mitigation Planning Workshop materials (2012)*, and the *Local Mitigation Planning Handbook (2013)* as guidance, the Committee reviewed and updated various elements of the town's 2008 Hazard Mitigation Plan. The planner and the committee reviewed and referenced a variety of plans, studies, reports, and technical information during the development of this Plan Update; a list of these resources can be found in Appendix H. Data on property valuation was gathered through correspondence with the Town Assessor.

The Committee held meetings from March through September, 2013. The following timeline shows the dates and corresponding Committee actions. The committee reviewed each section of the plan and LRPC provided updated information on hazards in New Hampshire. Each section of the existing plan was revised and in some cases reformatted in order to develop a more comprehensive document. Meeting agendas were posted in Town Hall and at the LRPC web page and are included in Appendix D.

Committee Meetings

March 20, 2013: *Introductory Committee Meeting:*
Sanbornton Central Fire Station
 Overview of update process and objectives
 Discussion of Development Trends since 2008
 Locate critical facilities and hazards on map
 Identify Hazard Events since 2008

April 17, 2013: *Committee Meeting:*
Sanbornton Central Fire Station
 Existing Plans and Policies
 Status of 2008 Mitigation Actions
 Asset Assessment

May 15, 2013: *Committee Meeting:*
Sanbornton Central Fire Station
 Impact of Hazards
 Vulnerability
 Review of Community Goals

Mitigation Strategies

- June 13, 2013:** *Committee Meeting:
Sanbornton Central Fire Station
Mitigation Strategies*
- July 31, 2013:** *Committee Meeting:
Sanbornton Central Fire Station
Prioritization of Mitigation Actions*
- September 4, 2013:** *Committee Meeting:
Sanbornton Central Fire Station
Prioritization of Mitigation Actions
Implementation*

Public Involvement

The Sanbornton EMD invited a variety of Hazard Mitigation Planning stakeholders to join the Hazard Mitigation Planning Committee. The Committee was well represented by municipal officials, including a member of the Board of Selectmen and a local resident. Specific opportunities for public input occurred at each meeting. Local businesses and members of the public were encouraged to attend all meetings through press releases and postings on the town and LRPC websites (Appendix C).

The Committee held a public comment period in order to obtain additional feedback on the draft document. The Plan (including comment instructions) was available for public review at Town Hall, the town library, and at the town website from August XX, 2014 - August YY, 2014. A press release and a public notice were distributed to regional media announcing the public comment period (Appendix C). The neighboring towns were also notified of the review period. This provided an opportunity for local and regional businesses, organizations, agencies, educational and health institutions in Sanbornton and surrounding towns to review and comment on the plan update. No comments were received from the public during this review period.

G. ACKNOWLEDGMENTS

Special thanks to those that assisted in the development of this Plan:

- | | |
|-------------------|--|
| Karen Ober | <i>Selectman, Sanbornton Board of Selectman</i> |
| Robert Veloski | <i>Town Administrator, Sanbornton</i> |
| Paul Dexter, Jr. | <i>Chief, Sanbornton Fire Department and
Emergency Management Director (EMD), Sanbornton</i> |
| Stephen Hankard | <i>Chief, Sanbornton Police Department</i> |
| Johnnie VanTassle | <i>Public Works Director, Sanbornton Department of Public Works,</i> |
| Richard Gardner | <i>Planning Board member, Citizen, Sanbornton</i> |
| Carmine Cioffi | <i>Sanbornton Citizen and Commissioner to Lakes Region Planning Commission,</i> |
| Danielle Morse | <i>Belknap County Field Representatives for NH Homeland Security and Emergency</i> |
| Nancy St. Laurent | <i>Management</i> |
| David Jeffers | <i>Regional Planner, Lakes Region Planning Commission</i> |

Additional information was provided by:

Rob Jutton	<i>Assessing Assistant</i> , Sanbornton
Jennifer Gilbert	<i>Floodplain Management Coordinator</i> , NH Office of Energy and Planning
Nancy McGrath	<i>Programs Information Officer</i> , NH Dam Bureau, NH Department of Environmental Services

CHAPTER II: COMMUNITY PROFILE

A. GEOGRAPHY



The town of Sanbornton is located on the western side of Belknap County. The Pemigewasset River borders Sanbornton to the west and Lake Winnisquam borders the town to the east. Meredith and New Hampton border the northern edge and Tilton and Belmont form the southern border. The city of Laconia lies just east of Sanbornton and the city of Franklin is west of town across the Pemigewasset.

The 2012 Sanbornton Master Plan states, “The pattern of land development in Sanbornton exists in the form of farms and homes scattered across the rural landscape along town roads and state highways with a village center at Sanbornton Square providing various essential services to the community. Small lot, seasonal residential development has built up along

the shorelines of Lake Winnisquam and Hermit Lake. Higher density, second home residential and commercial uses have developed on the higher elevations of Steele Hill. The NH Route 3 & 11 highway corridor contains the majority of the commercial and industrial use in Town. There are also numerous home occupations located throughout Town. Most of the community facilities are located in Sanbornton Square.”

Sanbornton contains 47.28 square miles of land area and 2.37 square miles of inland water area. Rivers flowing through Sanbornton include the Pemigewasset River, Hermit Brook, Hadley Brook, Patterson Brook, Giles Brook, Emerson Brook, Chapman Brook, and Knox Brook. Lake Winnisquam and Hermit Lake are also popular recreation areas in town. An aquifer underlies the Pemigewasset River and is considered an area of high transmissivity. It is also the primary source of well water for the town. Sanbornton’s rural character is in part defined by its many lakes and ponds, open space, wildlife habitat, and forests.

Natural constraints on development in the Town of Sanbornton are based upon natural resource limitations that include steep slopes, wetlands, aquifers, floodplains, and shore lands. There are approximately 8,949 acres of land in Sanbornton with steep slopes (at least 15% slope). This accounts for just over 29% of the Town’s total land area. Steep slope areas are especially subject to excessive and accelerated surface water runoff which is a principal cause of soil erosion. There are about 374 acres of floodplains in Sanbornton that represents about 1% of its total land area. The federal government (US Army Corps of Engineers) manages most of the flood plain land along the Pemigewasset River. The Town of Sanbornton adopted the Floodplain Conservation District for the

purpose of protecting the public health, safety and general welfare by controlling and guiding the use of land areas subject to periodic flooding.¹

B. WEATHER CONDITIONS

Like many New England towns, Holderness's temperatures and precipitation vary greatly. January temperatures range from an average high of 30 degrees Fahrenheit to an average low of 8 degrees Fahrenheit. July temperatures range from an average high of 81 degrees Fahrenheit to an average low of 55 degrees Fahrenheit. Annual precipitation totals average between 42 and 48 inches, where the distribution is slightly lower in the winter months when compared to summer months. Holderness averages about 70 inches of snow per year.²

C. PUBLIC SERVICES

A three-member Board of Selectmen governs the town of Sanbornton. The town has a 30-member volunteer Fire Department and one full-time Fire Chief. The Police Department consists of a full-time Police Chief, five full-time and five part-time officers, and one administrative staff. The Department of Public Works has a full-time Director and five full-time staff who maintain 90 miles of town roads, only 50 of which are paved. Franklin Regional Hospital located in Franklin, NH is 8 miles southwest, Lakes Region General Hospital located in Laconia, NH is 11 miles east, and Speare Memorial Hospital located in Plymouth, NH is 17 miles north. Concord Hospital is also 25 miles south of town in Concord, NH.

Interstate 93 runs north/south through the center of Sanbornton. NH Route 132 runs generally parallel to I-93. NH Route 127 runs west from NH Route 132 into Franklin and US 3/NH Route 11 runs generally east-west across a small segment of the southeast corner of town.

Public water and sewer services are available to a small part of town near Lake Winnisquam, near Laconia and Belmont. The town is served by NH Electric Cooperative on the western edge of town and along the NH 132 corridor and Public Service of New Hampshire throughout the remainder of town.

D. LAND USE AND DEVELOPMENT TRENDS

Like many Lakes Region communities, the population of Sanbornton grew rapidly between 1960 and 1980, nearly doubling from 857 to 1,679 residents. Growth since then has slowed a bit but remains higher than both the state and county rates (Table 1). Population growth is projected to continue at a much slower pace for the foreseeable future (Figure 2). The median age of residents continues to rise (31.6 years in 1980, 40.1 years in 2000, and 46.5 years in 2010).

¹ Sanbornton Master Plan (2012), Section III Land Use.

² <http://www.city-data.com/city/Sanbornton-New-Hampshire.html>, visited June 19, 2013.

Table 1: Year-Round Population, 1980-2010

Year	1980	1990	2000	2010
Sanbornton Population	1,679	2,136	2,581	2,966
Sanbornton Change	---	27%	21%	15%
Belknap County Change	---	15%	14%	7%
NH Change	---	20%	11%	7%

Table 2: Sanbornton, NH Projected Year-Round Population, 2020-2040³

Year	2010	2020	2030	2040
Population	2,966	3,316	3,483	3,558
Change	---	12%	5%	2%

The 2010 Census reported 1,612 housing units in Sanbornton, an increase of 253 units since the 2000 Census. Most of that growth occurred prior to the recent economic downturn; between 2008 and 2011 twenty-one residential permits were reported in Sanbornton⁴. The 2010 Census identified 387 of Sanbornton's housing units (24%) as seasonal. Because Sanbornton does have some seasonal housing, it is important to acknowledge that the actual number of people residing in town can fluctuate a bit.

While there is some variability over the years, the Traffic Volume Reports from the NH Department of Transportation indicate no dramatic changes in traffic volumes in the last several years along the major roadways in Sanbornton. Table 3 indicates the Average Annual Daily Traffic counts, measured in vehicles per day. As this is a projected average over the entire year, there are certainly many summer days when the volume of traffic on any one of these roads far exceeds these figures.

Table 3: Sanbornton Traffic Counts

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION BUREAU OF TRAFFIC											
Bureau of Planning, Traffic Section, Traffic Reports											
STAT.	TYPE	LOCATION	FC	2005	2006	2007	2008	2009	2010	2011	2012
Total SANBORNTON											
403051	82	NH 127 (NEW HAMPTON RD) AT FRANKLIN TL (SB-NB) (81403010-81403011)	07	*	*	*	2200	*	2100	*	*
403052	82	NH 132 (SANBORN RD) AT TILTON TL	08	*	*	1800	*	*	1400	*	*
403056	82	LOWER BAY RD NORTH OF BAY RD	09	*	*	1600	*	*	2000	*	*
403057	82	BAY RD WEST OF LOWER BAY RD	09	*	*	1300	*	*	1300	*	*
403058	82	US 3/NH 11 (LACONIA RD) AT TILTON TL	14	*	*	15000	*	*	16000	*	*
403059	82	PRESCOTT RD OVER SALMON BROOK	09	*	*	1200	*	*	1100	*	*
403060	82	HERMIT WOODS RD OVER HERMIT BROOK	09	*	*	400	*	*	470	*	*
403061	82	NH 132 (STAGE RD) SOUTH OF ISSAC COLBY RD	08	*	*	1100	*	*	1200	*	*
403062	82	LOWER BAY RD EAST OF HUSE RD	09	*	*	220	*	*	300	*	*
403067	82	NH 127 (NEW HAMPTON RD) NORTH OF PERLEY HILL RD	08	*	*	*	920	*	*	920	*

12-Feb-13

³ New Hampshire Office of Energy and Planning, March 2013 <http://www.nh.gov/oep/data-center/documents/2013-projections-municipalities.pdf>.

⁴ Development Activity in the Lakes Region, 2013 Annual Report, Lakes Region Planning Commission.

CHAPTER III: RISK ASSESSMENT

A. IDENTIFYING HAZARDS

The town of Sanbornton is prone to a variety of natural and man-made hazards. The *2013 Multi-Hazard Mitigation Plan*, developed by the New Hampshire Department of Safety's Division of Homeland Security and Emergency Management identified the following hazards as those posing a risk to Belknap County communities.⁵

Table 3: Belknap County Hazards

Flooding	Epidemic	Earthquake	Radon
Lightning	Dam Failure	Severe Winter Weather	

The Committee reviewed all of the hazards identified in the 2008 Plan. This plan identified the following hazards events as the greatest threats to the town at that time (Table 4).

Table 4: Hazards identified in the 2008 Sanbornton Hazard Mitigation Plan

Natural Hazard	Risk
Nor'easter	High
Flood	Moderate
Thunderstorm/Lightning	Moderate
Blizzard/Snowstorm	Moderate
Motor Vehicle Accident w/ Hazardous Materials	Moderate
Epidemic	Moderate

The Committee also reviewed historical information from internet sources about past hazard events in and near Sanbornton since 2008. Through this review of state-wide hazards, past regional and local events, and with discussion, the committee identified the hazards listed in Table 5 as the hazards most likely to occur in the town of Sanbornton.

Table 5: Hazards of Concern: Sanbornton, NH

Flooding	Severe Wind (Tornado, Downburst, Hurricane)	Severe Winter Weather
Lightning	Wildfire	Earthquake
	Hazardous Materials in Transport	Health Hazards

This differs from the earlier version of the Plan by acknowledging the significance of all severe wind events and the possibility of both wildfire and earthquake as hazards that might impact Sanbornton. Through the discussion several 'health hazards' were discussed: epidemic, rabies, and insect-borne diseases. The committee determined that while individual cases of animals with rabies do occur, the impact on the community was so small that it did not really belong in this plan.

⁵ <http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hazard-mitigation-plan.pdf>, visited December 2013.

B. PROFILING HAZARD EVENTS

The committee reviewed the various hazards that might occur in Sanbornton and assessed the Probability of such an event occurring in Sanbornton. This process began by taking the risk rating matrix from the previous plan, reviewing the hazards, past occurrences, specific areas of concern, and revising the Probability of Occurrence rating using the following categories:

- Unlikely: Less than 1% probability of occurrence in the next year or a recurrence interval of more than every 100 years.
- Occasional: 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- Likely: 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- Highly Likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

For this update, lightning was treated as a hazard distinct from thunderstorm. Tornado, downburst, and hurricane were grouped as “High Wind Event” and similarly, blizzard, snowstorm, and nor’easter were grouped together. The resulting summary indicates that High Winter Weather, and Lightning all are Highly Likely natural hazard occurrences with Flood, Wildfire, Earthquake, and Hail as Likely natural events.

Table 6: Probability of Hazard Occurrence

Risk Assessment Sanbornton	Geographic Area					Specific Areas of Concern	Probability of Occurrence (2013)
	Localized	Town-wide	Regional	State-wide	Other (explain)		
Hazard Type						Describe potential impact areas (critical facilities, floodplain, etc)	Unlikely, Occasional, Likely, Highly Likely
Flood, Drought, Extreme Heat & Wildfire							
Flood	X					Black Brook & Chapman Rd	L
Dam Failure	X						U
Ice Jam	X						O
Drought				X			O
Conflagration	X					Hermit Lake, Bayshore Dr., Black Brook, Leighton Estates	U, O - reg
Extreme Heat				X			O
Wildfire	X						L
Geologic Hazards							
Earthquake			X				L
Landslide	X						O
Radon	X						O
Severe Wind Hazards							
Lightning			X			Six strikes in 2012 caused damage. Town Hall phones impacted in the past.	HL
High Wind (Tornado/ Downburst/ Hurricane)	X					Bayside microburst 7/4/12	HL
Hail			X				L
Winter Weather Hazards							
Blizzard/Snow Storm			X				HL
Ice Storm			X			Ice - higher elevations - Ice storms require more materials on roads, more \$	HL
Avalanche	X						U
Human-Related Events							
MV Accident involving Hazardous Materials	X					SB exit on I-93, shortcut to Franklin, I-93 - Increased speed limit will lead to more incidents.	HL
Military Aircraft Accident	X					NY- refueling training	U
Pandemic	X					Pow-Wows on Dulac Land Trust (NH 132) several times/ yr, Rendezvous on USACoE land (600 people)	U
Other							
Rabies				X		10-year cycle	HL

Probability of Future Events

- **Unlikely:** Less than 1% probability of occurrence in the next year or a recurrence interval of more than every 100 years.
- **Occasional:** 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- **Highly Likely:** 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Each of the hazards that the Committee identified as likely or highly likely to occur in Sanbornton is profiled below. In addition conflagration is addressed in this section: it is a hazard that is of concern in a couple of specific areas. The likely location of each hazard, the extent of the hazard, and the

probability of an occurrence in Sanbornton is described below. The extent is a description of “how bad the hazard could get”. A list of events prior to 2008 is included in Appendix E. For more information on these hazards, please see Appendix G.

FLOODING

Location: The Sanbornton Flood Insurance Rate Maps (FIRM) show the flood boundaries in the event of a 100-year flood, defined as a having a one percent chance of flooding each year. These maps date from 1979. The map of the western section of town identifies floodplains along the Pemigewasset River including sections of Shaw Hill Road and areas around Giles Pond and Salmon Brook. The map of the eastern section of town shows floodplains around Chapman Brook, Black Brook, and a small tributary near Bay Road.

Extent: Flooding is defined as a temporary overflow of water onto lands that are not normally covered by water. It results from the overflow of rivers and tributaries or inadequate drainage. Flooding is most commonly associated with structures and properties located within the 1% annual (or 100-year) floodplain. Areas in this floodplain have been identified as having a one percent chance of flooding any given year.

The US Geological Survey (USGS) stream gauge on the Pemigewasset River at the in Plymouth indicates that the height of the river varies a great deal throughout the year from less than three feet to over ten feet.⁶ In several of the years since 2008 the river reached flood stage of more than 13 feet.⁷ However, the floodplain in Sanbornton along the Pemigewasset is managed by the US Army Corps of Engineers; it is accessible for recreation but closed off during flood conditions. On the eastern side of town, Chapman and Black Brooks can overflow their banks and cause problems on some of the roads that they cross.

Dams in New Hampshire are classified by the New Hampshire Department of Environmental Services Dams Bureau. The four dam hazard classifications (High, Significant, Low, and Non-Menace) are based on the potential losses associated with a dam failure (see Appendix G for a detailed description). High (H) and Significant (S) Hazard dams have the highest potential for damage; this could include damage to state or municipal roadways as well as structures. There are twenty-one active dams in Sanbornton or within a half mile of the town (Table 7); none are High or Significant Hazard dams, six are Low Hazard, and fifteen are Non-Menace Hazard dams.

⁶ US Geological Survey, Current Water Data for New Hampshire <http://waterdata.usgs.gov/nh/nwis/rt>.

⁷ New Hampshire Union Leader, Irene Blog, August 29, 2011
<http://newhampshire.com/article/20110829/NEWS11/110829899/0/newhampshire>.

Table 7: Dams in and near Sanbornton

Active dams within half a mile of Sanbornton, NH

HAZCL	NAME	TOWN	RIVER	OWNER
L	GILES POND DAM	FRANKLIN	SALMON BROOK	FRANKLIN FALLS HYDRO CORP
L	BAYARD HENRY DAM	SANBORNTON	TRIB KNOX BROOK	MR BAYARD HENRY
L	HERMIT LAKE DAM	SANBORNTON	SALMON BROOK	NH WATER DIVISION
L	MOUNTAIN POND NORTH DAM	SANBORNTON	TR PEMIGEWASSET RIVER	NEW HAMPTON VILLAGE PRECINCT
L	MOUNTAIN POND SOUTH DAM	SANBORNTON	TR PEMIGEWASSET RIVER	NEW HAMPTON VILLAGE PRECINCT
L	FLEISHHACKER LOWER DAM	TILTON	TR TO WINDING HILL BROOK	MRS NEL BENETT
NM	FARM POND DAM	MEREDITH	NATURAL SWALE	MR ROBERT PERRY
NM	FIRE POND DAM	NEW HAMPTON	UNNAMED STREAM	MR RICHARD C HALLBERG SR
NM	CONSERVATION POND DAM	SANBORNTON	UNNAMED STREAM	STEELE HILL DEVELOPMENT CO
NM	GOLF COURSE POND DAM	SANBORNTON	CHAPMAN BROOK	DEN BRAE GOLF COURSE
NM	GRAY FIRE POND DAM	SANBORNTON	UNNAMED BROOK	MR JAMES C GRAY
NM	HOLDING POND DAM	SANBORNTON	HUNT BROOK	PERSONS CONCRETE
NM	HUNCKINS POND FISH SCREENS DAM	SANBORNTON	TRIB TO CHAPMAN BRK	OWNER INDETERMINATE
NM	MOREY DAM	SANBORNTON	NATURAL SWALE	MS EILEEN E MOREY
NM	RUTTER FARM POND DAM	SANBORNTON	UNNAMED BROOK	MR E ROGER RUTTER
NM	SALMON BROOK II DAM	SANBORNTON	SALMON BROOK	MR RUSSELL CARPENTER
NM	STONE WILDLIFE POND DAM	SANBORNTON	UNNAMED BROOK	MR GEORGE STONE
NM	SUROWIEC FARM POND DAM	SANBORNTON	UNNAMED STREAM	MR STEPHEN SUROWIEC
NM	WILDLIFE POND DAM	SANBORNTON	UNNAMED BROOK	STEELE HILL DEVELOPMENT CO
NM	FLEISCHHACKER UPPER DAM	TILTON	TR TO WINDING HILL BROOK	MRS NEL BENETT
NM	HUCKINS FARM POND DAM	TILTON	NATURAL SWALE	MR DAVID C HUCKINS

Source: NH DES, 9/2012
Hazard Class Key: L - Low
NM - Non-Menace

History:

Hazard	Date	Location	EXTENT	IMPACT		Notes	Source
			Magnitude/Description	Damage			
Flood	8/7/2008	<u>BELKNAP Ashland, W. Center Harbor, New Hampton, Meredith, Laconia</u>	6 inches of rain in 3 hours	Damage to homes, cars, road washouts	1 death, 2 injuries, \$3.0 M	Flash Flood	NOAA
Flood	8/10/2008	<u>BELKNAP - Laconia, Gilford, Meredith</u>	3 inches of rain	Stream flooding			NOAA
Flood	6/27/2009	<u>BELKNAP</u>			\$50 K	Flash Flood	NOAA
Flood	7/26/2011	<u>BELKNAP</u>				Flash Flood	NOAA
Flood	8/28/2011	<u>BELKNAP</u>	3 - 6 inches of rain		1 death, 1 injury, \$25 K	Tropical Storm Irene	NOAA

Probability of Occurrence: Flooding – Likely, Dam Failure Unlikely

WILD FIRE

Location: Sanbornton is heavily wooded; a fire could occur anywhere.

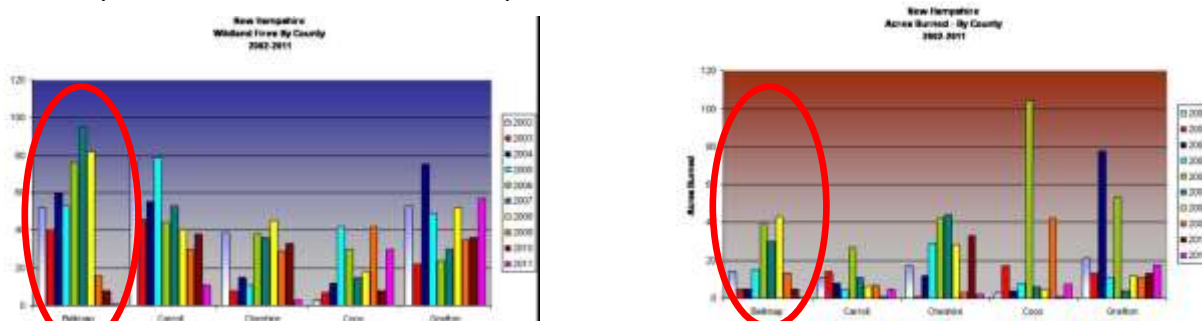
Extent: A wildfire is defined as a fire in wooded, potentially remote areas that may endanger lives. New Hampshire has about 500 wild land fires each year; most of these burn less than half an acre. Much of the Lakes Region is forested and susceptible to fire. The National Wildfire Coordinating Group (NWCG) has defined seven classes of wildfire based on 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.

Minimal

History: In Belknap County, from 2009 – 2011 (last year for which data is available) the number of wildfires annually has been less than twenty. The charts below indicate that the number of acres burned in the county each year has ranged from less than five to more than 40 acres.⁸ There have not been any wildfires in Sanbornton recently.



Figures 1a and 1b: Number of forest fires (a) and acres burned (b) by county.

Probability of Occurrence: Likely

CONFLAGRATION

Conflagration is an extensive, destructive fire in a populated area that endangers lives and affects multiple buildings.

Location: Several neighborhoods near the shores of Lake Winnisquam and Hermit Lake have cottages built close together; a fire in one could quickly spread to others.

Extent: Most homes and businesses in Sanbornton are scattered. As noted above, there are a few areas where ten to twenty cottages are clustered and a fire in one could spread to the others. Minimal



Alton Bay Christian Conference Center, 2009

History: The city of Laconia was the site of one of the most devastating structural fires to occur in the state of New Hampshire. The 1903 Great Lakeport Fire consumed more than 100 homes; two churches, two factories, a large mill, a power plant, and a fire station. Wolfeboro's history includes a significant fire in the winter of 1956 and is considered a small conflagration. On April 12, 2009 the Alton Bay Christian Conference Center complex caught fire, resulting in an 11-alarm fire and destroying more than 40 structures. There is no history of conflagration in Sanbornton.

Probability of Occurrence: Locally – Unlikely, Regional Aid - Occasional

EARTHQUAKE

⁸ NH Division of Forest and Lands, <http://www.nhdf.org/fire-control-and-law-enforcement/fire-statistics.aspx>, Accessed May 15, 2014.

Location: An earthquake could affect all areas of Sanbornton. One of two major faults in New Hampshire runs through Sanbornton.

Extent: An earthquake is a series of vibrations induced in the Earth's crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating. Earthquakes are commonly measured using *magnitude*, or the amount of seismic energy released at the epicenter of the earthquake. The Richter magnitude scale is a mathematical device used to compare the size of earthquakes, shown in Table 8.⁹

Table 8: Richter Magnitude Scale

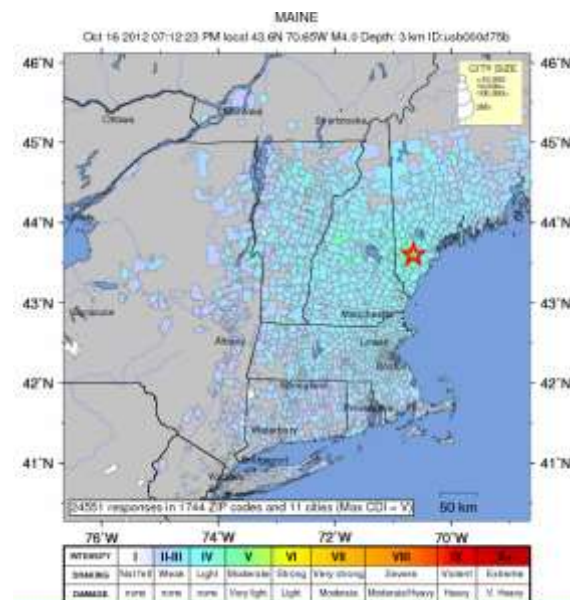
Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph.
2.5 to 5.4	Often felt, but only causes minor damage.
5.5 to 6.0	Slight damage to buildings and other structures.
6.1 to 6.9	May cause a lot of damage in very populated areas.
7.0 to 7.9	Major earthquake. Serious damage.
8.0 or greater	Great earthquake. Can totally destroy communities near the epicenter.

New Hampshire is considered to be in an area of moderate seismic activity with respect to other regions of the country. This means the state could experience large (6.5-7.0 magnitude) earthquakes, but they are not likely to occur as frequently as in a high hazard area like the Pacific coast. There is the potential for nearby earthquakes to register 5.5 on the Richter Scale, causing slight damage to buildings and structures. Due to the unique geology of New Hampshire, earthquake propagation waves travel up to 40 times further than they do in the western United States, possibly enlarging the area of damage.¹⁰ The strongest earthquakes to strike New Hampshire occurred December 20 and 24, 1940 in the town of Ossipee. Both earthquakes had a magnitude of 5.5 and were felt over an area of 400,000 square miles.

Moderate

History: On average, every other year the Lakes Region experiences an earthquake, though these earthquakes are mild and go mostly undetected by people. Sanbornton (Gaza) and Tamworth are identified as a major epicenters in the region.¹¹

A search of the USGS National Earthquake Information Center database shows that since 1977 there have been 12 earthquakes with a magnitude of at least 3.0 within a 100 km (62 mi.) radius of Sanbornton; the largest was magnitude 4.5.¹² Two



Areas where the October 16, 2012 earthquake was felt

⁹ <http://pubs.usgs.gov/gip/earthq4/severitygip.html>, visited February 8, 2011.

¹⁰ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> visited February 8, 2011.

¹¹ <http://des.nh.gov/organization/commissioner/pip/factsheets/geo/documents/geo-3.pdf>, pg. 3, visited January 25, 2011.

¹² USGS. <http://earthquake.usgs.gov/earthquakes/eqarchives/epic/>, Accessed August 1, 2013

such earthquakes have occurred since 2008; a 3.4 event in 2010 centered in Penacook, NH and a 4.0 quake in southern Maine shook the region on October 16, 2012. The image above indicates the communities where people reported feeling this event.¹³

Probability of Occurrence: Likely

LIGHTNING

Location: Thunderstorms occur mainly in the summertime; some can be anticipated and detected well in advance while others are “pop-up” storms that are limited in size and duration. Exactly where and when lightning will strike is unknown. Lightning can strike anywhere in town.

Extent: Thunderstorms have several threats associated with them including heavy rain, high wind, and lightning. The discharge of lightning causes an intense sudden heating of air. The air rapidly expands when heated then contracts as it cools, causing a shock wave that we hear as thunder. This shock wave is sometimes powerful enough to damage windows and structures. These giant sparks of electricity can result in fire or electrical damage to property or electrocution of people. Lightning damages cost the insurance industry more than \$5 billion annually in the United States.¹⁴

The National Weather Service does utilize a six-point scale (Table 9) for characterizing lightning activity called the Lightning Activity Level (LAL) based on frequency of ground strikes along with rainfall and ground conditions.¹⁵

Table 9: Lightning Activity Level

LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

History:

Hazard	Date	Location	EXTENT		IMPACT		Notes	Source
			Magnitude/Description		Damage			
Lightning	9/27/2007	BELKNAP			\$200 K	Downed trees in Center Harbor	NOAA	
Lightning	8/7/2008	BELKNAP		Structural fire in Laconia	\$60 K		NOAA	

¹³ USGS, Earthquake Archive Search. <http://earthquake.usgs.gov/earthquakes/search/> accessed August 8, 2013

¹⁴ National Lightning Safety Institute webpage, http://www.lightningsafety.com/nlsi_lls/nlsi_annual_usa_losses.htm visited February 8, 2011.

¹⁵ NWS Definitions webpage, <http://graphical.weather.gov/definitions/defineLAL.html>. Accessed June 3, 2014.

The committee noted that half a dozen strikes occurred in 2012, causing some minor structural damage but no deaths or injuries due to lightning. There has been some minor disruption of phone service at the Town Hall in the past, steps have been taken to the Town Hall and its communication systems against lightning. The potential for damage or injury exist within any of the many thunderstorms that pass overhead each year, especially in the summertime.

Probability of Occurrence: Highly Likely

HIGH WINDS (THUNDERSTORM/TORNADO/DOWNBURST/HURRICANE)

Location: On average, six tornadoes touch down somewhere in New England each year. There is no way of knowing where or when the next damaging tornado will strike as they are among the most unpredictable weather phenomena. Downbursts are 10 times more likely to occur than tornadoes. All areas of town are susceptible to damage from high winds, although the most recent occurrences have been limited to the Bayside area of town.

Extent: Sanbornton is at risk of several types of natural events associated with high winds; including hurricanes, microbursts, macrobursts, tornadoes, and nor'easters.

Hurricanes are large, cyclonic storms with sustained winds of at least 74 miles per hour. Tropical depressions and hurricanes form over the Atlantic Ocean and often come ashore in the southeastern United States, frequently moving up the Eastern Seaboard. Occasionally such storms come ashore along the northeast coast. Sustained high winds and heavy rains for 12 – 36 hours are characteristic of tropical depressions and hurricanes. The strength of hurricanes are classified on a scale from 1 up to 5 based on factors such as wind speed and barometric pressure.

Tornadoes are violent rotating storms that extend to the ground with winds that can reach 300 miles per hour. They are produced from thunderstorms and can uproot trees and buildings. For full descriptions of hurricane and tornado classification systems, see Appendix G.

According to the National Oceanic and Atmospheric Administration (NOAA) a downburst is a strong downdraft, rotational in nature, which causes damaging winds on or near the ground. Winds can exceed 130 mph.¹⁶ Downbursts fall into two categories based on their size:

- microbursts, which cover an area less than 2.5 miles in diameter, and
- macrobursts, which cover an area at least 2.5 miles in diameter.

The Committee considered the overall extent to be moderate.

History:

Hazard	Date	Location	EXTENT		IMPACT		Source
			Magnitude		Damage	Notes	
High Wind	6/22/2008	<u>BELKNAP</u>	50 kts.			Thunderstorm Wind	NOAA
High Wind	7/18/2008	<u>BELKNAP</u>	50 kts.			Thunderstorm Wind	NOAA

¹⁶ *Weather Glossary*. National Oceanic and Atmospheric Administration, <http://www.weather.gov/glossary/index.php?letter=d>, visited March 8, 2011.

Hazard	Date	Location	EXTENT		IMPACT		Notes	Source
			Magnitude		Damage			
High Wind	7/19/2008	<u>BELKNAP - Alton, Belmont</u>	50 kts.				Thunderstorm Wind	NOAA
Tornado	7/24/2008	<u>BELKNAP</u>	EF2		\$561 K			NOAA
High Wind	8/7/2008	<u>BELKNAP</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	8/10/2008	<u>BELKNAP</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	5/9/2009	<u>BELKNAP - Laconia, Tilton</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	7/27/2009	<u>BELKNAP - Barnstead, Belmont</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	6/24/2010	<u>BELKNAP</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	7/19/2010	<u>BELKNAP</u>	50 kts.	Downed trees and power lines			Thunderstorm Wind	NOAA
High Wind	6/9/2011	<u>BELKNAP</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	7/4/2011	<u>BELKNAP</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	7/26/2011	<u>BELKNAP</u>	50 kts.				Thunderstorm Wind	NOAA
High Wind	10/29/2012	<u>BELKNAP</u>	50 kts.	Downed trees & power outages	\$387,000		Remnants of Hurricane Sandy	NOAA

Probability of Occurrence: Highly Likely

HAIL

Location: Hail can accompany the region's frequent summer thunderstorms. It could affect any area in Sanbornton.

Extent: Hail can cause damage to crops and structural damage to vehicles. Hail is measured by the TORRO intensity scale, shown in Table 10.

Table 10: TORRO Hailstorm Intensity Scale

Code	Diameter	Description	Typical Damage
H0	5-9 mm*	Pea	No damage
H1	10-15 mm	Mothball	Slight damage to plants, crops
H2	16-20 mm	Marble, grape	Significant damage to fruit, crops, vegetation
H3	21-30 mm	Walnut	Severe damage to fruit/crops, damage to glass/plastic structures, paint & wood scored
H4	31-40 mm	Pigeon's egg	Widespread glass damage, vehicle bodywork damage
H5	41-50 mm	Golf ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	51-60 mm	Hen's egg	Aircraft bodywork dented, brick walls pitted
H7	61-75 mm	Tennis ball	Severe roof damage, risk of serious injuries
H8	76-90 mm	Large orange	Severe damage to aircraft bodywork
H9	91-100 mm	Grapefruit	Extensive structural damage. Risk of severe or fatal injuries to exposed persons
H10	>100 mm	Melon	Extensive structural damage. Risk of severe or fatal injuries to exposed persons

*mm = millimeters (Approximate range since other factors (e.g. number, density of hailstones, hail fall speed, surface wind speed) affect severity
Source: <http://www.torro.org.uk/torro/severeweather/hailscale.php>

History:

Although hailstorms are not particularly common in the Lakes Region, which averages fewer than two hailstorms per year, several have occurred in New Hampshire in the last decade. In 2007 and 2008 nearby Laconia experienced hail storms with no resulting damage, though reported hail sizes were as large as 1.25 inches (H4).

Probability of Occurrence: Likely

SEVERE WINTER WEATHER (SNOW STORMS, NOR'EASTERS, ICE STORMS)

Location: Snow and Ice Storms can affect the entire town. Severe winter weather occurs frequently in the northeast and the possibility exists for residents to have to withstand several days without power. No one area of the town and region is at greater risk than another, but there are segments of the population that are more at risk. These include the elderly, people that are in need of regular medical care, and young children. These weather events can vary greatly based on slight differences in temperature, humidity, and elevation. Some events will produce a combination of winter weather types.

Extent:

A heavy snowstorm can be defined as one which deposits four or more inches of snow in a twelve hour period. The region typically receives greater than 66" of snow annually.¹⁷ The nearest airport weather station is ten miles to the east in Gilford, NH. Records there indicate that eight or more inches have fallen in a single day on most dates from late November through mid-March but the average snowfall on any day from November through April is less than an inch. This record also shows that deposits of more than ten inches have happened in each of these months and on several days in February the area has seen more than fifteen and even twenty inches of snow in one day.

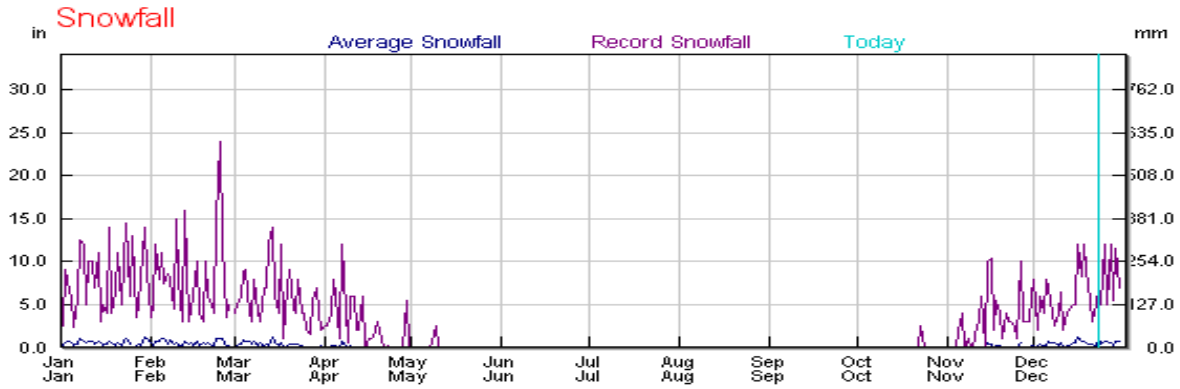
In the winter months, the region may experience blizzard conditions. A blizzard is characterized by sustained winds or frequent gusts to 35 miles per hour or greater and considerable amounts of falling or blowing snow that last for a duration of three hours or longer. The combination of winds and snow reduce visibility to less than a quarter mile.¹⁸

New Hampshire generally experiences at least one or two nor'easters each year with varying degrees of severity. A nor'easter is defined as a large anticyclone weather system that resides near the New England region. These storms have the potential to inflict more damage than many hurricanes because high winds can last from twelve hours to three days, while the duration of hurricanes ranges from six to twelve hours. A nor'easter also has the potential to sustain hurricane force winds, produce torrential rain, and create blizzard conditions in winter months.

¹⁷ *Northeast States Emergency Consortium*, <http://www.nesec.org/>, visited January 25, 2011.

¹⁸ "Winter storm terms," http://www.fema.gov/hazard/winter/wi_terms.shtm, visited February 8, 2011.

Average and Record Snowfalls at Laconia Airport in Gilford, NH¹⁹



An ice storm coats trees, power lines, streets, vehicles, and roofs with a very slick and heavy coating of ice. In the winter of 1998, a major ice storm crippled much of New Hampshire, coating everything with as much as three inches of ice. The U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory estimates a 40 – 90 year return period for an event with a uniform ice thickness of between 0.75 and 1.25 inches. Ten years later (2008), however, New Hampshire was struck again by another severe ice storm. The Committee felt that extent was moderate

The Sperry-Piltz Ice Accumulation (SPIA) Index is being used to forecast and classify ice storms based on a combination of the average thickness of ice coating (referencing expected temperature and precipitation levels) and wind speed; ratings range from 0 to 5.²⁰ The SPIA Index was first used in the United States in 2009 and is now beginning to be utilized by the National Weather Service.

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	
5	1.00 – 1.50	< 15	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.50 – 0.75	> 35	
	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.)

¹⁹ Weather Underground, Season Weather Averages <http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KLCI&SafeCityName=Sanbornton&StateCode=NH&Units=none&IATA=L.I>.

²⁰ SPIA Northeast webpage, <http://www.spia-index.com/neIce.php>, June 3, 2014.

History:

Hazard	Date	Location	Magnitude/ Description
Heavy Snow	1/1/2008	Belknap County	12 inches
Heavy Snow	1/14/2008	Belknap County	8 inches
Winter Storm	2/12/2008	Belknap County	
Heavy Snow	2/26/2008	Belknap County	8 inches
Heavy Snow	3/1/2008	Belknap County	8 inches
Ice	12/11/2008	Belknap County	\$359,000 Ice Storm
Heavy Snow	12/19/2008	Belknap County	9 inches
Heavy Snow	12/21/2008	Belknap County	15 inches
Heavy Snow	1/18/2009	Belknap County	12 inches
Winter Storm	1/28/2009	Belknap County	
Heavy Snow	2/18/2009	Belknap County	9 inches
Heavy Snow	2/22/2009	Belknap County	9 inches
Heavy Snow	3/1/2009	Belknap County	7 inches
Winter Storm	12/9/2009	Belknap County	
Heavy Snow	1/17/2010	Belknap County	8 inches
Nor'easter	2/3/10 – 3/3/10	Statewide	Snow and ice; 330,000 without power \$2 million; Presidential Disaster
Heavy Snow	12/26/2010	Belknap County	12 inches
Heavy Snow	1/12/2011	Belknap County	15 inches
Heavy Snow	1/18/2011	Belknap County	6 inches
Heavy Snow	2/2/2011	Belknap County	10 inches
Heavy Snow	2/25/2011	Belknap County	10 inches
Heavy Snow	4/1/2011	Belknap County	9 inches
Heavy Snow	10/29/2011	Belknap County	17 inches
Heavy Snow	12/26/2012	Belknap County	6-12 inches
Heavy Snow	2/8/2013	Belknap County	18 inches
Heavy Snow	2/23/2013	Belknap County	6-14 inches
Heavy Snow	3/19/2013	Belknap County	6-10 inches
Heavy Snow	12/4/2013	Belknap County	8-14 inches
Heavy Snow	1/2/2014	Belknap County	6-14 inches

Probability of Occurrence: Highly Likely

MOTOR VEHICLE ACCIDENT INVOLVING HAZARDOUS MATERIALS

Location: The committee noted that Exit 22 (NH Route 127) is frequently utilized as a southbound route for trucks bound for Franklin. They also pointed out that there are a couple of sections of I-93 where trucks tend to have accidents. Additionally, a spill at the US 3/NH 11 bridge into Belmont could quickly spread into the Winnepesaukee River/Silver Lake. .

Extent: Oil spills along several of the routes in Sanbornton could result in the contamination of wells or waterbodies in the watershed. In addition to distributing fuel to central locations in the region, tankers travel throughout the area daily to deliver home heating fuel. Many oil tankers have the capacity to carry 10,000 gallons of home heating oil. The committee rated the extent as moderate.

History: Several incidents, especially rollovers on I-93 were mentioned. No local incidents on local roads were identified; however the volume of traffic and proximity to state roads to vulnerable water bodies led the Committee to consider a spill of hazardous materials while in transport a concern.

Probability of Occurrence: Highly Likely

HEALTH HAZARDS (EPIDEMIC AND INSECT-BORNE DISEASES)

Location: An epidemic is an outbreak of a disease, generally isolated to one area. The disease spreads easily person-to-person and can cause serious illness. An outbreak could impact anyone in town. Transmission of germs and diseases between people is accelerated in a close living and socializing environment. Schools, and congregate care centers for the elderly are good places for transmission to occur.

Insect-borne diseases could impact people and land throughout Sanbornton.

Extent: The New Hampshire Health and Human Services developed an epidemic and pandemic response plan in February 2007, so that communities can be prepared and respond to outbreaks.²¹ Shaker School District has an up to date Emergency Operations Plan with policies for addressing epidemics.

Over the past ten years, two strains of influenza viruses have become concerns across the country. The Lakes Region of New Hampshire has a large influx of seasonal visitors, which could make viral containment very difficult. Between 2005 and 2006, the Avian Influenza H5N1 virus infected 81 people and killed 52 in 10 countries in Asia and Africa. Most of the H5N1 cases were a result of human contact with infected poultry and the spread of the virus has not continued beyond that person. Although no human-to-human cases have been reported, viruses have the ability to mutate. The significance of the H5N1 pandemic is that it brought local, state, and federal attention to the need for pandemic emergency preparedness plans.

In 2009, the WHO declared a global H1N1 pandemic.²² H1N1 is an influenza virus that can spread “human to human” through respiratory droplets from coughs or sneezes.²³ Many of the planning systems developed out of the H5N1 pandemic were useful during this pandemic.²⁴

Numerous diseases such as West Nile Virus and Lyme Disease are transmitted to humans and some animals through insects. However, the committee discussed this topic mainly in terms of the economic threat posed to woodlands by insects such as the Emerald Ash Borer and the Hemlock Woolly Adelgid. Once infested, by the Emerald Ash Borer, trees will die in 3-5 years. “If left untreated, the Hemlock Woolly Adelgid can kill a tree in 4 to 10 years. Today there are many communities throughout the southeast and lakes region with small infestations.”²⁵ Moderate

History: While there certainly have been minor outbreaks of flu in town, no major outbreaks of this or any other infectious disease was identified during this process. The 2012-13 flu season was much

²¹ <http://www.dhhs.nh.gov/dphs/cdcs/avian/documents/pandemic-plan.pdf>, visited February 8, 2011.

²² http://c3ph.org/Files/vaccine_fact.pdf, visited February 15, 2011.

²³ <http://c3ph.org/Files/H1N1FAQ.pdf>, visited February 15, 2011.

²⁴ <http://www.cdc.gov/h1n1flu/cdcresponse.htm>, visited February 8, 2011.

²⁵ UNH Cooperative Extension, <http://nhbugs.org/hemlock-woolly-adelgid>.

more severe in New Hampshire than any of the previous decade; 35 deaths occurred statewide, the most since 1997.²⁶ No infestations of the Emerald Ash Borer were noted, however, neighboring Merrimack County does have infestations of the insect, which has led to limits on the transportation of ash products.²⁷ The Hemlock Woolly Adelgid has not been detected in Sanbornton yet but has been found in some other Lakes Region communities.

Probability of Occurrence: Epidemic – Unlikely, Insect-borne diseases - Likely

Summary

It is cost prohibitive to make the built environment resistant to the most devastating natural hazards that could occur, though reasonable measures can be taken to minimize loss of life and property damage. Sanbornton may be affected by an unavoidable extraordinary circumstance such as a violent earthquake, but historically, events of this magnitude have been infrequent. Those natural events that are common to the northeast also have common elements of concern for public safety. These include the potential for long-term power outages, the potential need for short-term sheltering facilities, and the availability of equipment and trained personnel. Key to loss prevention in these relatively common event scenarios is pre-event planning that critically assesses communications within the community, mutual aid resources regionally, public awareness and education, and emergency response training.

²⁶ NH Department of Health and Human Services <http://www.dhhs.nh.gov/media/pr/2013/01-jan/01112013flu.htm>, visited January 17, 2013.

²⁷ UNH Cooperative Extension <http://nhbugs.org/emerald-ash-borer>.

CHAPTER IV: VULNERABILITY ASSESSMENT

A. INVENTORY ASSETS

The list of critical infrastructure for the town of Sanbornton (Table 11) was updated by the Committee and the values updated by the Town Assessor (2013). The critical infrastructure list is divided into four categories, 1) Essential Services; 2) Emergency Shelters; 3) Structures and Services; 4) Populations to Protect. The first category contains facilities essential in a hazard event, including the Emergency Operation Centers. The second contains the emergency shelters within the town. The third category is a list of facilities that have been identified by the Committee as facilities to protect in order to minimize additional risk to hazards. The fourth category contains special populations that may require additional attention in the event of a disaster.

Table 11: Critical Facilities

CLASSIFICATION	TYPE	NAME	ADDRESS	Notes	Structural value
Structures & Services	Public Service	Sanbornton Public Library	27 Meeting House Hill Road		\$202,100
Structures & Services	Public Service	Old Town Hall	19 Meeting House Hill Road	Historic	\$109,700
Structures & Services	Public Service	U.S. Post Office	542 Sanborn Road		\$102,100
Essential Services	Public Service	Town Office	573 Sanborn Road	generator	\$88,900
Essential Services	EOC	Public Safety Building	565 Sanborn Road	generator	\$252,600
Populations to Protect/ Shelter	School	Sanbornton Central School	16 Hunkins Pond Road	Secondary EOC	\$1,368,600
Populations to Protect	School	Sant Bani School	179 Osgood Road		\$1,649,200
Populations to Protect	School	Montessori School	Route 127		\$157,900
Populations to Protect	Congregate Care	1190 New Hampton	1190 New Hampton Road		\$224,100
Populations to Protect	Elderly Housing	Pyareo (assisted living)	333 Brook Road		\$385,500
Populations to Protect	Seasonal Campground	Dulac Land Trust	117 Osgood Road		\$132,700
Structures & Services	DPW	Transfer Station	184 Shaw Hill Road		\$117,400
Essential Services	DPW	Highway Department	60 Hunkins Pond Road		\$289,200
Essential Services	Emergency Fuel	Irving Station	Rte. 127/New Hampton Road		\$413,500
Structures & Services	City Sewer	Pump Station #1	Lower Bay Road		No Data
Structures & Services	City Sewer	Pump Station #2	Johnson Barn Road	Warren Barn Road	No Data
Structures & Services	Bridge	Mosquito Bridge	Rte. 3 over Lake Winnisquam		No Data
Structures & Services	Bridge	Turkey Bridge	Rte. 127/ Burleigh Hill Road	replaced	No Data
Structures & Services	Bridge	Knox Mtn Bridge	Knox Mtn Road	replaced	No Data
Structures & Services	Bridge	Chapman Rd Bridge	Chapman Road		No Data
Structures & Services	Bridge	Huse Rd Bridge	Huse Road	replaced	No Data
Structures & Services	Bridge	Shute Hill Bridge	Shute Hill Road	replaced	No Data
Structures & Services	Bridge	Hermit Woods Bridge	Hermit Woods Road		No Data
Structures & Services	Dam	Hermit Lake Dam	Southern end of Hermit Lake	State-owned	No Data
Structures & Services	Dam	205 Johnson Road Dam	End of Johnson Road	Turkey Bridge	No Data
Structures & Services	Evacuation Route	I-93	South/North central Sanbornton		No Data
Structures & Services	Evacuation Route	Rte. 132	South/North central Sanbornton		No Data

CLASSIFICATION	TYPE	NAME	ADDRESS	Notes	Structural value
Structures & Services	Evacuation Route	Rte. 127	East/West central Sanbornton		No Data
Structures & Services	Evacuation Route	Rte. 3	1/4 mile in western Sanbornton		No Data
Emergency Shelter	Shelter	1st Baptist Church	17 Church Lane	No generator	\$145,400
Emergency Shelter	Shelter	2nd Baptist Church	322 Upper Bay Road	No generator	\$324,800
Emergency Shelter	Shelter	Congregational Church	21 Meeting House Hill Road	No generator	\$248,800
Emergency Shelter	Shelter/Unique Resource	Steele Hill Resort	516 Steele Hill Road	No generator	\$7,348,700
Populations to Protect	Public Beach	Town Beach	68 Doctor True Road		No Data
Populations to Protect	Public Beach	Hermit Lake Beach	677 Stage Road		No Data
Populations to Protect	Park	Town Park	Shaw Hill Road	Has two portable classrooms	\$117,400
Structures & Services	Historic Resources	Town Center/Square	Meeting House Hill Road	Sanborn Road	No Data
Structures & Services	Commercial Center	Industrial/ Commerce	Rte. 3 near Winnisquam Bridge		No Data
	Additions				
		New DPW Garage	60 Hunkins Road		\$289,200
		Cell phone towers	Steele Hill		\$202,000
		New culvert	Brook Road		\$297,800
		Bridge	Lower Bay Road		No Data
		Bridge	US ACoE		No Data
Emergency Shelter	Regional Shelter	Winnisquam High School	Tilton		No Data
Structures & Services	Bridge	Bay Road	State		No Data
Structures & Services	Bridge	Plummer Bridge			No Data
	Fire Station	Chapel Fire Station	Weeks Road		\$26,000
		Town Forest & hiking trails			No Data
Population to Protect		Bed and Breakfast	100 Lower Bay Road		\$278,200
Population to Protect		Bed and Breakfast	1 Shute Hill Road		\$157,800
Population to Protect		Bed and Breakfast	30 Lower Smith Road		\$155,200
Population to Protect		Bed and Breakfast	Brook Road		\$149,500
Population to Protect	High Density	Leighton Estates			No Data
Population to Protect	High Density	Bayshore/Broadview			No Data
Total					\$15,234,300

The *Critical Facilities and Potential Hazards Map* (Appendix F) identifies the location of the critical facilities in relation to mapped hazard areas.

B. IMPACT OF HAZARDS

The 2013 assessed value of the critical facilities identified in Section A are listed in Table 11, totaling \$15,234,300. This does not; however, include the contents of the building and does not necessarily reflect the cost of full replacement. Also not reflected in this assessment is the value of built infrastructure such as streets, sidewalks, bridges, curbs, drainage, and utility transmission lines. These values can also be used to determine potential loss estimates in the event that a natural or manmade hazard damages a part of or an entire facility. Many of the facilities listed here are privately owned but represent structures or service that the Committee considered to be essential in terms of mitigating vulnerability to hazards.

The 2013 assessed value of all of the structures in Sanbornton is \$228,829,600. The value of the residential structures in town totals \$208,452,475 (more than 90% of the total). The value of the commercial/industrial structures in Sanbornton is \$11,123,100 and the value of the tax-exempt structures (including the structures such as the Fire Stations and Town Hall) is \$6,436,125. An additional \$2,817,900 of structural value is classified as public utilities. The overall average value of structures is \$137,639.

The impact of a hazard is the potential degree of damage that could occur in Sanbornton. This incorporates the assessed value of each critical facility and the vulnerability of these facilities and various populations and places to protect. To rate the impact of a hazard, committee members considered the damages and consequences that might result from an event, as defined below:

- Low: limited structural damage, the town's ability to respond is not compromised, local residents can handle the hazard event without help from outside sources
- Moderate: some structural damage, the town's ability to respond is compromised, regional or county assistance is needed to survive and/or recover
- Severe: substantial structural damage, the town's ability to respond is greatly compromised, state or federal assistance is necessary to survive and/or recover

Flooding

Flooding, whether from heavy rains or ice jams, carries great risk for the town of Sanbornton. Floods could impact dams and bridges and have the potential to cause damage to roads, properties, and structures, as well as loss of life.

The town of Sanbornton actively participates in the National Flood Insurance Program (NFIP) through the administration of its floodplain ordinance by the Selectmen and Zoning Enforcement Officer. This includes correspondence with the NH Floodplain Manager regarding specific issues and periodically updating the town's floodplain ordinance. By actively participating in the NFIP property owners are able to purchase flood insurance through the FEMA program.

The town has been in the program since 1979. Flood Insurance Rate Maps (FIRM) were developed by FEMA in 1979; they have not been updated since then and no Digital FIRMs have been developed. There is no Flood Insurance Study (FIS) for Belknap County. According to the State Floodplain Manager, neither upgrading FIRMs nor development of an FIS for Belknap County are part of FEMA's current priorities.²⁸

²⁸ NFIP State Coordinator, NH Office of Energy and Planning, May 22, 2014.

The town's Floodplain Ordinance was last revised in 2003 and adopted at Town Meeting. The Zoning Enforcement Officer is responsible for maintaining floodproofing and elevation certificates. The major floodplain in Sanbornton is along the Pemigewasset River, all of which is managed by the US Army Corps of Engineers as part of the Franklin Falls Recreation Area. This ensures that there is no development within the flood-prone areas near the river and gates limit the exposure of people to high water situations. There are also sections of floodplain along Black Brook, Chapman Brook, Salmon Brook and around Giles Pond, and a small stream near Bay Road. Sanbornton does have two levels of protection for streams in the form of zoning overlays through setbacks.



USACE Franklin Falls Recreation Area

<http://www.nae.usace.army.mil/Portals/74/docs/Recreation/FFDMap.pdf>

There are currently 13 buildings with NFIP flood insurance policies in force. These are all residential properties and with an insurance value \$2,229,300 (average of \$171,484 per property). Since 1975 there have been three losses paid out for a total of \$12,383, with zero repetitive losses.²⁹ Six of the insured properties are in the A-Zone (1% chance of an annual flood), the seven other properties are in the B, C, and X Zones (less than 1% chance of an annual flood - Moderate to Low Risk Areas).³⁰

In 2010 the town had a Community Assistance Call with the NH Floodplain Manager. The Planning Board and Planning Department actively maintain an up-to-date floodplain ordinance and periodically evaluate it as well as the Subdivision and Site Plan Review Regulations for compliance with federal and state standards. Taking the steps to maintain involvement in the NFIP can reduce the impact of flooding to the town and also ensures that property owners will maintain their ability to purchase flood insurance through the FEMA program.

All new structures in town must have a local Certificate of Building Compliance (Building Permit), which requires that the owner indicate whether the structure is within the floodplain; the 1979 FIRM maps are available at the Town Hall as well as the town webpage. The town maintains a list of all actions taken at the annual Town Meeting regarding the town's floodplain ordinance. The New Hampshire Floodplain Manager considers Sanbornton to be in compliance with the NFIP requirements.

Flooding along sections of Hermit Woods Road, Knox Mountain Road, Lower Bay Road, Chapman Pond, and **Black Brook Road** can result in dangerous road conditions and could lead to erosion.

Potential impact to the town due to flooding is moderate.

²⁹ NFIP State Coordinator, NH Office of Energy and Planning, August 2013.

³⁰ FEMA definitions, <https://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%20Flood%20Zone%20Designations>.

Dam Failure

None of the dams in or around Sanbornton are classified as more than a low hazard. Very little structural damage would result from failure of these dams. The approximate dollar value is not known without conducting a detailed engineered study on the specific dam sites as well as measuring potential downstream impact. Potential impact to the town due to dam failure is low.

Wildfire

In the northern and western sections of town firefighters have limited access to potential wildfire areas but fires in these areas would have limited impact on structures; there are no critical facilities in this region. There are some water resources, including dry hydrants, in this area. Due to the heavily wooded nature of the town, all properties in town have the potential to be impacted by a wildfire. These most susceptible areas tend to be rather remote and relatively few structures would be impacted. Assuming 1% town-wide damage to buildings, each year wildfire could result in \$2,288,296 in damages.

Potential impact to the town due to wildfire is moderate.

Conflagration

The structures in Sanbornton most susceptible to damage from conflagration are those in the high density areas such as Hermit Lake, and Leighton Estates. Assuming 2% town-wide damage to buildings, fire could result in up to \$4,576,592 million in damages. The potential impact to the town due to conflagration is moderate. Potential impact to the town due to conflagration is low.

Earthquake

According to the US Geologic Survey, the overall earthquake risk to the state is high due to the built environment; which means that many structures in the state are old or not built to withstand an earthquake. Damage from the 1940 earthquakes in Ossipee included some damage to most of the chimneys in the epicenter region of Ossipee, ranging from cosmetic cracks to total collapse. Sections of several foundations collapsed and at least one house rotated on its foundation. In the town of Conway, 15 miles from the epicenter, one house was lost to fire when sparks in a cracked chimney started the blaze. Splits found in the rafters and trusses temporarily closed Ossipee High School. No damages were associated with the October 2012 earthquake but the potential does exist for some damages to occur.³¹

While all structures in Sanbornton are susceptible to damage by an earthquake, those that are taller, older, and constructed of masonry are most susceptible to damage; there are few masonry buildings or structures taller than three stories high in Sanbornton. A relatively large earthquake in all likelihood would impact the roads including the bridges, limiting the ability of emergency services to be rendered. The fire department would have some response problems if the bridges were impacted, although in most cases there are alternate options, requiring redeployment of apparatus and people or mutual aid assistance. The likely impact of an earthquake on the town would be moderate.

All structures in Sanbornton are susceptible to damage by an earthquake, although very few are constructed of masonry or have more than two stories. Assuming 1% town-wide damage to buildings, an earthquake could result in \$2,288,296 in damages any given year.

Lightning

Although the numbers have trended downward in recent decades, during the last half of the twentieth century more people were killed in the United States each year by lightning than by any other weather

³¹ USGS <http://earthquake.usgs.gov/earthquakes/eventpage/usb000d75b#pager>, accessed October 17, 2012.

event. It can also wreak havoc with electrical and communications systems.

Power outages, whether associated with natural or man-made hazards have the potential to cause great disruption to residents and the functioning of the town. There is back-up power for most municipal facilities. As indicated in Table 12, lightning could have an impact on many of the town's critical facilities. Forest fires or structural fires can result from lightning strikes. Lightning can injure or kill people near the strike. Structures that are not grounded are the most susceptible to damage. The impact of lightning could be similar to either wildfire or conflagration. All structures in Sanbornton are susceptible to damage by lightning and resulting fires. The town's computer and communication systems could also be impacted by lightning. Assuming 1% town-wide damage to buildings, each year lightning could result in \$2,288,296 in damages.

The potential impact to the town due to lightning is moderate.

High Winds (Tornado, Downburst, Hurricane)

Tornados and downbursts could strike anywhere in town with little, if any warning. While individual events may be small and rare, their impacts could be devastating. All structures, especially older ones, which are not necessarily built to the current building code standards, could be at risk.

Damage can occur to most structures in town as a result of downed trees in any high wind event, including the commonly occurring thunderstorms. These winds can bring down limbs and trees, causing damage to structures as well as pulling down power and telephone lines and blocking roads. This is particularly the case along private roadways that may only get limited cutback of vegetation. Because hurricanes form over the ocean and move relatively slowly, people usually have time to prepare for the event. However, this also means that once the storm arrives, heavy rain and wind can be expected for couple of days.

All structures in Sanbornton are susceptible to damage by high wind events, whether through thunderstorms, downburst, or tornado. Assuming 1% to 5% town-wide damage to buildings, high winds could result in \$2,288,296 to \$11,441,480 in damages.

The potential impact to the town due to high winds is low.

Hail

Hail can damage exposed emergency vehicles and crops. Minor damage to structures may occur. Potential impact to Sanbornton due to hail is low.

Winter Weather (Snow storms/Ice Storms)

Downed limbs and wires and unplowed or untreated roads can severely limit emergency access to many residences. The potential for very cold temperatures and loss of power can quickly compound the issue. A severe ice storm struck central and southern New Hampshire and New England on December 11, 2008. Over 400,000 people were without power, some for over two weeks, and overall damages exceeded \$15 million.

Most critical facilities in Sanbornton were identified as being vulnerable to snow or ice event. Flat-roofed buildings are all susceptible to damage from snow and ice loads.

All structures in Sanbornton are susceptible to damage by winter weather events, whether through ice storms, blizzards, or the heavy, wet snow often associated with a nor'easter. Assuming 1% to 5% town-wide damage to buildings, winter weather could result in \$2,288,296 to \$11,441,480 in damages annually.

The potential for impact to the town from severe winter weather is seen as moderate.

Motor Vehicle – Hazardous Materials

The release of hazardous materials along one of the roadways in Sanbornton has the capacity to cause substantial damage in the town; there are many variables that could affect the degree of impact, including the nature of the material, the location of the accident and its proximity to surface and groundwater, as well as structures. An oil spill along a remote section of NH Route 132 is quite different from a chemical spill at Mosquito Bridge (US Route 3/NH Route 11) at Lake Winnisquam. A spill that gets into the surface water might impact the businesses associated with waterfront recreation.

A hazardous materials accident would not likely impact structures; rather the impact would be environmental. The NH Lakes Association notes that a reduction in water quality could lead to \$25 million of lost income to the 30 communities of the Lakes Region. The potential for impact to Sanbornton from a hazardous materials motor vehicle incident is seen as moderate.

Health Hazard – Epidemic, Insect-borne diseases

The concerns associated with an epidemic include local capacity to respond to not only the residents of Sanbornton but also any visitors. There would need to be an effort to not only treat those who are suffering but also prevent the further spread of the disease. Incidents of rabies transmission are usually limited to a very small number of individuals.

The community does partner with Lakes Region Partnership for Public Health (<http://www.lrp-ph.org/>) for resources and training. A health emergency would not impact structures but the facilities providing services that would be impacted the most are the schools, the Public Safety Building, and the shelters. The impact of an epidemic on the town would be moderate while the impact of rabies would be low.

The impact of insect-borne diseases to Sanbornton's economy was not determined as part of this update. Committee members were concerned that there may be some impact to the town's forestry and agriculture sector as well as some of the tourism sector.

Table 12: Vulnerability of Critical Facilities**Natural Hazards Vulnerability* of Critical Facilities Matrix: Sanbornton NH**

Facility/Infrastructure	Flood	High Wind: Tornado, Downburst	Lightning	Severe Winter Weather	Earthquake	Fire	MV Accident w/ HazMat	Epidemic	Rabies
Sanbornton Public Library	low	high	high	high	medium	medium	low	medium	medium
Old Town Hall	low	high	high	high	medium	medium	low	low	medium
U.S. Post Office	low	high	high	high	medium	medium	medium	medium	medium
Town Office	low	high	high	high	medium	medium	medium	medium	medium
Public Safety Building	low	high	high	high	medium	medium	medium	high	medium
Sanbornton Central School	low	high	high	high	medium	medium	low	high	medium
Sant Bani School	low	high	high	high	medium	medium	low	high	medium
Montessori School	low	medium	medium	high	medium	medium	low	high	medium
Congregate Care - 1190 New Hampton Rd.	low	low	low	high	medium	medium	low	low	medium
Pyareo (assisted living)	low	medium	medium	high	medium	medium	low	medium	medium
Dulac Land Trust	low	low	low	low	medium	medium	low	medium	medium
Transfer Station	low	medium	low	high	medium	medium	low	low	medium
Highway Department	low	medium	low	high	medium	medium	low	low	medium
Irving Station	low	medium	medium	high	medium	medium	medium	high	medium
Sewer Pump Station #1	low	low	low	low	medium	medium	low	low	medium
Sewer Pump Station #2	low	low	low	low	medium	medium	low	low	medium
Mosquito Bridge	low	medium	medium	high	medium	medium	medium	low	medium
Bridge: Turkey Bridge	medium	medium	medium	high	medium	medium	low	n/a	n/a
Bridge: Knox Mtn Bridge	medium	low	low	low	medium	medium	low	n/a	n/a
Bridge: Chapman Road	medium	low	low	high	medium	medium	low	n/a	n/a
Bridge: Huse Road	medium	low	low	high	medium	medium	low	n/a	n/a
Bridge: Shute Hill	medium	low	low	high	medium	medium	low	n/a	n/a
Hermit Woods Bridge	medium	low	low	high	medium	medium	low	n/a	n/a
Dam: Hermit Lake	high	low	low	low	medium	medium	low	n/a	n/a
Dam: 205 Johnson Road	high	low	low	low	medium	medium	low	n/a	n/a
Evacuation Route: I-93	low	low	low	high	medium	medium	high	n/a	n/a
Evacuation Route: NH Rte. 132	medium	low	low	high	high	medium	high	n/a	n/a
Evacuation Route: NH Rte. 127	low	low	low	high	high	medium	high	n/a	n/a
Evacuation Route: US Rte. 3	low	high	high	high	medium	medium	high	n/a	n/a

Facility/Infrastructure	Flood	High Wind: Tornado, Downburst	Lightning	Severe Winter Weather	Earthquake	Fire	MV Accident w/ HazMat	Epi demic	Rabies
Shelter: 1st Baptist Church	low	medium	medium	low	medium	medium	low	medium	medium
Shelter: 2nd Baptist Church	low	high	high	low	medium	medium	low	medium	medium
Shelter: Congregational Church	low	high	high	low	medium	medium	low	medium	medium
Shelter: Steele Hill Resort	low	high	high	high	medium	medium	medium	high	medium
Town Beach	low	medium	medium	low	medium	medium	low	low	medium
Hermit Lake Beach	low	medium	medium	low	medium	medium	low	low	medium
Town Park	low	low	low	low	medium	medium	low	low	medium
Town Center/Square	low	high	high	high	medium	medium	medium	low	medium
Commercial Center: Industrial/Commerce	low	high	high	high	medium	medium	high	low	medium
New DPW Garage	low	medium	medium	medium	medium	medium	medium	low	medium
Cell phone tower at Steele Hill	low	high	high	medium	medium	medium	medium	low	medium
Cell phone tower at Brook Road	low	high	high	medium	medium	medium	medium	low	medium
Shelter (Regional) Winnisquam High School (Tilton)	low	medium	medium	medium	medium	medium	medium	high	medium
Bridge: Bay Road	low	low	low	medium	medium	medium	medium	n/a	medium
Bridge: Plummer Road	low	low	low	medium	medium	medium	medium	n/a	medium
Chapel Fire Station	low	low	low	medium	medium	medium	medium	n/a	medium
Town Forest and hiking trails	low	low	low	medium	medium	high	medium	low	medium
B & B: Lower Bay Road	low	high	high	medium	medium	medium	medium	medium	medium
B & B: Shute Hill Road	low	medium	medium	medium	high	medium	medium	medium	medium
B & B: Lower Smith Road	low	high	high	medium	medium	medium	medium	medium	medium
B & B: Brook Road	low	medium	medium	medium	medium	medium	medium	medium	medium
Leighton Estates	low	high	high	medium	medium	high	medium	low	medium
Bayshore/Broadview	low	high	high	medium	medium	high	medium	low	medium

*Vulnerability is susceptibility to damage or economic loss. It includes how exposed or susceptible to damage an asset is and depends on:

a) location (floodplain, steep slope), b) construction (elevated, meets codes), and c) contents (haz. mat.)

Low - not particularly exposed to hazard, constructed to code or hardened against hazard, contents are not particularly hazardous or exposed.

Medium - some exposure to hazard, some deficiencies in construction or could be hardened against hazard, some contents are exposed or hazardous.

High - site or structure is exposed to the hazard, structure is not up to code or should be hardened against hazard, contents are exposed or hazardous.

C. SUMMARY OF RISK

Taking into account 1) the potential extent of the hazard, 2) the likelihood of occurrence of an event, and 3) the potential impact of a particular hazard event, the risk of the various hazards that might occur in Sanbornton was determined (Table 13). Level of risk was determined by multiplying the values of these three factors together.

A matrix was created to determine an overall hazard risk assessment rating. Each criterion (hazard extent, frequency of occurrence, and vulnerability – both impact and exposure) was given a rating to show which hazards are the greatest threat to the community, based on: historic events and local knowledge, danger/destruction, the town's ability to respond, along with economic and environmental issues. These ratings were transformed into numerical values 3, 2, and 1, with 3 as high and 1 as low (frequency used a 4, 3, 2, 1 scale).

The overall risk rating associated with each hazard was determined by multiplying the two factors. This resulted in risk ratings ranging from 1 to 16; 1-3 = minimal risk, 4-8 = low risk, 9-12 = moderate risk, 13-16 = high risk. This Plan will focus on those events that pose at least a moderate risk to the town of Sanbornton as determined by the Committee (Table 13).

It should be noted that the ranking of individual hazards for the purposes of planning discussion should not in any way diminish the potential severity of the impacts of a given hazard event. Further, hazards ranked as low risk may have the impact of increasing the risk of other hazards when they occur. For example, in the event of a drought, the risk of woodland fire may be greater. In combination, hazard events may have the impact of overwhelming existing emergency response systems.

Table 13: Risk Assessment

Risk Assessment Sanbornton	Geographic Area					Specific Areas of Concern	Extent			Frequency				Vulnerability/ Impact			Risk Rating
	Localized	Town-wide	Regional	State-wide	Other (explain)		Severe	Moderate	Minimal	Highly Likely	Likely	Occasional	Unlikely	High	Moderate	Low	Risk Rating
Flood	X					Black Brook & Chapman Rd			1	3				2		6	
Dam Failure	X								1			1			1	1	
Ice Jam	X								1		2				1	2	
Drought				X					1		2				1	2	
Conflagration	X					Hermit Lake, Bayshore Dr., Black Brook, Leighton Estates			1		2				1	2	
Extreme Heat				X					1		2				1	2	
Wildfire	X								1	3				2		6	
Earthquake			X					2		3				2		12	
Landslide	X								1		2				1	2	
Radon	X								1		2				1	2	
Lightning			X			Six strikes in 2012 caused damage. Town Hall phones impacted in the past.		2		4				2		16	
High Wind (Tornado/ Downburst/ Hurricane)	X					Bayside microburst 7/4/12		2		4					1	8	
Hail			X						1	3					1	3	
Blizzard/Snow Storm			X					2		4				2		16	
Ice Storm			X			Ice - higher elevations - Ice storms require more materials on roads, more \$		2		4				2		16	
Avalanche	X								1			1			1	1	
Human-Related Events																	
MV Accident w/ Hazardous Materials	X					SB exit on I-93, shortcut to Franklin, I-93 - Increased speed limit will lead to more incidents.		2		4				2		16	
Military Aircraft Accident	X					NY- refueling training			1			1		2		2	
Epidemic	X					Pow-Wows on Dulac Land Trust (NH 132) several times/ yr, Rendezvous on USACoE land (600 people)		2				1		2		4	
Rabies				X		10-year cycle		2		4					1	8	

CHAPTER V: MITIGATION STRATEGIES

A. CURRENT PLANS, POLICIES, AND REGULATIONS

The planning decisions that affect community growth patterns have evolved over the years as Sanbornton has developed. Many local programs have the effect of mitigating disasters; some of these have been in effect for years, others were implemented since the development of the 2008 Hazard Mitigation Plan. A review of existing mitigation strategies was conducted and included review of pertinent documents including the zoning ordinance, subdivision regulations, emergency management plan, site plan regulations, and discussion with Committee members. The following strategies detail existing plans and regulations related to hazard mitigation. Also included is a column with comments noted by the Committee.

Table 14: Existing Protections and Policies

Entity	Description	Comments	How Effective	Improvements/ Changes
Zoning Ordinance	(Art. 8) Recreational District – (8) sanitary protections	Protects the quality of local groundwater.	Good	No changes necessary at this time.
	(Art. 12) Aquifer Conservation District	Protects the quality of local groundwater.	Good	No changes necessary at this time.
	(Art. 13) Floodplain Conservation District – no domiciles or structures	Limits development in areas likely to flood.	Good	No changes necessary at this time.
	(Art. 14) Shorefront District- 300' inland from shoreline for all lakes & ponds >10 acres	Reduces the impact of development on water quality.	Good	No changes necessary at this time.
	(Art. 15) Wetlands Conservation District	Has multiple levels of protection against development based on the characteristics of the wetland.	Good	No changes necessary at this time.
	(Art. 16) Steep Slopes Conservation District	15% slopes. Reduces the likelihood of erosion.	Good	No changes necessary at this time.
	(H) Limits regarding Hunkins Pond as it is a public water supply 200' setback & no motor boats	Protects a current/future water supply.	Good	No changes necessary at this time.
	(L) 50' setback all structures from water bodies	Reduces the impact of development on water quality.	Good	No changes necessary at this time.

Entity	Description	Comments	How Effective	Improvements/ Changes
	(M) Requires erosion & sediment control plan for major developments	Reduces the likelihood of erosion.	Good	No changes necessary at this time.
	(Q) Standards for new/renovated housing - elderly/handicapped/disabled to meet health & safety standards and for placement of persons with mental challenges.	Helps to protect a vulnerable population.	Good	Construction standards for Multi-Family Housing are being considered by the Planning Board.
	The Sanbornton FD inspects Multi-Family & Commercial structures for life safety building code.	Helps protect structures and people against fire damage.	Good	No changes necessary at this time.
	(R) Daycare requirements for health & safety of children	No registered daycares at this time	Good	No changes necessary at this time.
Floodplain protection - ordinance & action	National Flood Insurance Program (NFIP)	Regular Participant since 6/15/1979 (13 policies totaling \$2.3 M in force)	Fair	Due to existing protections and zoning, there are very limited opportunities for development in the floodplain.
	Community Assistance Call (7/13/2010)	Recommended question regarding whether in or out of SFHA.	Good	No changes necessary at this time. Zoning Compliance Certificate now includes this question.
	FIRM & FBFM (Flood Boundary Floodway Map) 6/15/1979	Maps are 35 years old. This task is FEMA's responsibility.	Poor	Urge FEMA and NH HSEM to update the maps for Belknap Co.
	Current Flood Insurance Study (Belknap County) - 12/1/1978	Study is 35 years old. This task is FEMA's responsibility.	Poor	Urge FEMA and NH HSEM to update the study for Belknap Co.
Subdivision Regulations	[C.9] Road Grade requirements <8%	Limits damage to new roads due to erosion and washout.	Good	No changes necessary at this time.
	[C.10] Road Drainage requirements	Limits damage to new roads due to erosion and washout.	Good	No changes necessary at this time.
	Town does have Road Design Standards	Limits damage to new roads due to erosion and washout.	Good	No changes necessary at this time.
	[D] Lot Drainage requirements	Limits damage to new lots and structures due to erosion and washout.	Good	No changes necessary at this time.
	[E] Sewage Disposal	Limits damage to new lots and groundwater quality.	Good	No changes necessary at this time.

Entity	Description	Comments	How Effective	Improvements/ Changes
	[G] Flood Hazard Areas	Protects new structures from flooding.	Good	No changes necessary at this time.
	Applicants are required to show wetlands	Protects new structures from water damage	Good	No changes necessary at this time.
	Applicants are required to show Base Flood Elevation on map (NFIP)	Protects new structures from water damage	Good	No changes necessary at this time.
	Planning Board may require a Stormwater Management & Drainage Plan.	Protects new structures from water damage	Good	No changes necessary at this time.
	Planning Board may require Hydrogeological Study	Protects new structures from water damage	Good	No changes necessary at this time.
Planning	Town does have a PT Planner	Reviews plans and advises the Planning Board.	Good	No changes necessary at this time.
	No local Building Code - Use State Code	State Code is based upon the International Building Code (IBC), 2009.	Good	No changes necessary at this time.
	As there is no Building/Code Inspector, it is the Selectmen's responsibility [but the committee noted that there is no mechanism for inspection - See RSA 155:A7]	***There is no mechanism for notifying Fire Chief to do inspections.***Note - Work is being done on creating a process for inspection of rental properties.***	Fair	Selectboard should create a Certificate of Occupancy.
	The Black Brook Watershed Plan was developed in 2012.	This addresses erosion and sediment control	Good	No changes necessary at this time.
	Planning Board developed and maintains a Capital Improvements Plan	Helps the community plan for and manage large capital expenses.	Good	No changes necessary at this time.
Sewer Service	Winnepesaukee River Basin Project (WRBP) – reduces the number of septic systems near the lake.	Only around Lake Winnisquam from Normandon Drive to Rte. 3 (Appendix J)	Good	If the WRB system were extended, even fewer septic systems would need to exist near the lake.
Communication	Brook Road and Steele Hill Communications Towers	Steele Hill has back up batteries. The local frequency works well.	Good	No changes necessary at this time.
	Work within Lakes Region Mutual Fire Aid	Cost effective means of sharing resources.	Good	No changes necessary at this time.

Entity	Description	Comments	How Effective	Improvements/ Changes
	Belknap County Sheriff's Department	Cost effective means of sharing resources.	Good	No changes necessary at this time.
	Have Nixle - public notification system	Effective method for notifying the public of emergency situations.	Good	No changes necessary at this time.
Fire Department	Full-time FD Chief	New policy - at least two staff in FD during daytime hours.	Good	No changes necessary at this time.
	2 part-time fire fighter	This is up from one in 2008.	Good	No changes necessary at this time.
	30 volunteer fire fighters	Train regularly	Good	No changes necessary at this time.
	Have an Inspection/Maintenance Plan for equipment	Preparedness	Good	No changes necessary at this time.
	80% Haz Mat Operations Certified	Preparedness and Response	Good	Continue to provide training opportunities for staff.
	100% NIMS Certified	Enhances communication and coordination	Good	No changes necessary at this time.
	Have a boat with response equipment	Preparedness and Response	Good	No changes necessary at this time.
	Trails have been mapped	Salmon Brook Trailriders	Good	No changes necessary at this time.
	Logging roads have been mapped	Salmon Brook Trailriders	Good	No changes necessary at this time.
	Capital Reserve Fund for equipment	Targeted funding for large equipment purchases. Subject to vote at Town Meeting.	Good	No changes necessary at this time.
	Schools have Emergency Plans and conduct drills	Preparedness	Good	No changes necessary at this time.
	Member of Regional Swift Water Rescue Team	Cost effective sharing of resources and training.	Good	No changes necessary at this time.
	There is a regional support network for health emergencies.	Laconia has mass casualty trailers at Lakeport Station nearby for pandemic. Town was recently switch over to LRPPH. Note: due to staffing, there has been limited involvement by the EMD.	Fair	Ensure that there is opportunity for EMD to be involved with regional network.
	Fire Chief inspects oil burner installations.	There are gaps in the enforcement mechanism.	Fair	Selectboard should create a Certificate of Occupancy.

Entity	Description	Comments	How Effective	Improvements/ Changes
	The state building and fire codes apply to multi-family and commercial structures.	The town has no building codes; the default is therefore the state fire and building codes. This applies only to public and commercial buildings, not residential.	Fair	Selectboard should create a Certificate of Occupancy.
	Have a Water Resources Management Plan (WRMP) for Rural Fire Protection (2009).	This has been a useful resource in developing new water resources for rural firefighting.	Good	No changes necessary at this time.
	Have several dry hydrants through town.	Provide a reliable water source in many rural areas.	Good	Continuing to develop sites as recommended in WRMP as opportunities arise.
Police Department	Full-time PD Chief	No change since 2008.	Good	No changes necessary at this time.
	Five full-time officers	No change since 2008.	Good	No changes necessary at this time.
	Five part-time officer	No change since 2008.	Good	No changes necessary at this time.
	One administration staff	No change since 2008.	Good	No changes necessary at this time.
	Member of the Regional Special Operations Group	Cost effective sharing of resources.	Good	No changes necessary at this time.
	Operate a DARE program in the school	Cost effective sharing of resources.	Good	No changes necessary at this time.
	90% NIMS/ICS Certified	Enhances communication and coordination	Good	Continue to provide training opportunities for staff.
	Have formal aid agreements with all surrounding communities.	Cost effective sharing of resources.	Good	No changes necessary at this time.
Emergency Operations Plan	EOP was last updated in 2004	Should be updated every five years.	Poor	The local EOP should be updated.
Department of Public Works (DPW)	Full-time Director of DPW	No change since 2008.	Good	No changes necessary at this time.
	Five full-time staff	No change since 2008.	Good	No changes necessary at this time.
	Projects are incorporated into the town's C.I.P.	Helps the community plan for and manage large capital expenses.	Good	No changes necessary at this time.

Entity	Description	Comments	How Effective	Improvements/ Changes
	0% NIMS/ICS Certified	Enhances communication and coordination	Poor	Provide training opportunities for staff.
	No staff are Haz Mat Operations Certified	Utilize Lakes Region HHW Collection. Some training could enhance the town's ability to respond to a hazardous spill.	Poor	Provide training opportunities for staff.
	Members of State-wide DPW Mutual Aid through UNH T2	Cost effective sharing of resources.	Good	No changes necessary at this time.
	Repair/maintain roads as needed	Road maintenance is limited to maintaining gravel roads due to funding constraints. No rebuilding.	Fair	Because funds are limited, road work needs to be prioritized.
	Tree maintenance is conducted as needed, with \$5,000 budgeted for this annually.	There is no written maintenance plan. \$5,000 per year is insufficient to do the job well. There are some questions regarding liability for hazards which have been identified but not immediately rectified..	Fair	A. Develop a written tree maintenance plan. B. Use the tree maintenance plan to determine the appropriate level of funding, then fund the program. C. Clarify any questions regarding liability associated with tree maintenance.
	No written debris plan.	Having local and regional contacts identified in advance can facilitate recovery.	Poor	Develop a written plan for dealing with debris in the aftermath of a hazard event.
	Erosion and sediment control work was recently completed along Black Brook, Dr. True, and Schute Hill Roads, as well as Maple Circle utilizing ARRA funds.	Includes work identified in 2008 HMP. Improves drainage and reduces the need for short-term repairs.	Good	No changes necessary at this time.
Power	Generators: town office, Life Safety Building, central school	Maintains continuity of operations	Good	No changes necessary at this time.
	Improved tree trimming policy near wires, especially PSNH	Reduces downed wires and power outages. Less expensive than repair.	Good	NHElecCoop could do a better job of tree maintenance.
Transfer Station	One full-time, two part-time staff	Handles waste and debris	Good	No changes necessary at this time.
	Open 3 days a week		Good	No changes necessary at this time.
	Recycling and dumpsters are enclosed and on concrete pads	Reduces the likelihood of contamination of soil or water	Good	No changes necessary at this time.
Shelters	Winnisquam High School (in Tilton)	Regional (primary) Shelter	Excellent	Cost effective use of resources.

Entity	Description	Comments	How Effective	Improvements/ Changes
	Central School	short-term shelter	Good	No changes necessary at this time.
	1 st Baptist Church	short-term shelter	Good	No changes necessary at this time.
	2 nd Baptist Church	short-term shelter	Good	No changes necessary at this time.
	Congregational Church	short-term shelter	Good	No changes necessary at this time.
	Steele Hill Resort	short-term shelter	Good	No changes necessary at this time.
Town Administration	Have full time Town Administrator	Can facilitate and coordinate both planning and response activities.	Good	No changes necessary at this time.
	Priorities include roads, bridges and other infrastructure	Enables community to recover from a disaster.	Good	No changes necessary at this time.
	Have made improvements in grounding of Town Hall against lightning.	Protects infrastructure and records	Good	No changes necessary at this time.
Sanbornton Public Library	Provides technology infrastructure, i.e. computers, internet, information	Available to the public.	Good	No changes necessary at this time.

Notably under the Purpose and Intent of the Floodplain Conservation District in the Zoning Ordinance, “The purpose of the Floodplain Conservation District is to protect the public health, safety and general welfare by controlling and guiding the use of land areas subject to periodic flooding. It is intended that the provision of this District shall:

- (1) Promote the general health, safety and welfare of the community through certain restrictions on the use of land located within the floodplain.
- (2) Prevent the erection of structures in areas unfit for human usage by reason of danger from flooding, unsanitary conditions or other hazards.
- (3) Reduce the financial burdens imposed on the community, its governmental units and its individuals by frequent and periodic floods and overflow of lands.
- (4) Permit appropriate uses to be located in the floodplain as herein defined, which will not impede the flow of flood waters, or otherwise cause danger to life and property at or above or below their locations along the floodway.
- (5) Conform with Federal Emergency Management Agency (FEMA) by stipulating that structures shall not be allowed in the floodway and/or floodplains as shown on FEMA maps. [March 1990]
- (6) Permit only those uses in the floodplain compatible to the preservation of natural conditions which are conducive to the maintenance of constant rates of water flow throughout the year;
 - (a) Withholding rapid water runoff contributing to downstream flooding, and
 - (b) Providing area for ground water absorption for maintenance of the subsurface water supply.”

B. STATUS OF 2008 ACTIONS

The 2008 HMP contained more than 30 recommendations. A review of the status of these actions reveals that eight have been completed and four others are no longer considered pertinent. The status of the mitigation actions recommended in the 2008 plan is indicated in Table 15 as either, Completed, Deleted, or Deferred. Some of the deleted Actions are now listed above as “Current Plans, Policies, and Regulations” (Table 14). Deferred Actions (or deferred portions of Actions) were carried forward to be considered as new Mitigation Actions (Table 16).

Table 15: Status of Mitigation Actions from the 2008 Hazard Mitigation Plan

Action ID	Mitigation Action - 2008	2013 Status	Comment	How Effective	Improvements/ Changes
D	Obtain a generator for the library	Delete	Not a shelter	n/a	n/a
F	Construct containment structures for hazardous waste at the transfer station	Delete	Participate in annual Lakes Region Household Hazardous Waste Collections	Good	No further changes required.
R	Obtain digital radios for DPW	Delete	Technologically, not the best strategy at this point in time.	Fair	Improve coverage.
T	Draft an ordinance to allow water access easements for fire suppression	Delete	FD has been utilizing a different strategy, obtaining individual easements.	Good	No further changes required.
AA	Update vulnerable culverts and bridges, identified by the DPW, throughout town: Shute Hill Road Bridge, Turkey Bridge, Huse Road Bridge, Plummer Road Bridge	Completed	Shute Hill Bridge was enlarged using ARRA funds.	Good	No further changes required.
B	Obtain shelter supplies (i.e. MREs, cots, blankets, toiletries)	Completed	Winnisquam Regional High School now serves as the Regional Shelter.	Good	No further changes required.
G	Construct secondary containment (accessway and pad) for dumpster and construction debris areas at the transfer station	Completed	Prevention	Good	No further changes required.
H	Construct a retaining wall behind the dumpster at the transfer station	Completed	Prevention	Good	No further changes required.

Action ID	Mitigation Action - 2008	2013 Status	Comment	How Effective	Improvements/ Changes
S	Enhance the phone system for communications during events.	Completed	Response	Good	No further changes required.
V	Install a shared server for all municipal departments	Completed	Communication and Coordination	Good	No further changes required.
W	Work with the Department of Safety, 911 Mapping Bureau to fix known problems with GIS road data to limit confusion in emergency planning and emergency response.	Completed	Emergency Services now utilize tablets and digital data to locate incidents and resources.	Good	This is now a policy
DD	Ensure that development projects comply with the existing mitigation strategies of the subdivision regulations, site plan review, and building codes.	Completed	Done through the Planning Board's Subdivision and Site Plan Review processes.	Good	This is now a policy
E	Construct a sallyport and garage for the PD cruisers and equipment upon relocation	Completed	Response	Good	No further changes required.
M	Complete NIMS/ICS training for all municipal staff	Partially Completed	Policy - See Table 13.	Good	When there is turnover, this requires training. Consider training for DPW staff.
BB	Repair roads that flood regularly: Hunkins Pond Road, Blackbrook Road, Chapman Road	Completed/Defer	Hunkins Pond Road has been completed. Chapman Pond Road and Black Brook Road still need mitigation - insufficient funds.	Fair	Upgrade drainage associated with roads that flood regularly: Black Brook Road, Chapman Road
A	Upgrade the forestry truck for wildfire suppression	Defer	2016 Fire Equipment	Good	This is in the CIP.
C	Obtain EOC supplies (i.e. laptops, portable phones, projectors, maps, etc.)	Defer	Work on this has begun; it should be completed in 2014	Good	No further changes required.
CC	Adopt town Building Codes	Defer	There has been limited political will for this.	Fair	State Building Code is the default. Any effort to change this will require a local advocate and more discussion of pros and cons.

Action ID	Mitigation Action - 2008	2013 Status	Comment	How Effective	Improvements/ Changes
EE	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a "no adverse impact".	Defer	Implicitly, this is part of the job of the Town Planner and Planning Board and is being done.	Good	Being explicit about the desired final outcome and putting the burden of proof on the applicant could be a benefit.
I	Construct a fire sub-station in the eastern portion of town to improve response time	Defer	This may not be the most appropriate solution at this point in time.	Fair	The problem (inadequate response time to eastern portion of town) has been identified as a concern. Some feel that addressing insufficient staffing will improve the situation.
J	Obtain GIS data layers for emergency services/high hazard areas in town	Defer	Insufficient funds	Fair	Most data is available for free; to truly utilize it, software and training are necessary (See Action K).
K	Obtain GIS software and components for municipal offices	Defer	Insufficient funds	Fair	Planning Department utilizes LRPC for GIS services.
L	Update FIRM maps with aerial overlays [digitized flood maps].	Defer	Belknap County DFIRMs not completed. Insufficient funds.	Poor	This is FEMA's responsibility and it is not a FEMA priority at this time. Maintain communication and urge HSEM & FEMA to raise its priority status.
N	Incorporate the 2007 Hazard Mitigation Plan in the Emergency Operations Plan.	Defer	EOP to be updated in 2014	Fair	Separate documents; utilize the information, goals, and actions of the HMP to inform the LEOP.
O	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	Defer	Existing data can be accessed in all vehicles with tablets. Digitization is in progress.	Good	This needs to continue and then be done as data is updated.

Action ID	Mitigation Action - 2008	2013 Status	Comment	How Effective	Improvements/ Changes
P	Identify companies that can assist for debris removal and snow plowing in emergencies	Defer	Still a need.	Fair	Some are known. Formalizing the process could improve response time in an emergency.
Q	Include a recommendation in the Master Plan to maintain the Hazard Mitigation Plan.	Defer	A local advocate has been needed to implement this.	Fair	EMD or PB member meet with Master Plan Update Committee when MP is being updated.
U	Draft an ordinance that requires free municipal access [on the top 1/3] for any cell/communications tower installed in town.	Defer	Meet with PB subcommittee.	Fair	EMD should meet with subcommittee addressing communications towers.
X	Create a roads/infrastructure inventory (including culverts, bridges, dams)	Defer	Time, money, staff	Fair	Explore options available for infrastructure inventory - there may be some low cost options.
Y	Develop an infrastructure maintenance schedule	Defer	Time, money, staff	Fair	Best done after an inventory has been completed (Action X)
Z	Create and implement dry hydrant/cistern installation and maintenance plan.	Defer	Plan is complete.	Good	Implementation of Installation and Maintenance Plan will become a policy.

C. MITIGATION GOALS AND TYPES OF ACTIONS

In the 2008 Plan, the committee affirmed its support for the goals stated in the State HMP at the time. While the overall goals of the town of Sanbornton have not changed substantially since then, the form in which they are stated has. The general goals below are similar to the goals in the earlier plan while the hazard-specific goals address specific local concerns.

General Goals:

1. Improve upon the protection of the residents of Sanbornton and its visitors from all hazards, raise general awareness, and reduce the liability to the town from hazard events.
2. Reduce the potential impact of hazard events on Sanbornton's critical support services, facilities, and infrastructure.
3. Improve emergency preparedness.
4. Improve the response and recovery capability of Sanbornton to hazard events.
5. Reduce the potential impact of hazard events on private and public property, the natural environment, and economic resources.

Hazard Specific

Flooding

6. Minimize the impact that a flood would have on life, property, and infrastructure along the Pemigewasset River, Lake Winnisquam, the associated floodplains, along with various streams of the town of Sanbornton.

Fire

7. Reduce the risk of loss of life, and damage to property and infrastructure due to structural or wildfires.
8. Minimize the impact to life, property, and the environment during a hazardous materials spill.
9. Reduce the impact on life, structures, and infrastructure (especially communications infrastructure) as a result of a lightning strike.

Winter Weather

10. Minimize the impact of severe winter weather on people living in or visiting Sanbornton along with structures and infrastructure.

Severe Wind

11. Reduce the likelihood of damage or loss of life due to high wind events.

Health Hazard

12. Minimize the impact that a health hazard may have on the people in the town of Sanbornton.

Earthquake

13. Minimize the impact that an earthquake may have on the structures, infrastructure, and people in the town of Sanbornton.

There are a number of types of actions that communities may take to reduce the likelihood that a hazard might impact the community. These include:

A. Actions that will keep things from getting worse - Prevention

- a. Zoning – floodplain and steep slope overlays
- b. Open space preservation

- c. Subdivision and Site Plan Review
 - i. Impervious surface limits
 - ii. Stormwater management
- d. Capital Improvements Plan – limiting the extension of public infrastructure into hazard areas
- e. Building and Fire codes

B. Actions that address individual buildings - Property Protection

- a. Flood-proofing existing buildings
- b. Retrofitting existing buildings to reduce damage
- c. Relocating structures from hazard-prone areas
- d. Public procurement and management of land vulnerable to hazard damage

C. Actions that will inform the public - Public education and awareness

- a. Make hazard information and maps available to residents and visitors.
 - i. Paper or electronic
 - ii. Targeted at residents and businesses in hazard-prone areas
 - iii. Set up displays in public areas, or homeowners associations.
 - iv. Give educational programs in schools.
 - v. Make information available through newspapers, radio, TV.
- b. Ask businesses to provide hazard information to employees.
- c. Adopt a real estate disclosure requirement so that potential owners are informed of risks prior to purchase.

D. Actions that will protect natural resources

- a. Erosion and sediment control programs
- b. Wetlands protection programs
- c. Expand public open space
- d. Environmental restoration programs

E. Actions that will protect emergency services before, during, and immediately after an event (long-term continuity)

- a. Protect warning system capability
- b. Protection or hardening of critical facilities such as fire stations or hospitals
- c. Protection of infrastructure, such as roads that are needed in emergency response

F. Actions that will control the hazard – Structural projects

- a. Diversion of stormwater away from developed areas
- b. Reservoirs to store drinking water

G. Actions that will improve response - Response

D. POTENTIAL ACTIONS

Through a review of the risk assessment and local vulnerabilities, a number of Problem Statements were identified and refined by the Committee. Multiple brainstorming sessions yielded an updated list of mitigation strategies to address these current problems. Table 16 lists the problems and actions along with the hazard(s) that they address and notes whether the action addresses existing structures/infrastructure or future (new) structures/infrastructure as well as which goal(s) they address and the type of mitigation action each represents. The ID letters are used simply for tracking purposes; they do not indicate any sort of prioritization. ID letters with similar colored highlighting address similar problem statements. Note: The goals and their numbers are listed on page 45.

Table 16: Problems and Mitigation Actions indicating Hazard, Structure, Goal, and Type of Action

Hazard	ID	Problem	Mitigation Actions	New or Existing Structures	Goal	Type
Fire	6	Access to wildfires for control and suppression is limited.	Upgrades to the forestry truck are included in the 2016 CIP.	Existing	4, 7	Response
Fire	7A	Some feel that the response time to eastern portion of town is too long.	Increase EMS and fire staffing/hours within town.	Existing	1, 3, 4, 7	Response
Fire	7B	Some feel that the response time to eastern portion of town is too long.	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	Existing	1, 3, 4, 7	Response
Fire	8	Some feel that the response time to eastern portion of town is too long.	Construct a fire sub-station in the eastern portion of town to improve response time	Existing	1, 2, 7	Response
Fire	9	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Create and implement dry hydrant/cistern installation and maintenance plan.	Existing	2, 5, 7	Long-term Continuity
Fire	10	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	Existing	1, 4, 5, 7	Structural Projects
Fire	11	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Construct new dry hydrants at Steele Hill Resort and Hermit Lake Road.	Existing	2, 4, 5, 7	Property Protection

Hazard	ID	Problem	Mitigation Actions	New or Existing Structures	Goal	Type
Fire	12	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Install cisterns at Steele Hill Resort and Sant Bani School.	Existing	1, 4, 5, 7	Property Protection
Fire	14	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Recommend that the Planning Board amend the Subdivision Regulations to require on-site water storage, minimum fire flow, and fire breaks in wildland/urban interface areas.	New	1, 2, 4, 5, 7	Prevent
Fire	15	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Encourage referral to the Water Resources Plan and maps by the Planning Board when reviewing subdivision proposals.	New	1,3,4, 5, 6	Prevent
Fire	16	Access to potential wildfire areas is limited.	Increase the Fire Department's resources to access wildfires.	Existing	1, 3, 4, 7	Response
Fire	17	Homeowners can do more to protect their property against fire hazards.	Develop a formal process to educate homeowners on the "Firewise Communities" program which encourages the use of fire ponds, maintenance of vegetation, and appropriate access to reduce the risk of fire damage.	Existing	1, 3, 5, 7	Education & Awareness
Flood	1	Chapman Pond Road and Black Brook Road washout.	Rebuild Chapman Road to reduce flooding and washouts.	Existing	2, 5, 6	Long-term Continuity
Flood	2	It can be difficult identifying what property is in the floodplain.	Encourage FEMA to update (Flood Insurance Rate Maps) FIRM maps with aerial overlays.	New	1,2,5,6	Prevent
Flood	3	Municipal resources and their condition have not been documented recently. This can lead to gaps in maintenance.	Create a roads/infrastructure inventory (including culverts, bridges, dams)	Existing	2, 6	Long-term Continuity

Hazard	ID	Problem	Mitigation Actions	New or Existing Structures	Goal	Type
Flood	5	Hermit Woods Road and Knox Mountain Road are all deteriorating. They flood or wash out.	Culverts should be upgraded and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	Existing	2, 5, 6	Structural Projects
Flood	5A	Lower Bay Road floods or washes out. This road serves a high density area.	A drainage study should be conducted to develop a clear understanding of the best options for mitigating flooding and wash outs along Lower Bay Road, a high density residential area.	Existing	2, 5, 6	Long-term Continuity
Health	21	The town has not been an active participant in regional planning for health emergencies.	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	n/a	1, 3, 12	Education & Awareness
Health	41	Insect -borne disease outbreaks seem to be on the rise in New Hampshire and may pose a threat to Sanbornton's residents and economy but there are several unknowns regarding this potential threat and its mitigation.	Research insect-borne disease outbreaks and the various measures that the town might take.	n/a	1	Prevent
Lightning	22	Lightning can cause damage to both structures and electronic equipment and data.	Investigate protection of all public buildings against power surges and structural damage due to lightning.	Existing	2, 9	Long-term Continuity
Lightning	23	Lightning can cause damage to both structures and electronic equipment and data.	Install lightning protection systems on high risk structures.	Existing	2, 3, 4, 9	Property Protection

Hazard	ID	Problem	Mitigation Actions	New or Existing Structures	Goal	Type
Wind/ Severe Winter	18	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 and local roads.	Work with the tree warden to develop a tree maintenance plan for town roads.	Existing	2, 5, 10, 11	Long-term Continuity
Wind/ Severe Winter	19	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 and local roads.	Clarify any issues of liability associated with roadside tree maintenance.	Existing	2, 5, 10, 11	Long-term Continuity
Wind/ Severe Winter	20	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 and local roads.	Adopt and fund roadside tree maintenance as a normal town expenditure.	Existing	1, 2, 3, 4, 10, 11	Long-term Continuity
All	4	Not having a documented and prioritized infrastructure maintenance plan can result in gaps in maintenance, deterioration of resources, and inefficient use of time and money.	Develop an infrastructure maintenance schedule	Existing	2, 5	Long-term Continuity
All	27	The Emergency Operations Center (EOC) should be adequately supplied to serve its function as a communications and coordination hub.	Complete the update of the Emergency Operations Center to its full functioning capacity as the town's communications and coordination hub.	Existing	1, 3, 4	Long-term Continuity
All	28	The ability to inspect properties for potential hazards is quite limited.	Prepare a local Building Code for local adoption.	New	1, 2, 5	Prevent
All	29	The ability to inspect properties for potential hazards is quite limited.	Recommend that the Planning Board adjust the Site Plan Regulations to require inspection of all new construction.	New	1, 2, 5	Prevent
All	30	The ability to inspect properties for potential hazards is quite limited.	Improve the town's code enforcement process through an enhanced permitting and inspection system.	New	1, 2, 5	Prevent

Hazard	ID	Problem	Mitigation Actions	New or Existing Structures	Goal	Type
All	31	If mitigation actions required in the Zoning Ordinances, Subdivision and Site Plan Review Regulations, and Building Codes are not enforced they cannot be effective.	Ensure that development projects comply with the existing mitigation strategies of the subdivision and site plan review regulations.	New	1	Prevent
All	32	Municipal efforts to help mitigate the risks and costs to homeowners, business, and the town associated with potential hazards should be coordinated and enforced.	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a “no net adverse impact”.	New	1, 5	Prevent
All	33	Municipal efforts to help mitigate the risks and costs to homeowners, business, and the town associated with potential hazards should be coordinated and enforced.	Incorporate the 2014 Hazard Mitigation Plan in the Emergency Operations Plan.	Existing	1,3,4	Prevent
All	35	Local and regional hazard planning and response efforts are enhanced with digital and GIS (Geographic Information Systems) data.	Obtain GIS software and components for municipal offices	Existing	3, 4	Prevent & Response
All	36	Local and regional hazard planning and response efforts are enhanced with digital and GIS (Geographic Information Systems) data.	Obtain GIS data layers for emergency services/high hazard areas in town	Existing	3, 4	Prevent & Response
All	37	Local and regional hazard planning and response efforts are enhanced with digital and GIS (Geographic Information Systems) data.	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	Existing	1, 3, 4	Prevent & Response

Hazard	ID	Problem	Mitigation Actions	New or Existing Structures	Goal	Type
All	38	During a hazard event, it can be difficult to call in outside assistance for debris and snow removal. This type of delay could hinder response efforts.	Identify companies that can assist with debris removal and snow plowing in emergencies	Existing	2, 3, 4, 10, 11	Response
All	39	Access to some structures for emergency response is difficult. This can be costly in terms of time and resources. In the case of fire this could increase the likelihood of spreading.	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	New	1, 4, 7	Prevent
All	40	It can be difficult to maintain emergency radio communications throughout town.	Draft an ordinance that requires free municipal access [on the top 1/3] for any cell/communications tower installed in town.	Existing	4	Response

Actions #5 and 7 were split into two parts. Action 5A was developed because there was not yet enough information to determine the most cost effective course of action. Actions 7A, 7B, and 8 are different methods to address the same problem and were all discussed; the Board of Selectmen have begun discussions with staff and neighboring communities regarding the most effective solution to the problem.

The Committee identified the various costs and benefits associated with each action. The estimated cost represents what the town estimates it will cost in terms of dollars or staff hours to implement each action. Table 17 shows the costs as well as the various benefits associated with each action.

Table 17: Mitigation Actions by Hazard Type – Estimated Cost and Potential Funding

Hazard	ID	Mitigation Actions	(in dollars or Staff/ Volunteer Hours)	Potential Funding	Comments
		Under \$10,000 or under 200 hours			
All	33	Incorporate the 2014 Hazard Mitigation Plan in the Emergency Operations Plan.	10 hours Staff and volunteer time	Town Budget	EOP to be updated in 2014
Flood	2	Encourage FEMA to update (Flood Insurance Rate Maps) FIRM maps with aerial overlays.	10 hours Staff Time	FEMA	Belknap County DFIRMs not completed. Insufficient funds. This task is a FEMA responsibility, not the town's responsibility.
Fire	15	Encourage referral to the Water Resources Plan and maps by the Planning Board when reviewing subdivision proposals.	10 hours Staff and volunteer time	Town Budget (Fire & Planning)	Plan and maps already exist.
All	38	Identify companies that can assist with debris removal and snow plowing in emergencies	20 hours Staff Time	FEMA, Town Budget	Still a need.
All	39	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	20 hours Staff and volunteer time	Town Budget (Planning)	Could enhance the ability to respond in areas of new development.
All	40	Draft an ordinance that requires free municipal access [on the top 1/3] for any cell/communications tower installed in town.	20 hours Staff and volunteer time	Town Budget (Planning)	Meet with PB subcommittee.
Wind/ Severe Winter	18	Work with the tree warden to develop a tree maintenance plan for town roads.	20 hours Staff Time	Town Budget (DPW)	Could reduce downed trees during a hazard event, which impacts the town's ability to respond. Also, having a plan can enhance continuity during personnel changes.
Wind/ Severe Winter	19	Clarify any issues of liability associated with roadside tree maintenance.	20 hours Staff Time	Town Budget (DPW, Town Admin)	By getting clarity on responsibilities, work can proceed expeditiously.

Hazard	ID	Mitigation Actions	(in dollars or Staff/ Volunteer Hours)	Potential Funding	Comments
All	31	Ensure that development projects comply with the existing mitigation strategies of the subdivision and site plan review regulations.	20 hours Staff Time	Town Budget (Planning)	This is a primary role of the Town Planner and Planning Board.
All	32	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a "no net adverse impact".	20 hours Staff Time	Town Budget (Planning)	Being explicit about the desired final outcome and putting the burden of proof on the applicant could be a benefit.
All	36	Obtain GIS data layers for emergency services/high hazard areas in town	40 hours Staff Time	Data sources: GRANIT, State Agencies, LRPC	Much data is available for free; it should be gathered, organized, and made accessible.
Health	41	Research insect-borne disease outbreaks and the various measures that the town might take.	20 hours Staff Time	Town Budget (EMD/Health Officer)	Concern was expressed about this topic. It was agreed that more information is needed before a course of action could be determined.
All	4	Develop an infrastructure maintenance schedule	25 hours Staff Time	Town Budget (DPW)	Time, money, staff
Fire	9	Create and implement dry hydrant/cistern installation and maintenance plan.	40 hours Staff Time	Town Budget (Fire Dept.)	Developing a plan can enhance the likelihood of implementation and continuity if there are changes in responsibilities or staffing.
All	30	Improve the town's code enforcement process through an enhanced permitting and inspection system.	40 hours Staff and volunteer time	Town Budget (Planning/ Select.)	Politically difficult
All	29	Recommend that the Planning Board adjust the Site Plan Regulations to require inspection of all new construction.	40 hours Staff and volunteer time	Town Budget (Planning)	Politically difficult

Hazard	ID	Mitigation Actions	(in dollars or Staff/ Volunteer Hours)	Potential Funding	Comments
Fire	14	Recommend that the Planning Board amend the Subdivision Regulations to require on-site water storage, minimum fire flow, and fire breaks in wildland/urban interface areas.	50 hours Staff and volunteer time	Town Budget (Fire & Planning)	These items could reduce damages due to fire.
Lightning	22	Investigate protection of all public buildings against power surges and structural damage due to lightning.	± 50 hours Staff Time	Town Budget	Includes Town Offices, Public Safety Building, DPW Garage, Library
Fire	11	Construct new dry hydrants at Steele Hill Resort and Hermit Lake Road.	\$1,500 each	Town Budget (Fire Dept.)	These water sources could reduce damage and loss of life due to fire in areas with a relatively high population density.
Flood	3	Create a roads/infrastructure inventory (including culverts, bridges, dams)	120+ hrs Staff Time	Town Budget (DPW)	Time, money, staff
All	35	Obtain GIS software and components for municipal offices	\$1,500 annually	Town Budget	Insufficient funds
All	28	Prepare a local Building Code for local adoption.	60 hours Staff time	Town Budget (Planning)	Not much political will in support of this.
All	27	Complete the update of the Emergency Operations Center to its full functioning capacity as the town's communications and coordination hub.	\$10,000	Town Budget, HSEM	Work on this has begun; it should be completed in 2014
Fire	10	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	\$500 each repair, \$1,500 each replace	Town Budget (Fire Dept.)	These are identified in the WRMP. Funding has been an obstacle in the past.
\$10,000 - \$99,999 or 200 - 2,000 hours					
Lightning	23	Install lightning protection systems on high risk structures.	Potentially >\$10,000	Town Budget	Town Hall, Fire Station, Police Station

Hazard	ID	Mitigation Actions	(in dollars or Staff/ Volunteer Hours)	Potential Funding	Comments
Fire	17	Develop a formal process to educate homeowners on the "Firewise Communities" program which encourages the use of fire ponds, maintenance of vegetation, and appropriate access to reduce the risk of fire damage.	40 hours/ year Staff Time	Town Budget (Fire)	This voluntary program could help reduce damage to homes in the event of a wildfire.
Health	21	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	40 hours/ year Staff Time	Town Budget	Maintaining local representation can help if a regional event needs to be coordinated.
Fire	12	Install cisterns at Steele Hill Resort and Sant Bani School.	\$30,000 each	Property owner, Town Budget (Fire Dept.), FEMA	These are facilities have a relatively high population density. There is a high initial cost but low maintenance cost.
Flood	5A	A drainage study should be conducted to develop a clear understanding of the best options for mitigating flooding and wash outs along Lower Bay Road, a high density residential area.	\$30 - 50K	Town Budget	This may involve upgrading several drainage structures. It is best to determine the best option for the system prior to spending money on individual upgrades.
Fire	16	Increase the Fire Department's resources to access wildfires.	\$50,000	Town Budget (DPW) NH Fish & Game	This includes ATVs.
Wind/ Severe Winter	20	Adopt and fund roadside tree maintenance as a normal town expenditure.	\$10,000/year	Town Budget (DPW)	Regular maintenance can reduce downed trees on wires.
All	37	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	Staff Time 5 hrs/week (250 hrs/ yr)	911 mapping, LR Mutual Aid, FEMA, HSEM, Town Budget	Existing data can be accessed in all vehicles with tablets. Digitization is in progress.

Hazard	ID	Mitigation Actions	(in dollars or Staff/ Volunteer Hours)	Potential Funding	Comments
Flood	5	Culverts should be upgraded and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	ditch work - \$8/ft	FEMA, Town Budget (DPW)	Culverts - \$5,000 each
\$100,000 or more or more than 2,000 hours					
Fire	6	Upgrades to the forestry truck are included in the 2016 CIP.	\$150,000	Town Budget (Fire Dept.)	2016 Fire Equipment
Fire	7A	Increase EMS and fire staffing/hours within town.	\$100,000 annually	Town Budget (Fire Dept.), Grant	Lowest cost solution to this problem.
Fire	7B	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	> \$500,000 + \$100,000 annually	Town Budget (Fire), Warrant Article	24 hour staffing with engine and ambulance (\$300,000 annually for staffing, \$500,000 equipment, \$1.5 M for structure split between three communities)
Fire	8	Construct a fire sub-station in the eastern portion of town to improve response time.	\$500,000 + staffing	Town Budget (Fire Dept.)	Insufficient staffing. The problem (inadequate response time to eastern portion of town) has been identified as a concern. This may not be the most appropriate solution at this point in time.
Flood	1	Rebuild Chapman Road to reduce flooding and washouts.	\$500K - \$1M	Town Budget (DPW), FEMA, DOT	Four or five Sanbornton properties impacted.

E. PRIORITIZATION OF ACTIONS

After considering the Pros and Cons of each project, the Committee prioritized the various projects which had been identified. Committee members agreed to adapt the standard prioritization tool to better reflect the concerns of the community. The tool that came out of this process asks the committee to consider ten separate aspects for each Action including the costs. The committee considered the Social, Technical, Administrative, Political, Economic, and Financial aspects of each action, along with whether a particular action impacted Life Safety and Protected Property within Sanbornton, and finally whether there was a Local Champion for the project.

There was much discussion during this prioritization process with individual committee members focusing on specific aspects. In the end, the final scores were arrived at by group consensus. Table 18 shows the Actions ordered by their overall score.

This section contains a summary of rankings for each of the proposed Mitigation Actions by the Sanbornton Hazard Mitigation Committee. For each action, the benefits and costs of implementing the action (under each of the ten categories) was considered and scored -1, 0, 1 with a ‘minus one’ indicating that the costs outweighed the benefits in a particular category, a ‘one’ meant that the benefits were greater than the costs, and a ‘zero’ meant that while there are costs associated with the project, they are balanced out by the benefits. The ten category scores were summed for an overall project total. A maximum total score is 10, the minimum is -10.

The actions were scored within the three divisions based on the cost of implementation. In the lower cost group prioritization scores ranged from -2 to 7, in the medium cost group scores ranged from -1 to 5.5, and in the high cost group scores ranged from -4 to 5. Similar ID colors indicate that the Actions address similar Problems. This table also indicates whether the action is primarily a mitigation action or a preparedness/response action.

Table 18: Recommended Mitigation Actions in Ranked Order

Hazard	ID	Mitigation/ Preparedness- Response	Mitigation Actions	TOTAL
Under \$10,000 or under 200 hours				
Flood	2	Mitig.	Encourage FEMA to update (Flood Insurance Rate Maps) FIRM maps with aerial overlays.	7.0
Flood	3	Mitig.	Create a roads/infrastructure inventory (including culverts, bridges, dams)	7.0
Lightning	22	Mitig.	Investigate protection of all public buildings against power surges and structural damage due to lightning.	7.0
All	40	Respon.	Draft an ordinance that requires free municipal access [on the top 1/3] for any cell/communications tower installed in town.	6.5
All	38	Respon.	Identify companies that can assist with debris removal and snow plowing in emergencies	6.0

Hazard	ID	Mitigation/ Preparedness- Response	Mitigation Actions	TOTAL
Fire	9	Respon.	Create and implement dry hydrant/cistern installation and maintenance plan.	6.0
Fire	15	Mitig.	Encourage referral to the Water Resources Plan and maps by the Planning Board when reviewing subdivision proposals.	6.0
All	33	Prepare.	Incorporate the 2014 Hazard Mitigation Plan in the Emergency Operations Plan.	5.5
Fire	11	Respon.	Construct new dry hydrants at Steele Hill Resort and Hermit Lake Road.	5.5
Wind/ Severe Winter	18	Mitig.	Work with the tree warden to develop a tree maintenance plan for town roads.	5.5
Health	New 41	Prepare.	Research insect-borne disease outbreaks and the various measures that the town might take.	5.0
All	27	Prepare.	Complete the update of the Emergency Operations Center to its full functioning capacity as the town's communications and coordination hub.	4.5
All	39	Respon.	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	4.5
Fire	10	Prepare.	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	4.5
All	4	Prepare.	Develop an infrastructure maintenance schedule	4.0
Fire	14	Respon.	Recommend that the Planning Board amend the Subdivision Regulations to require on-site water storage, minimum fire flow, and fire breaks in wildland/urban interface areas.	3.0
Wind/ Severe Winter	19	Mitig.	Clarify any issues of liability associated with roadside tree maintenance.	3.0
All	36	Respon.	Obtain GIS data layers for emergency services/high hazard areas in town	2.5
All	30	Mitig.	Improve the town's code enforcement process through an enhanced permitting and inspection system.	1.5
All	31	Mitig.	Ensure that development projects comply with the existing mitigation strategies of the subdivision and site plan review regulations.	1.0
All	32	Mitig.	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a "no net adverse impact".	0.0
All	28	Mitig.	Prepare a local Building Code for local adoption.	-0.5

Hazard	ID	Mitigation/ Preparedness- Response	Mitigation Actions	TOTAL
All	35	Respon.	Obtain GIS software and components for municipal offices	-1.5
All	29	Mitig.	Recommend that the Planning Board adjust the Site Plan Regulations to require inspection of all new construction.	-2.0
\$10,000 - \$99,999 or 200 - 2,000 hours				
All	37	Mitig.	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	5.5
Health	21	Prepare.	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	5.0
Flood	5	Mitig.	Culverts should be upgraded and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	4.0
Fire	17	Mitig.	Develop a formal process to educate homeowners on the "Firewise Communities" program which encourages the use of fire ponds, maintenance of vegetation, and appropriate access to reduce the risk of fire damage.	3.5
Fire	12	Respon.	Install cisterns at Steele Hill Resort and Sant Bani School.	3.0
Wind/ Severe Winter	20	Mitig.	Adopt and fund roadside tree maintenance as a normal town expenditure.	1.0
Lightning	23	Mitig.	Install lightning protection systems on high risk structures.	0.5
Flood	5A	Mitig.	A drainage study should be conducted to develop a clear understanding of the best options for mitigating flooding and wash outs along Lower Bay Road, a high density residential area.	-0.5
Fire	16	Respon.	Increase the Fire Department's resources to access wildfires.	-1.0
\$100,000 or more or more than 2,000 hours				
Fire	6	Respon.	Upgrades to the forestry truck are included in the 2016 CIP.	5.0
Fire	7A	Respon.	Increase EMS and fire staffing/hours within town.	1.0
Fire	7B	Respon.	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	-1.0
Flood	1	Mitig.	Rebuild Chapman Road to reduce flooding and washouts.	-2.0
Fire	8	Respon.	Construct a fire sub-station in the eastern portion of town to improve response time	-4.0

F. IMPLEMENTATION OF MITIGATION ACTIONS

There are many factors that influence how a town chooses to spend its energy and resources in implementing recommended actions. Factors include:

- Urgency
- How quickly an action could be implemented
- Likelihood that the action will reduce future emergencies
- Regulations required to implement the action
- Administrative burdens
- Time (both paid and volunteer)
- Funding availability
- Political acceptability of the action.

In the context of these factors, the Committee discussed the mitigation actions and relative level of priority, recognizing that some actions are of greater priority to different town departments. This implementation schedule is a matrix (Table 19) indicating the estimated cost of implementation, potential funding sources, the parties responsible for bringing about these actions, and implementation time frame. As noted earlier, Actions #7A, 7B, and 8 were all considered as possible solutions to the same problem; the town is in the process of determining which will most effectively meet the town's needs, thus only one of these actions would be implemented. Action #42 was developed after the evaluation process and have been added in to this table.

These are listed in order of their Time Frame. To keep the plan current, the implementation schedule should be updated and re-evaluated on a regular basis as outlined in the monitoring section of this plan and a record of this progress documented in Appendix K.

Table 19: Implementation Schedule for Mitigation Actions by Time Frame

Hazard	ID	Problem	Mitigation Actions	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding	Responsible Party
			Under \$10,000 or under 200 hours				
Flood	2	It can be difficult identifying what property is in the floodplain.	Encourage FEMA to update (Flood Insurance Rate Maps) FIRM maps with aerial overlays.	2014	10 hours Staff Time	FEMA	Plan. Board
All	40	It can be difficult to maintain emergency radio communications throughout town.	Draft an ordinance that requires free municipal access [on the top 1/3] for any cell/communications tower installed in town.	2014	20 hours Staff and volunteer time	Town Budget (Planning)	Plan. Board
All	38	During a hazard event, it can be difficult to call in outside assistance for debris and snow removal. This type of delay could hinder response efforts.	Identify companies that can assist with debris removal and snow plowing in emergencies	2014	20 hours Staff Time	FEMA, Town Budget	DPW
Fire	9	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Create and implement dry hydrant/cistern installation and maintenance plan.	2014	40 hours Staff Time	Town Budget (Fire Dept.)	Fire Chief
All	33	Municipal efforts to help mitigate the risks and costs to homeowners, business, and the town associated with potential hazards should be coordinated and enforced.	Incorporate the 2014 Hazard Mitigation Plan in the Emergency Operations Plan.	2014	10 hours Staff and volunteer time	Town Budget	EMD
Wind/ Severe Winter	18	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 and local roads.	Work with the tree warden to develop a tree maintenance plan for town roads.	2014	20 hours Staff Time	Town Budget (DPW)	DPW

Hazard	ID	Problem	Mitigation Actions	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding	Responsible Party
Health	41	Insect-borne disease outbreaks seem to be on the rise in New Hampshire and may pose a threat to Sanbornton's residents and economy but there are several unknowns regarding this potential threat and its mitigation.	Research insect-borne disease outbreaks and the various measures that the town might take.	2014	20 hours Staff Time	Town Budget (EMD/Health Officer)	Health Officer
Wind/ Severe Winter	19	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 and local roads.	Clarify any issues of liability associated with roadside tree maintenance.	2014	20 hours Staff Time	Town Budget (DPW, Town Admin)	Town Admin.
Fire	10	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	2014,'15, '16,'17,'18	\$500 each repair, \$1,500 each replace	Town Budget (Fire Dept.)	Fire Chief
Earthquake	New 42	Sanbornton is located over a seismic fault. Many in town may not be aware of how to protect damage to their property or harm to themselves.	Develop public outreach materials about earthquakes and what can be done to protect structures and people.	2015	20 hours staff time and \$200 printing	Town Budget	EMD
Lightning	22	Lightning can cause damage to both structures and electronic equipment and data.	Investigate protection of all public buildings against power surges and structural damage due to lightning.	2015	± 50 hours Staff Time	Town Budget	Town Admin.
Fire	15	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Encourage referral to the Water Resources Plan and maps by the Planning Board when reviewing subdivision proposals.	2015	10 hours Staff and volunteer time	Town Budget (Fire & Planning)	EMD
All	39	Access to some structures for emergency response is difficult. This can be costly in terms of time and resources. In the case of fire this could increase the likelihood of spreading.	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	2015	20 hours Staff and volunteer time	Town Budget (Planning)	EMD, DPW

Hazard	ID	Problem	Mitigation Actions	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding	Responsible Party
All	4	Not having a documented and prioritized infrastructure maintenance plan can result in gaps in maintenance, deterioration of resources, and inefficient use of time/ money.	Develop an infrastructure maintenance schedule	2015	25 hours Staff Time	Town Budget (DPW)	Select.
All	31	If mitigation actions required in the Zoning Ordinances, Subdivision and Site Plan Review Regulations, and Building Codes are not enforced they cannot be effective.	Ensure that development projects comply with the existing mitigation strategies of the subdivision and site plan review regulations.	2015	20 hours Staff Time	Town Budget (Planning)	Plan. Board
All	32	Municipal efforts to help mitigate the risks and costs to homeowners, business, and the town associated with potential hazards should be coordinated and enforced.	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a "no net adverse impact".	2015	20 hours Staff Time	Town Budget (Planning)	Plan. Board
All	35	Local and regional hazard planning and response efforts are enhanced with digital and GIS (Geographic Information Systems) data.	Obtain GIS software and components for municipal offices	2015	\$1,500 annually	Town Budget	Town Admin.
All	29	The ability to inspect properties for potential hazards is quite limited.	Recommend that the Planning Board adjust the Site Plan Regulations to require inspection of all new construction.	2015	40 hours Staff & volunteer time	Town Budget (Planning)	CEO
All	27	The Emergency Operations Center (EOC) should be adequately supplied to serve its function as a communications & coordination hub.	Complete the update of the Emergency Operations Center to its full functioning capacity as the town's communications and coordination hub.	2016	\$10,000	Town Budget, HSEM	EMD

Hazard	ID	Problem	Mitigation Actions	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding	Responsible Party
All	36	Local and regional hazard planning and response efforts are enhanced with digital and GIS (Geographic Information Systems) data.	Obtain GIS data layers for emergency services/high hazard areas in town	2016	40 hours Staff Time	Data sources: GRANIT, State Agencies, LRPC	EMD
Flood	3	Municipal resources and their condition have not been documented recently. This can lead to gaps in maintenance.	Create a roads/infrastructure inventory (including culverts, bridges, dams)	2017	120+ hrs Staff Time	Town Budget (DPW)	DPW
All	30	The ability to inspect properties for potential hazards is quite limited.	Improve the town's code enforcement process through an enhanced permitting and inspection system.	2017	40 hours Staff and volunteer time	Town Budget (Planning/ Select.)	CEO
Fire	11	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Construct new dry hydrants at Steele Hill Resort and Hermit Lake Road.	2018	\$1,500 each	Town Budget (Fire Dept.)	Fire Chief
Fire	14	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Recommend that the Planning Board amend the Subdivision Regulations to require on-site water storage, minimum fire flow, and fire breaks in wildland/urban interface areas.	2018	50 hours Staff and volunteer time	Town Budget (Fire & Planning)	Fire Chief
All	28	The ability to inspect properties for potential hazards is quite limited.	Prepare a local Building Code for local adoption.	2018	60 hours Staff time	Town Budget (Planning)	Plan. Board
			\$10,000 - \$99,999 or 200 - 2,000 hours				
Health	21	The town has not been an active participant in regional planning for health emergencies.	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	2014	40 hours/year Staff Time	Town Budget	EMD
All	37	Local and regional hazard planning and response efforts are enhanced with digital and GIS (Geographic Information Systems) data.	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	2014,'15, '16,'17,'18	Staff Time 5 hrs/week (250 hrs/ yr)	911 mapping, LR Mutual Aid, FEMA, HSEM, Town Budget	EMD

Hazard	ID	Problem	Mitigation Actions	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding	Responsible Party
Flood	5	Hermit Woods Road and Knox Mountain Road are all deteriorating. They flood or wash out.	Culverts should be upgraded and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	2017	ditch work - \$8/ft	FEMA, Town Budget (DPW)	DPW
Fire	17	Homeowners can do more to protect their property against fire hazards.	Develop a formal process to educate homeowners on the "Firewise Communities" program which encourages the use of fire ponds, maintenance of vegetation, and appropriate access to reduce the risk of fire damage.	2017	40 hours/year Staff Time	Town Budget (Fire)	Fire Chief
Wind/ Severe Winter	20	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 and local roads.	Adopt and fund roadside tree maintenance as a normal town expenditure.	2017	\$10,000/year	Town Budget (DPW)	DPW
Fire	16	Access to potential wildfire areas is limited.	Increase the Fire Department's resources to access wildfires.	2017	\$50,000	Town Budget (DPW) NH Fish & Game	Fire Chief
Fire	12	There is an inadequate water supply system for fire suppression. This leaves people and property at risk to fire hazards.	Install cisterns at Steele Hill Resort and Sant Bani School.	2018	\$30,000 each	Property owner, Town Budget (Fire Dept.), FEMA	Fire Chief
Lightning	23	Lightning can cause damage to both structures and electronic equipment and data.	Install lightning protection systems on high risk structures.	2018	Potentially >\$10,000	Town Budget	DPW
Flood	5A	Lower Bay Road floods or washes out. This road serves a high density area.	A drainage study should be conducted to develop a clear understanding of the best options for mitigating flooding and wash outs along Lower Bay Road, a high density residential area.	2018	\$30 - 50K	Town Budget	DPW

Hazard	ID	Problem	Mitigation Actions	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding	Responsible Party
			\$100,000 or more or more than 2,000 hours				
Fire	7A	Some feel that the response time to eastern portion of town is too long.	Increase EMS and fire staffing/hours within town.	2015*	\$100,000 annually	Town Budget (Fire Dept.), Grant	Fire Chief
Fire	7B	Some feel that the response time to eastern portion of town is too long.	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	2015*	> \$500,000 + \$100,000 annually	Town Budget (Fire), Warrant Article	Fire Chief
Fire	8	Some feel that the response time to eastern portion of town is too long.	Construct a fire sub-station in the eastern portion of town to improve response time	2015*	\$500,000 + staffing	Town Budget (Fire Dept.)	Fire Chief
Fire	6	Access to wildfires for control and suppression is limited.	Upgrades to the forestry truck are included in the 2016 CIP.	2016	\$150,000	Town Budget (Fire Dept.)	Fire Chief
Flood	1	Chapman Pond Road and Black Brook Road washout.	Rebuild Chapman Road to reduce flooding and washouts.	2018	\$500K - \$1M	Town Budget (DPW), FEMA, DOT	DPW

CHAPTER VI: PLAN ADOPTION AND MONITORING

A. IMPLEMENTATION

The Sanbornton Hazard Mitigation Plan Update Committee, established by the EMD and Board of Selectmen, will meet annually to review the Plan and provide a mechanism for ensuring that an attempt is made to incorporate the actions identified in the plan into ongoing town planning activities. Essential elements of implementation require that all responsible parties for the various recommendations understand what is expected of them, and that they are willing to fulfill their role in implementation. It is therefore important to have the responsible parties clearly identified when the town adopts the final plan. Where appropriate it would be helpful to have any hazard mitigation activities identified in job descriptions.

Many of the actions in this plan rely on the town's operating budget along with grant funds available through FEMA and other sources such as those listed in Appendices B and I. The Emergency Management Director will work with the Town Administrator and coordinate with the department heads, Budget Committee, and Selectmen to ensure that funds and staff time for these projects are available. The EMD and Hazard Mitigation Committee will work with the Town Administrator, Selectmen, and Capital Improvements Plan (CIP) Committee to incorporate the various projects into subsequent budgets where appropriate. The EMD will also coordinate with the NH HSEM Field Representative to ensure that the town applies for appropriate grant funds.

For those mitigation actions which involve either revisions to the Subdivision Regulations or development of regulations or standards, the EMD and members of the Hazard Mitigation Committee will work with the Town Planner and Planning Board to develop appropriate language.

When appropriate, an effort will be made to incorporate this plan into the Emergency Operations Plan. Within a year after the town officially adopts the 2014 update to the Hazard Mitigation Plan, an attempt will be made to have hazard mitigation strategies integrated into these existing mechanisms and into all other ongoing town planning activities.

B. PLAN MAINTENANCE & PUBLIC INVOLVEMENT

The Sanbornton Hazard Mitigation Planning Committee and the Selectboard, in order to track progress and update the mitigation strategies identified in Chapter V - D & E, will review the Sanbornton Hazard Mitigation Plan every year or after a hazard event. Town of Sanbornton Emergency Management Director is responsible for initiating this review and needs to consult with members of the Committee identified in this Plan. Changes will be made to the Plan to accommodate projects that have failed, are no longer consistent with the timeframe identified, are no longer consistent with the community's priorities, or lack funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, will be reviewed during the monitoring and update of this Plan to determine feasibility of future implementation. In keeping with the process of adopting the Plan, a public hearing will be held to receive public comment on the Plan.

Maintenance and updating will be held during the annual review period and the final product adopted by the Selectboard. The Committee will meet annually as part of this plan maintenance. The Emergency Management Director is also responsible for updating and resubmitting the plan to FEMA to be re-approved every five years. The EMD will convene a plan update committee in mid-2018 to begin updating this plan before it expires.

On behalf of the Sanbornton Hazard Mitigation Committee, the Emergency Management Director, under direction of the Selectboard, will be responsible for ensuring that town's departments and the public have adequate opportunity to participate in the planning process during the Plan's annual review and during any Hazard Mitigation Committee meetings. Administrative staff may be utilized to assist with the public involvement process.

For each committee meeting, and the annual update process, techniques that will be utilized for public involvement include:

- ❖ Provide invitations to Budget Committee members;
- ❖ Provide invitations to municipal department heads;
- ❖ Post notices of meetings at the Town Hall, Fire Station, Library, and on the town website;
- ❖ Submit press releases for publication in the *Laconia Citizen*, *Laconia Daily Sun*, and other appropriate newspapers or media outlets.

Entities to invite to future Hazard Mitigation plan updates include the Emergency Management Directors of the neighboring communities of New Hampton, Belmont, Laconia, Franklin, Hill, Tilton.

C. SIGNED CERTIFICATE OF ADOPTION

Town of Sanbornton, NH Board of Selectmen
**A RESOLUTION ADOPTING THE SANBORNTON, NH
HAZARD MITIGATION PLAN UPDATE 2014**

WHEREAS, the town of Sanbornton, NH has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of flooding, high winds, snow and ice storms, earthquake, and fire resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the town of Sanbornton, NH has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2014 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between March 2013 and September 2013 regarding the development and review of the Hazard Mitigation Plan Update **2014**; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedure for the town of Sanbornton; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the town of Sanbornton, 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 Sanbornton 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 Sanbornton;
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.
4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by the Emergency Management Director
5. IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town Seal or Notary _____ Date: _____ this ___ day of _____, 2014

Karen Ober, Chairman _____

David Nickerson _____

Johnny VanTassel _____

APPENDIX A: TECHNICAL RESOURCES

NH Homeland Security and Emergency Management	271-2231
http://www.nh.gov/safety/divisions/HSEM/	
Hazard Mitigation Section.....	271-2231
http://www.nh.gov/safety/divisions/hsem/HazardMitigation/index.html	
Federal Emergency Management Agency	(617) 223-4175
http://www.fema.gov/	
FEMA, National Flood Insurance Program, Community Status Book	
http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book	
NH Regional Planning Commissions:	
Central NH Regional Planning Commission	796-2129
http://www.cnhrpc.org/	
Lakes Region Regional Planning Commission.....	279-8171
http://www.lakesrpc.org/	
Nashua Regional Planning Commission	883-0366
http://www.nashuarpc.org/	
North Country Council.....	444-6303
http://www.nccouncil.org/	
Rockingham Regional Planning Commission	778-0885
http://www.rpc-nh.org/	
Southern New Hampshire Regional Planning Commission.....	669-4664
http://www.snhpc.org/	
Southwest Regional Planning Commission	357-0557
http://www.swrpc.org/	
Strafford Regional Planning Commission.....	742-2523
http://www.trafford.org/	
Upper Valley Lake Sunapee Regional Planning Commission.....	448-1680
http://www.uvlsrc.org/	
NH Governor's Office of Energy and Planning	271-2155
http://www.nh.gov/oep/index.htm	
New Hampshire Floodplain Management Program	
http://www.nh.gov/oep/programs/floodplainmanagement/index.htm	
NH Department of Transportation	271-3734
http://www.nh.gov/dot/index.htm	
NH Department of Cultural Affairs	271-2540
http://www.nh.gov/nhculture/	
Division of Historical Resources.....	271-3483
http://www.nh.gov/nhdhr/	
NH Department of Environmental Services	271-3503
http://www.des.state.nh.us/	
Dam Bureau.....	271-63406
http://www.des.state.nh.us/organization/divisions/water/dam/index.htm	
NH Municipal Association	224-7447
http://www.nhmunicipal.org/LGCWebsite/index.asp	

NH Fish and Game Department	271-3421
http://www.wildlife.state.nh.us/	
NH Department of Resources and Economic Development	271-2411
http://www.dred.state.nh.us/	
Division of Forests and Lands.....	271-2214
http://www.nhdfil.org/	
Natural Heritage Inventory	271-2215
http://www.nhdfil.org/about-forests-and-lands/bureaus/natural-heritage-bureau/	
Division of Parks and Recreation.....	271-3255
http://www.nhstateparks.org/	
NH Department of Health and Human Services	271-9389
http://www.dhhs.state.nh.us/	
Northeast States Emergency Consortium, Inc. (NESEC)	(781) 224-9876
http://www.nesec.org/	
US Department of Commerce	(202) 482-2000
http://www.commerce.gov/	
National Oceanic and Atmospheric Administration.....	(202) 482-6090
http://www.noaa.gov/	
National Weather Service, Eastern Region Headquarters	
http://www.erh.noaa.gov/	
National Weather Service, Tauton, Massachusetts.....	(508) 824-5116
http://www.erh.noaa.gov/er/box/	
National Weather Service, Gray, Maine	(207) 688-3216
http://www.erh.noaa.gov/er/gyx/	
US Department of the Interior	
http://www.doi.gov/	
US Fish and Wildlife Service.....	225-1411
http://www.fws.gov/	
US Geological Survey.....	225-4681
http://www.usgs.gov/	
US Geological Survey Real Time Hydrologic Data	
http://waterdata.usgs.gov/nwis/rt	
US Army Corps of Engineers.....	(978) 318-8087
http://www.usace.army.mil/	
US Department of Agriculture	
http://www.usda.gov/wps/portal/usdahome	
US Forest Service	(202) 205-8333
http://www.fs.fed.us/	
New Hampshire Electrical Cooperative	(800) 698-2007
http://www.nhec.com/	
Cold Region Research Laboratory	646-4187
http://www.crrel.usace.army.mil/	
National Emergency Management Association	(859) 244-8000
http://nemaweb.org	

National Aeronautics and Space Administration

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

NASA Optical Transient Detector – Lightning and Atmospheric Research

<http://thunder.msfc.nasa.gov/>

National Lightning Safety Institute

<http://lightningsafety.com/>

The Tornado Project Online

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

National Severe Storms Laboratory

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

Plymouth State University Weather Center

<http://vortex.plymouth.edu/>

APPENDIX B: MITIGATION FUNDING RESOURCES

There are numerous potential sources of funding to assist with the implementation of mitigation efforts. Two lists of state and federal resources are provided below. Some of these may not apply or be appropriate for Sanbornton. The NH Homeland Security and Emergency Management Field Representative for Belknap County can provide some assistance.

- 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 Watershed Protection (EWP) Program USDA, Natural Resources Conservation Service
- Flood Mitigation Assistance Program (FMAP) NH Homeland Security and Emergency Management
- Highway Safety Improvement Program NH Department of Transportation
- Mitigation Assistance Planning (MAP) NH Homeland Security and Emergency Management
- Mutual Aid for Public Works NH Municipal Association
- National Flood Insurance Program (NFIP) NH Office of Energy & Planning
- Project Impact NH Homeland Security and Emergency Management
- Roadway Repair & Maintenance Program(s) NH Department of Transportation
- Shoreline Protection Program NH Department of Environmental Services
- Various Forest and Lands Program(s) NH Department of Resources & Economic Development
- Wetlands Programs NH Department of Environmental Services
- State Aid Bridge Program for Communities NH Department of Transportation
- Contribution to Damage Losses (RSA 235:34) NH Department of Transportation

Federal Emergency Management Agency (FEMA)

FEMA makes funds available for mitigation efforts to reduce future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Flood Mitigation Assistance Program (FMA)	Provides funding to implement measures to reduce or eliminate the long-term risk of flood damage http://www.fema.gov/government/grant/fma/index.shtml	States and localities
Hazard Mitigation Planning Grant (HMPG)	Provides grants to implement long-term hazard mitigation measures after a major disaster declaration http://www.fema.gov/government/grant/hmpg/index.shtml	Open
National Flood Insurance Program (NFIP)	Enables property owners to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages http://www.fema.gov/business/nfip/	States, localities, and individuals
Pre-Disaster Mitigation Program (PDM)	Provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event http://www.fema.gov/government/grant/pdm/index.shtml	States, localities, and tribal governments

Environmental Protection Agency (EPA)

The EPA makes funds available for water management and wetlands protection programs that help mitigate against future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. http://www.epa.gov/OWOW/NPS/cwact.html	Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities. http://www.epa.gov/owow/wetlands/initiative/srf.html	States and Puerto Rico
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. http://www.epa.gov/owow/wetlands/initiative/#financial	See website

Floodplain, Wetland and Watershed Protection Programs

US Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Service offer funding and technical support for programs designed to protect floodplains, wetlands, and watersheds.

Mitigation Funding Sources Program	Details	Notes
USACE Planning Assistance to States (PAS)	Fund plans for the development and conservation of water resources, dam safety, flood damage reduction and floodplain management. http://www.lre.usace.army.mil/planning/assist.html	50 percent non-federal match
USACE Flood Plain Management Services (FPMS)	Technical support for effective floodplain management. http://www.lrl.usace.army.mil/p3md-o/article.asp?id=9&MyCategory=126	See website
USACE Environmental Laboratory	Guidance for implementing environmental programs such as ecosystem restoration and reuse of dredged materials. http://el.ercd.usace.army.mil/index.cfm	See website
U.S. Fish & Wildlife Service Coastal Wetlands Conservation Grant Program	Matching grants to states for acquisition, restoration, management or enhancement of coastal wetlands. http://ecos.fws.gov/coastal_grants/viewContent.do?viewPage=home	States only. 50 percent federal share
U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program	Program that provides financial and technical assistance to private landowners interested in restoring degraded wildlife habitat. http://ecos.fws.gov/partners/viewContent.do?viewPage=home	Funding for volunteer-based programs

Bureau of Land Management

The Bureau of Land Management (BLM) has two technical assistance programs focused on fire mitigation strategies at the community level.

Mitigation Funding Sources Program	Details	Notes
Community Assistance and Protection Program	Focuses on mitigation/prevention, education, and outreach. National Fire Prevention and Education teams are sent to areas across the country at-risk for wildland fire to work with local residents. http://www.blm.gov/nifc/st/en/prog/fire/community_assistance.html	See website
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts. http://www.firewise.org/	See website

Housing and Urban Development

The Community Development Block Grants (CDBG) administered by HUD can be used to fund hazard mitigation projects.

Mitigation Funding Sources Program	Details	Notes
Community Development Block Grants (CDBG)	Grants to develop viable communities, principally for low and moderate income persons. CDBG funds available through Disaster Recovery Initiative. http://www.hud.gov/offices/cpd/communitydevelopment/programs/	Disaster funds contingent upon Presidential disaster declaration
Disaster Recovery Assistance	Disaster relief and recovery assistance in the form of special mortgage financing for rehabilitation of impacted homes. http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/assistance.cfm	Individuals
Neighborhood Stabilization Program	Funding for the purchase and rehabilitation of foreclosed and vacant property in order to renew neighborhoods devastated by the economic crisis. http://www.hud.gov/offices/cpd/communitydevelopment/programs/neighborhoodspg/	State and local governments and non-profits

U.S. Department of Agriculture

There are multiple mitigation funding and technical assistance opportunities available from the USDA and its various sub-agencies: the Farm Service Agency, Forest Service, and Natural Resources Conservation Service.

Mitigation Funding Sources Agency Program	Details	Notes
USDA Smith-Lever Special Needs Funding	Grants to State Extension Services at 1862 Land-Grant Institutions to support education-based approaches to addressing emergency preparedness and disasters. http://www.csrees.usda.gov/funding/rfas/smith_lever.html	Population under 20,000
USDA Community Facilities Guaranteed Loan Program	This program provides an incentive for commercial lending that will develop essential community facilities, such as fire stations, police stations, and other public buildings. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population under 20,000
USDA Community Facilities Direct Loans	Loans for essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Community Facilities Direct Grants	Grants to develop essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Farm Service Agency Disaster	Emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and	Farmers and ranchers

Assistance Programs	livestock damaged by natural disasters. http://www.fsa.usda.gov/	
USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. http://www.forestsandrangelands.gov/	See website
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a value-added fashion. http://www.fs.fed.us/spf/coop/programs/eap/	80% of total cost of project may be covered
USDA Natural Resources Conservation Service Emergency Watershed Protection Support Services	Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster. http://www.nrcs.usda.gov/programs/ewp/	See website
USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Funds for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. http://www.nrcs.usda.gov/programs/watershed/index.html	See website

Health and Economic Agencies

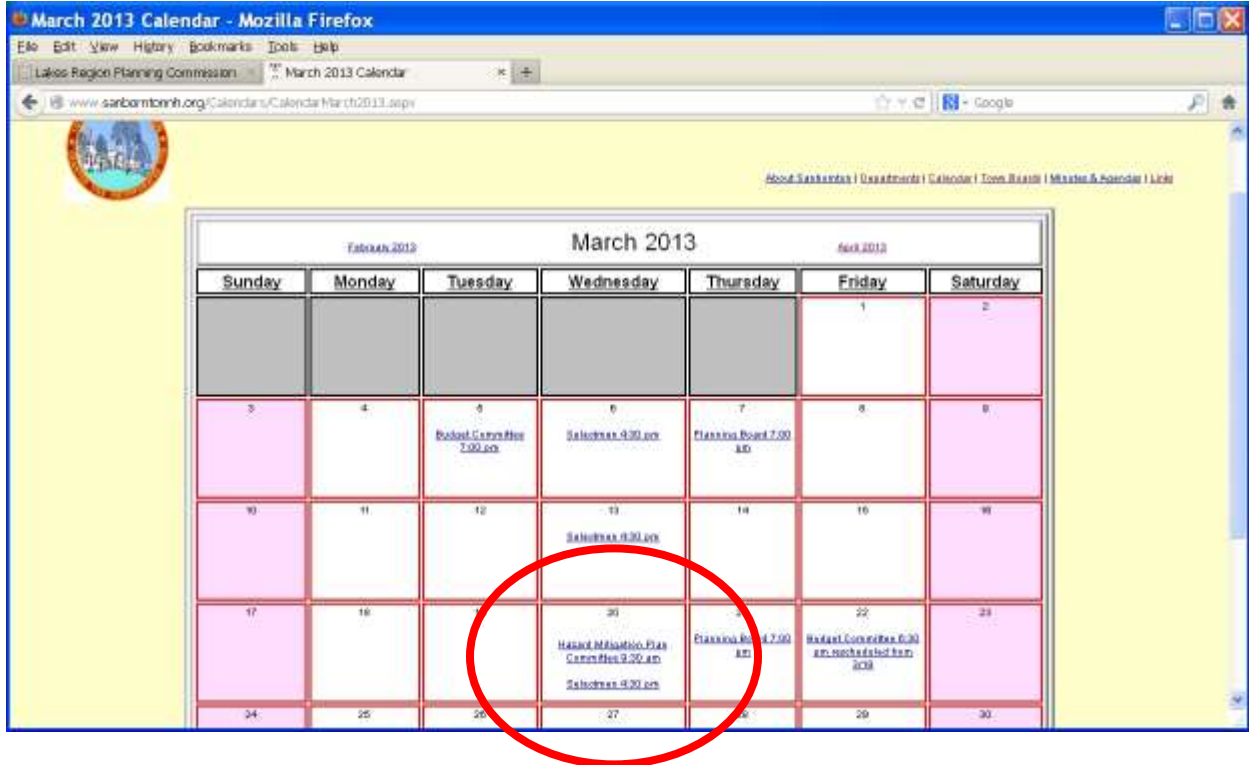
Alternative mitigation programs can be found through health and economic agencies that provide loans and grants aimed primarily at disaster relief.

Federal Loans and Grants for Disaster Relief

	Details	Notes
Department of Health & Human Services Disaster Assistance for State Units on Aging (SUAs)	Provide disaster relief funds to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act. http://www.aoa.gov/doingbus/fundopp/fundopp.asp	Areas designated in a Disaster Declaration issued by the President
Economic Development Administration (EDA) Economic Development Administration Investment Programs	Grants that support public works, economic adjustment assistance, and planning. Certain funds allocated for locations recently hit by major disasters. http://www.eda.gov/AboutEDA/Programs.xml	The maximum investment rate shall not exceed 50 percent of the project cost
U.S. Small Business Administration Small Business Administration Loan Program	Low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster damaged property. http://www.sba.gov/services/financialassistance/index.html	Must meet SBA approved credit rating

APPENDIX C: PUBLICITY AND INFORMATION

Committee meetings were announced on the town of Sanbornton webpage calendar. Press releases similar to the one below were sent to the weekly *Meredith News* and the local daily papers *Laconia Citizen* and *Laconia Daily Sun* prior to the Committee meetings. Several informational handouts and the 2008 Hazard Mitigation Plan were distributed to the committee and available at all meetings.



Lakes Region Planning Commission - Mozilla Firefox

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Lakes Region Planning Commission

www.lakesrpc.org

July 15, 2013

Google Custom Search Search

Welcome!
The Lakes Region Planning Commission is a unique governmental association of local communities established to provide planning and leadership on the diverse needs of New Hampshire's Lakes Region. Our mission is to provide a quality environment, to increase economic opportunity and to encourage cultural development by supporting local efforts with education, technical assistance, information, advocacy and responsive representation.

Recent Publications
[2013 Draft Lakes Region CEQS Review](#)
[Mid-State Regional Coordinating Council Preliminary Service Availability Map](#)
[Pemiawassee River Corridor Management Plan](#)
[CEQS Lakes Region Winter 2013 Newsletter](#)
[The Lakes Region Planning Commission FY2013 Annual Report](#)
[Development Trends in the Lakes Region, 2012 Annual Report](#)
[Sandwich Smart Growth Assessment](#)
[Map of Road Shoulder Width as Reported by NHDOT](#)
[Winnepesaukee Gateway - maps, environmental plans, water quality data and more](#)

For a complete list of publications, visit our [publications / links page...](#)

Latest News
Meeting the Next Generation of Environmental Challenges
In his June 24 presentation at the LRPC Annual Meeting, NH DES Commissioner Tom Burack cited two major challenges for New Hampshire: Global Climate Change and the effects of Land Use and Development on our Natural Resources. For the complete presentation, please [click here](#). [more...](#)

Transportation Funding in NH
The LRPC Transportation Advisory Committee (TAC) recently viewed [this presentation](#) regarding different municipal transportation funding opportunities. For additional information

Upcoming Events
7/17/2013 - Sanbornton Hazard Mitigation Plan Meeting [more...](#)
The Sanbornton Hazard Mitigation Plan Committee is continuing the process of updating the town's 2008 Hazard Mitigation Plan. Committee members are focusing on the natural hazards that put Sanbornton at risk as well as the development of recommendations to protect the safety and well being of town residents. More information can be found in the full [Press Release](#).

7/27/2013 - **Hazardous Waste** [more...](#)
Residents are invited to attend the Hazardous Waste

LAKES REGION PLANNING COMMISSION

March 12, 2013

103 Main Street, Suite #3
 Meredith, NH 03253
 tel (603) 279-8171
 fax (603) 279-0200
 www.lakesrpc.org

**For Immediate Release**

Contact: David Jeffers, 279-8171, djeffers@lakesrpc.org

Town of Sanbornton Hazard Mitigation Plan Meeting

The Sanbornton Hazard Mitigation Plan Committee will begin the process of updating its 2007 Hazard Mitigation Plan. The committee, which is represented by a variety of local interests, will focus on the natural and manmade hazards that put Sanbornton at risk as well as the development of recommendations to protect the safety and well being of town residents. The committee will have its first meeting on March 20, 2013 at Central Fire Station 575 Sanborn Road, Sanbornton starting at 9:30 AM. Residents of Sanbornton and representatives from neighboring communities are encouraged to attend and provide input.

Hazard Mitigation Planning is as important to reducing disaster losses as are appropriate regulations and land use ordinances. The most significant areas of concern for Sanbornton will be determined as a result of this process. With the update to the Hazard Mitigation Plan, community leaders will be able to prioritize actions to reduce the impacts of these and other hazards. Community leaders want the town to be a disaster resistant community and believe that updating the Hazard Mitigation Plan will bring Sanbornton one step closer to that goal.

For more information please call Chief Paul D. Dexter, Jr., Sanbornton Fire Chief and Emergency Management Director at 286-4819 or David Jeffers, Regional Planner, Lakes Region Planning Commission at 279-8171.

ALEXANDRIA • ALTON • ANDOVER • ASHLAND • BANKSTEAD • BELMONT • BRIDGEWATER • BRISTOL • CENTER HARBOR • DANBURY
 EFFINGHAM • FRANKLIN • FREEDOM • GILFORD • GILMANTON • HEBRON • HILL • HOLDERNESS • LACONIA • MEREDITH • MOULTONBOROUGH
 NEW HAMPTON • NORTHFIELD • OSSIPEE • SANBORNTON • SANDWICH • TAMWORTH • TILTON • TUFTONBORO • WOLFEBORO

Local Hazard Mitigation Planning

Hazard Mitigation:

"Hazard Mitigation means any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards"

Questions to address:

- Where are potential hazards?
- What are the risks?
- What are we already doing?
- Where are the gaps?
- What actions can be taken?
- What actions are feasible?
- What are our priorities?
- How will these actions be implemented?
- How will the plan be monitored?

What is a Hazard Mitigation Plan?

In cooperation with the NH Bureau of Emergency Management (BEM), the Lakes Region Planning Commission (LRPC) is working with several of its member communities each year to develop local Hazard Mitigation Plans.



The Hazard Mitigation Plans are designed to address each particular community's vulnerability to natural and man-made hazards. The local plan serves as a means to reduce future losses from hazard events before they occur. This local initiative is guided by a community-based Hazard Mitigation Planning Committee, with the LRPC providing technical support. The structure for plan development is provided through the *Guide to Hazard Mitigation Planning for New Hampshire Communities* which ensures that the community has considered the content of the State of New Hampshire Hazard Mitigation (409) Plan.

MITIGATION PROCESS

- IDENTIFY HAZARDS
- PROFILE HAZARD EVENTS
- INVENTORY ASSETS
- ESTIMATE LOSSES
- PRIORITIZE ACTION STEPS
- ADOPT THE PLAN
- IMPLEMENTATION

Why create a plan?

Development of a local Hazard Mitigation Plan is a chance for the community to assess the hazards that have the potential to threaten residents and their property. It also gives the community an opportunity to identify at-risk populations as well as resources within the community that might be at risk. The committee can then explore a variety of steps that might be put into place to help the community reduce damage and loss.

Having a Hazard Mitigation Plan in place, enables many communities to allocate their resources more effectively. It can also be a useful tool for leveraging additional sources of funding in the event of a disaster.

Federal Emergency Management Agency (FEMA) Requirement:

In order for communities to be eligible for the full spectrum of mitigation program funding, local hazard mitigation plans must be approved by FEMA. The staff of LRPC attend semi-annual hazard mitigation meetings and training programs that are designed to expedite the approval process.

Lakes Region Planning Commission
 103 N. Main St., Suite #3
 Meredith, NH 03253
 (603) 279-8171 - phone
 (603) 279-0200 - fax



Frequently asked questions

- **What will a Hazard Mitigation Plan cost?**

Since this project is funded by the NH Bureau of Emergency Management, the only cost to the community is the dedication of committee members' time and energy.

- **How is a Hazard Mitigation Plan different from an Emergency Action Plan?**

Although there is some overlap, these are different plans, each serving a different function in helping a community to minimize the potential for damage and loss in a community.

Emergency Action Plans (EAP) identifies potential hazard events and the resources available to address them; it also addresses how a community responds to an emergency.

A Hazard Mitigation Plan (HMP) also identifies potential hazard events and community resources. However, an HMP looks at the situation in terms of prevention instead of response. Gaps in coverage, programs, and structural needs are analyzed and specific mitigation steps are recommended and potential funding sources are identified.

- **Is this a community plan, a state plan, or a federal plan?**

The state of New Hampshire does require that each community develop an HMP. Once a plan is approved by FEMA and adopted by the community, should there be a need for Federal Mitigation money, more funding would be available. However, local public involvement is required. The local Emergency Management Director or a committee of citizens should help in plan development; there should also be several public presentations where citizens can make recommendations, provide input, and participate in development of the plan. In the end, the Board of Selectmen need to approve the plan.



Alton dam breach, 1996



The Essentials

At a minimum, each local Hazard Mitigation Plan should contain the following sections:

- An evaluation of the potential hazards within the community
- A description and analysis of local, state, and federal hazard mitigation policies, programs, and capabilities to mitigate the identified hazards in the area
- Goals, objectives, strategies and actions to reduce long-term vulnerability to hazards
- An evaluation of the costs and benefits of the recommended mitigation projects.



Building stronger and safer

Hazard mitigation planning is the process state, local and tribal governments use to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), State, local and Tribal governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.

Reducing risks through mitigation planning

A hazard mitigation plan is a long-term strategy for reducing disaster losses. The planning process promoted by the Disaster Mitigation Act of 2000 is as important as the resulting plan because it encourages jurisdictions to integrate mitigation with day-to-day decision-making regarding land-use planning, floodplain management, site design and other functions.

Mitigation planning elements

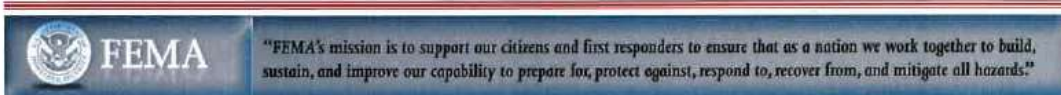
- Public involvement – In addition to government agencies involved in incident management, floodplain management and economic development, the planning process usually involves a range of stakeholders, including representatives of neighborhood groups, civic organizations, academia, environmental groups, the business community and individual citizens. Involving stakeholders is essential to determining the

most vulnerable populations and facilities in the community and to assuring community wide support for the plan.

- Risk assessment – A risk assessment is the process of identifying natural hazards and risks associated with them, including threats to public health and safety, property damage and economic loss. The assessment answers the fundamental question, “What would happen if a natural disaster occurred?” and provides a factual basis for the mitigation activities proposed in the strategy. The assessment includes a description of the type, location and extent of natural hazards; the jurisdiction’s vulnerability to the hazards; and the type and numbers of buildings, infrastructure and critical facilities located in identified hazard areas.
- Mitigation strategy – Based on the risk assessment, State, local and Tribal governments develop mitigation goals and objectives and a strategy for mitigating disaster losses. The strategy sets forth an approach for implementing activities that are cost-effective, technically feasible and environmentally sound.

Hazard mitigation plan required to receive HMGP Project Grants

Local jurisdictions are required by federal law to have a FEMA-approved hazard mitigation plan in order to receive Pre-Disaster Mitigation (PDM) or Hazard Mitigation Grant Program (HMGP) project grant funding. However, in extraordinary circumstances, HMGP funds can be awarded to communities that agree to develop a hazard mitigation plan within 12 months of receiving the project grant. Every State has a FEMA-approved hazard mitigation plan, though many local jurisdictions still do not.



Fact Sheet

State and Local Mitigation Planning



Mitigation Examples

History shows that the physical, financial and emotional losses caused by disasters can be reduced significantly through mitigation planning. Mitigation focuses attention and resources on solving a particular problem (such as reducing repetitive flood losses) and thereby produces successive benefits over time. Through implementation of local floodplain ordinances, for example, it is estimated that \$1.1 billion in flood damages are prevented annually.

Mitigation includes a broad range of activities designed to protect homes, schools, public buildings and critical facilities. Examples include the following types of projects:

- Adopting and enforcing more stringent building codes, flood-proofing requirements, seismic design standards, or wind-bracing requirements for new construction or the retrofit of existing buildings.
- Exceeding the National Flood Insurance Program (NFIP) floodplain management regulations by elevating structures above the base flood elevation (BFE) in high-risk areas.
- Adopting stricter development regulations and zoning ordinances that steer development away from areas subject to flooding, storm surge, or coastal erosion.
- Retrofitting public buildings, schools and critical facilities, such as police and fire stations, to withstand hurricane-strength winds or ground shaking from earthquakes.
- Using public funds to acquire damaged homes or businesses in flood-prone areas, demolish or relocate the structures and use the property for open space, wetlands, or recreational uses.
- Building community shelters and “safe rooms” to help protect people in public buildings and schools in hurricane- and tornado-prone areas.

Planning tool available for government agencies

FEMA has developed a number of planning tools to help government agencies develop mitigation plans. These include how-to guides, CD ROMs and online information about organizing a planning team, involving stakeholders, conducting risk assessments, evaluating potential mitigation measures, conducting benefit-cost analyses and other planning issues.

For more information

Please visit: <http://www.fema.gov/plan/mitplanning/index>.

For state name disaster recovery, visit www.fema.gov or your state Web-site.



"FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards."

APPENDIX D: MEETING AGENDAS AND PARTICIPATION

This section contains copies of the Committee meeting agendas and a summary of participation. All Committee meetings were held in the Sanbornton Public Safety Building. Agendas were developed by the LRPC planner and meetings were chaired by the Emergency Management Director. At each meeting there was opportunity for public input.

Sanbornton Hazard Mitigation Plan Update Committee

March 20, 2013 – 9:30 AM
Central Fire Station
575 Sanborn Road, Sanbornton, NH

AGENDA

1. Introductions
2. What is Hazard Mitigation Planning?
 - a. Mitigation planning vs. emergency response planning
3. Purpose of Committee
4. Set schedule for future meetings
5. Discussion of Development Trends
6. Identify Critical Facilities on base map
7. Identify all hazards (past – especially since 2007 & potential) in Sanbornton and mark on map
 - a. What are the hazards?
 - b. What is at risk from those hazards (structures, infrastructure, areas of town, populations)?
8. Public Input

Goals for next meeting:

- a. Risk Assessment, including data collection
- b. Man-made hazards
- c. Impact of hazards on Critical Facilities



Sanbornton Hazard Mitigation Plan Update Committee

April 17, 2013 – 9:30 AM
Central Fire Station
565 Sanborn Road, Sanbornton, NH

AGENDA

1. Introductions
2. Existing Plans and Policies
3. Status of 2008 Mitigation Actions
4. Assess Vulnerability
 - a. Assets
 - b. Impact of each Hazard on Assets
5. Public Input



Sanbornton Hazard Mitigation Plan Update Committee

May 15, 2013 – 9:30 AM
Central Fire Station
565 Sanborn Road, Sanbornton, NH

AGENDA

1. Introductions
2. Review of materials
3. Impact of each Hazard on Assets
4. Goals / Problem Statements for Hazards
5. Brainstorming of Mitigation Actions
6. Public Input
7. Adjourn



Sanbornton Hazard Mitigation Plan Update Committee

July 31, 2013 – 9:30 AM
Central Fire Station
565 Sanborn Road, Sanbornton, NH

AGENDA

1. Introductions
2. Review of Problem Statements and Potential Mitigation Actions
3. Prioritization of Potential Mitigation Actions
4. Implementation
5. Next Steps
6. Public Input
7. Adjourn



Sanbornton Hazard Mitigation Plan Update Committee

September 4, 2013 – 1:00 PM
Central Fire Station
565 Sanborn Road, Sanbornton, NH

AGENDA

1. Continued Review of Problem Statements and Potential Mitigation Actions
2. Prioritization of Potential Mitigation Actions
3. Implementation
4. Next Steps
5. Public Input
6. Adjourn



FEMA



Committee Member	Position	3/20/13	4/17/13	5/15/13	6/13/13	7/31/13	9/4/13	
Paul Dexter, Jr.	Sanbornton Fire Chief/EMD	X	X	X	X	X	X	
Karen Ober	Sanbornton Selectman	X		X	X	X	X	
Robert Veloski	Sanbornton Town Manager			X	X	X	X	
Johnnie Van Tassel	Sanbornton DPW			X	X	X	X	
Stephen Hankard	Sanbornton Police	X	X	X		X	X	
Richard Gardner	Sanbornton Planning Board	X	X	X		X	X	
Carmine Cioffi	Sanbornton citizen	X		X	X			
Danielle Morse	NH HSEM	X		X		X		
David Jeffers	Lakes Region Planning Commission	X	X	X	X	X	X	

APPENDIX E: HAZARD EVENTS PRIOR TO 2008

Hazard	Date	Location	Description	Source
Drought	1929-1936	Statewide	Regional	FEMA
Drought	1939-1944	Statewide	Sever in Southeast	FEMA
Drought	1947-1950	Statewide	Moderate	FEMA
Drought	1960-1969	Statewide	Longest record continuous period of below normal precipitation.	FEMA
Drought	6/1/1999	Statewide	Governor's Office declaration moderate drought for most of the state.	FEMA
Earthquake	12/20/1940	Carroll County	5.5 on Richter scale - affected region	NH OEM
Earthquake	12/24/1940	Carroll County	5.5 on Richter scale - affected region	NH OEM
Earthquake	1/18/1982	Sanbornton, NH	4.5 Richter Scale - felt in Nashua	NOAA
Flood	3/14/1977	Central and Southern NH	Peak flow for Soucook River	NH OEM
Flood	8/19/1991	Statewide	FEMA DR-917-NH: Hurricane Bob struck New Hampshire causing extensive damage in Rockingham and Stafford counties, but the effects were felt statewide.	NH OEM
Flood	10/15/2005	Statewide	Rainfall amounts ranged from around 3 - 9 inches. This resulting flooding of small rivers and streams caused additional damage to roads that had been damaged earlier in the month. \$625 K in damages statewide.	NOAA
Flood	6/1/1998 – 7/31/1998	Central and Southern NH	FEMA DR-1231-NH: A series of rainfall events. Counties Declared: Grafton, Carroll, Belknap, Rockingham, Sullivan, and Merrimack (1 fatality)	NH OEM
Flood	7/1/1986 – 8/10/1986	Statewide	FEMA DR-771-NH: Severe summer storms with heavy rains, tornadoes; flash flood and severe winds.	NH OEM
Flood	8/ 7/1990 - 8/11/1990	Statewide	FEMA DR-876-NH: A series of storm events from August 7-11, 1990 with moderate to heavy rains produced widespread flooding in New Hampshire.	NH OEM
Hail	7/12/1970	Belknap County	2.00 inch diameter	NOAA
Hail	7/11/1976	Belknap County	1.75 inch diameter	NOAA
High winds	late 1990's	Tilton	Tree fell on main power line during storm; lose of power extensive	NH OEM
Hurricane	9/21/1938	Statewide	13 Deaths, 2 Billion feet of marketable lumber blown down, flooding throughout the State, total Direct Losses - \$12,337,643 (1938 Dollars)	NH OEM
Hurricane	9/9/1991	Statewide	Hurricane Bob, severe storms	FEMA
Hurricane	September 18- 19, 1999	Statewide	Heavy Rains associated with tropical storms, Hurricane Floyd affected the area.	FEMA
Ice	1/5/1979	Statewide	Power and Transportation disruptions	NH OEM
Ice	1/7/1998	Statewide	More than \$17 million in power line damage alone	NH OEM

Hazard	Date	Location	Description	Source
Ice/Freezing Rain	1/27/1996	Belknap County	Cold road surfaces quickly iced up at the beginning of a heavy rain event, leading to numerous automobile accidents over a short period of time. Multiple vehicle accidents and one fatality	NOAA
Nor'easter	4/27/2007	Statewide	Nor'easter caused flooding, damage in excess of \$25 million s of August 2007.	FEMA
Snow/Blizzard	3/16/1993	Statewide	High winds and record snowfall	FEMA
Snow	1/15/2004	Statewide		FEMA
Snow	3/28/2001	Statewide		FEMA
Snow	4/27/2007	Statewide	Nor'easter caused flooding, damage in excess of \$25 million s of August 2007.	FEMA
Thunderstorm	7/6/1999	Sanbornton	Severe winds, downed trees blocked roads, and caused power outages. The winds damaged several buildings, damaged hundreds of trees, closing roads, and damaging homes. Small rivers and streams rose rapidly. Lightning also caused fires. 1 fatality, 1 injury	NOAA
Tornado	5/31/1972	Belknap County	F1 \$250K in damages	NOAA
Tornado	7/3/1972	Belknap County	F2	NH OEM
Tornado	7/23/1978	Belknap County	F1	Tornado P.
Tornado	7/23/1995	Belknap County	F1	NH OEM
Tornado	7/6/1999	Belknap County	F1	NH OEM

Table Sources:

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

2 = New Hampshire Bureau of Emergency Management (NHBEM)

3 = National Oceanic and Atmospheric Administration (NOAA)

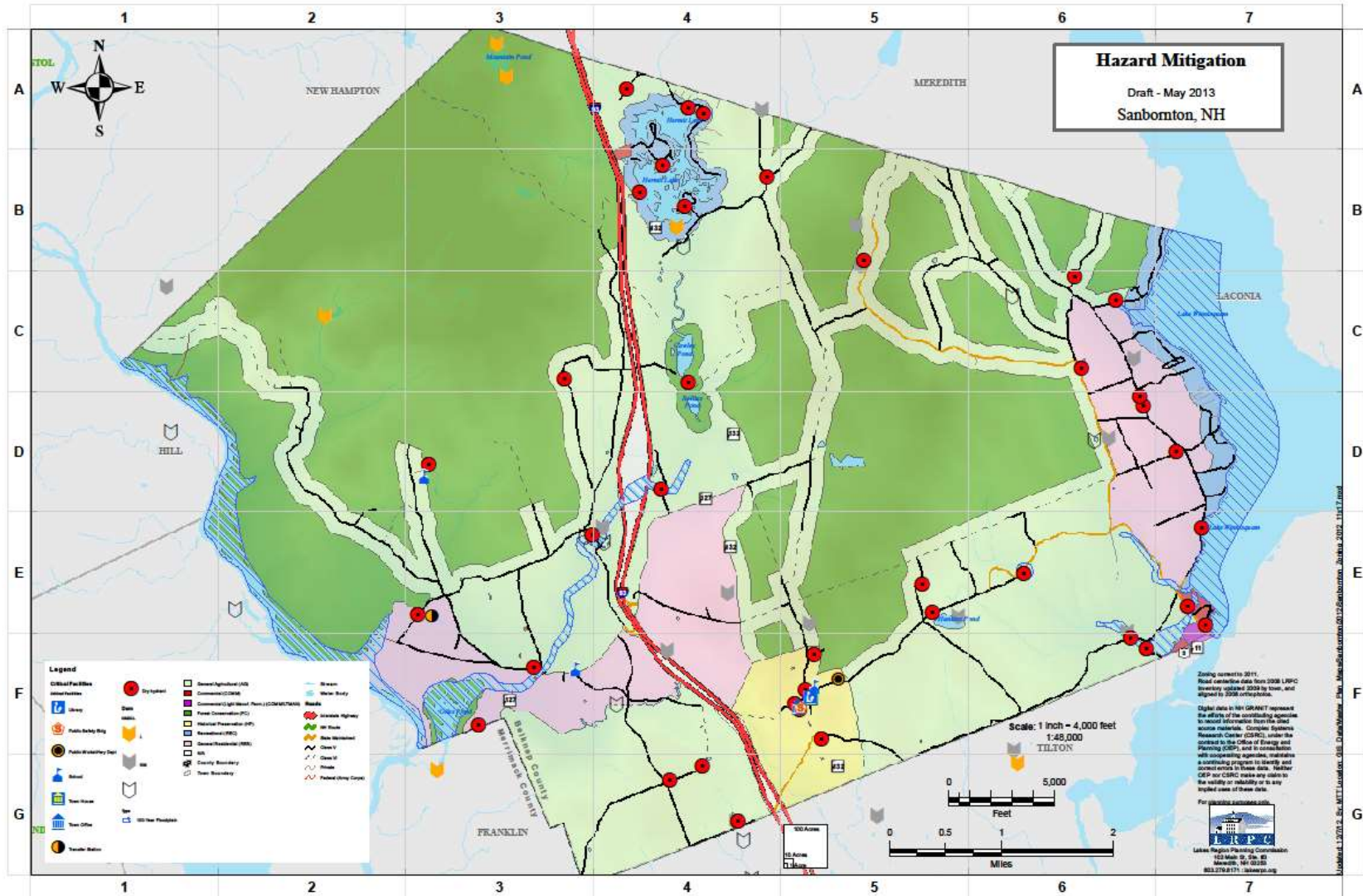
4 = National transportation Safety Board (NTSB)

5 = Federal Emergency Management Agency (FEMA)

6 = Northeast States Emergency Consortium (NESEC)

7 = National Interagency Fire Center (NIFC)

APPENDIX F: CRITICAL FACILITIES & POTENTIAL HAZARDS MAP



APPENDIX G: HAZARDS – SUPPLEMENTARY HAZARD INFORMATION

This section provides statewide or regional information regarding hazards. Some information is about hazards mentioned in the NH Hazard Mitigation Plan. Other information either provides context or extra detail which supplements the locally important information addressed in Chapter III.

I. FLOOD, WILDFIRE, DROUGHT

Flooding

Historically, the state's two largest floods occurred in 1936 and 1938. The 1936 flood was associated with snow melt and heavy precipitation. The 1938 flooding was caused by the Great New England Hurricane of 1938. Those floods prompted the construction of a series of flood control dams throughout New England, built in the 1950s and '60s. They continue to be operated by the US Army Corps of Engineers.³²

A series of floods in New Hampshire began in October 2005 with a flood that primarily affected the southwest corner of the state and devastated the town of Alstead. The flood killed seven people. It was followed by floods in May 2006 and April 2007 and a series of floods during the late summer and early fall of 2008.

Flooding in the Lakes Region is most commonly associated with structures and properties located within a floodplain. There are numerous rivers and streams within the region and significant changes in elevation, leading to some fast-moving water. The region also has a great deal of shoreline, making it exposed to rising water levels as well. Although historically, there have not been many instances of shoreline flooding, the potential always exists for a major flood event to occur.

Recent rain events have proven this is becoming an increasing concern as additional development is contributing to flood hazards. As areas are covered with impervious surfaces, less water is allowed to infiltrate, evaporate, or be transpired by vegetative growth and more of it runs off directly into surface drainages and water bodies. This increases the likelihood of flash floods and substantial overland flow. Of greatest concern are the waterfront properties on the lakes, ponds, and associated tributaries.

Culvert improvements and roadwork have been conducted throughout the region as a result of localized flooding events. Of particular concern in the region are areas of steep slopes and soils with limited capacity to accept rapid volumes of rainwater. Roads and culverts in close proximity to these conditions are most at risk of localized flooding.

Flooding due to Dam Failure

Dam failure results in rapid loss of water that is normally held back by a dam. These types of floods can be extremely dangerous and pose a threat to both life and property. Dam classifications in New Hampshire are based on the degree of potential damages that a failure or disoperation of the dam is

³² <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> date visited: January 18, 2011

expected to cause. The classifications are designated as non-menace, low hazard, significant hazard, and high hazard and are summarized in greater detail in Table G-1.

The designations for these dams relate to damage that would occur if a dam were to break, not the structural integrity of the dam itself. In the Lakes Region, the Town of Alton was impacted by an earthen dam failure on March 12, 1996. Although listed in the NH Hazard Mitigation Plan as a significant hazard, it did result in the loss of one life.

Table G-1: New Hampshire Dam Classifications³³

Classification	Description
Non-Menace	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: <ul style="list-style-type: none"> • Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or • Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.
Low Hazard	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: <ul style="list-style-type: none"> • 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. • Reversible environmental losses to environmentally-sensitive sites.
Significant Hazard	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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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	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: <ul style="list-style-type: none"> • 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.

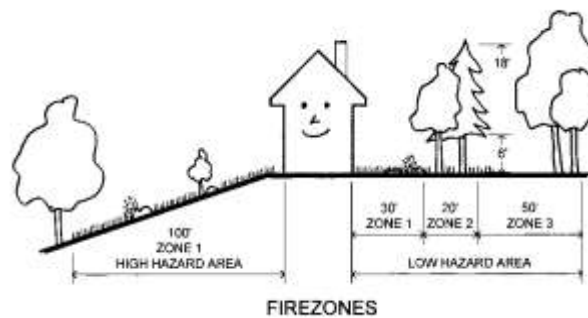
³³ NH DES Fact Sheet WD-DB-15 "Classification of Dams in New Hampshire", <http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf>. Accessed October 1, 2012.

Wildfire

Several areas in the region are relatively remote in terms of access and firefighting abilities. Of greatest concern are those areas characterized by steep slopes and vast woodlands, with limited vehicular access. These areas include the Ossipee, Squam, Belknap, and Sandwich Mountain Ranges. As these once remote areas begin to see more development (the urban wildfire interface), care should be taken to ensure that adequate fire protection and buffers are established. Techniques include increased buffers between wooded areas and residential buildings, requirements for cisterns or fire ponds, a restriction on the types of allowable building materials such as shake roofs, and special considerations for landscaping. While historically massive wildfires have been western phenomena, each year hundreds of woodland acres burn in New Hampshire.

The greatest risk exists in the spring when the snow has melted and before the tree canopy has developed, and in the late summer – early fall. Appropriate planning can significantly reduce a community's vulnerability to wildfires. There are four-zone suggestions from the Firewise community program that could be potentially helpful for Sanbornton's homeowners.³⁴

ZONE 4 is a natural zone of native or naturalized vegetation. In this area, use selective thinning to reduce the volume of fuel. Removing highly flammable plant species offers further protection while maintaining a natural appearance.



ZONE 3 is a low fuel volume zone. Here selected plantings of mostly low-growing and fire-resistant plants provide a decreased fuel volume area. A few well-spaced, fire resistant trees in this zone can further retard a fire's progress.

ZONE 2 establishes a vegetation area consisting of plants that are fire resistant and low growing. An irrigation system will help keep this protection zone green and healthy.

ZONE 1 is the protection area immediately surrounding the house. Here vegetation should be especially fire resistant, well irrigated and carefully spaced to minimize the threat from intense flames and sparks.

Conflagration

Conflagration is an extensive, destructive fire in a populated area that endangers lives and affects multiple buildings. Historically, many New Hampshire towns were settled in areas along waterways in order to power the mills. Often the town centers were at a low point in the topography, resulting in dense residential development on the steeper surrounding hillsides. Hillsides provide a natural updraft that makes fire fighting more difficult. In particular, structural fires spread more readily in hillside developments because burning buildings



Alton Bay Christian Conference Center,
2009

³⁴ <http://www.firewise.org> accessed September 21, 2012.

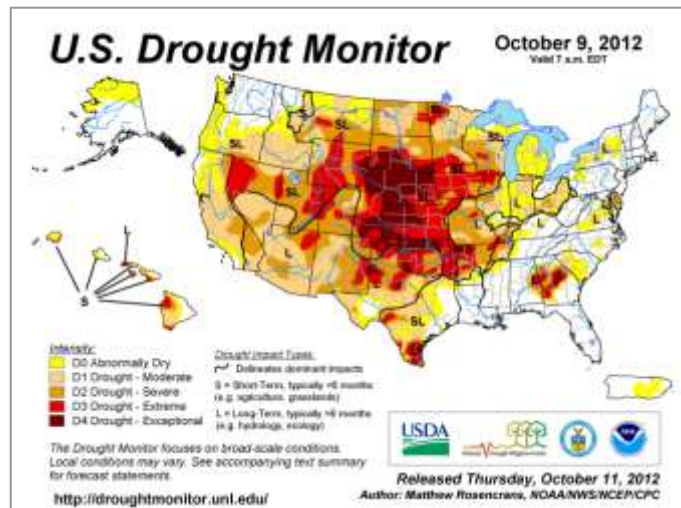
pre-heat the structures that are situated above them.

Within the Lakes Region the city of Laconia was the site of one of the most devastating structural fires to occur in the state of New Hampshire. The 1903 Great Lakeport Fire consumed more than 100 homes; two churches, two factories, a large mill, a power plant, and a fire station. Wolfeboro’s history includes a significant fire in the winter of 1956. This event is recognized as the last block fire in town and is considered a small conflagration. On April 12, 2009 the Alton Bay Christian Conference Center complex caught fire, resulting in an 11-alarm fire and destroying more than 40 structures.

Drought

Drought occurs when less than the normal amount of water is available for extended periods of time. Effects may include decreased soil moisture, groundwater levels, streamflow, and lake, pond, and well levels may drop. Factors that may contribute to drought include reduced rain/snowfall, increased rates of evaporation, and increased water usage. New Hampshire generally receives adequate rainfall; it is rare that the state experiences extended periods of below normal water supplies.

Since 1990 New Hampshire has had a state Drought Emergency Plan, which identifies four levels of action indicating the severity of the drought: Alert, Warning, Severe, and Emergency. There have been five extended droughts in New Hampshire in the past century: 1929 – 1936, 1939 – 1944, 1947 – 1950, 1960 – 1969, and 2001 – 2002.³⁵ While much of the country experienced drought conditions in 2012, New Hampshire received adequate precipitation.³⁶



II. GEOLOGICAL HAZARDS

Earthquake

Notable New Hampshire earthquakes are listed in Table G-2 with the extent of the hazard expressed in the Modified Mercalli Intensity scale and the Richter Magnitude.³⁷

Table G-2: NH Earthquakes of magnitude or intensity 4 or greater (1638-2007).

Location	Date	MMIntensity	Magnitude
Ossipee	December 24, 1940	7	5.5
Ossipee	December 20, 1940	7	5.5
Ossipee	October 9, 1925	6	4
Laconia	November 10, 1936	5	-

³⁵ <http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf> visited February 8, 2011.

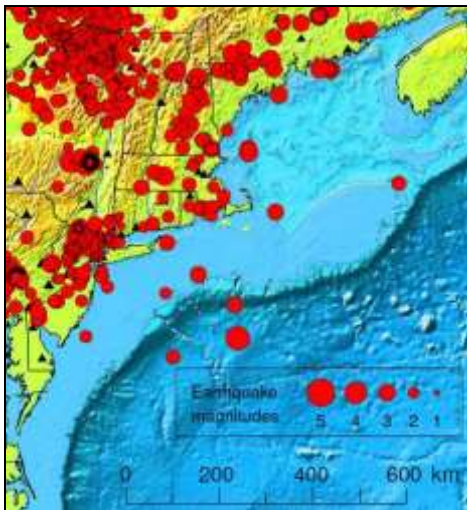
³⁶ US Drought Monitor <http://droughtmonitor.unl.edu/>. Accessed October 9, 2012.

³⁷ http://earthquake.usgs.gov/learn/topics/mag_vs_int.php, visited June 8, 2012.

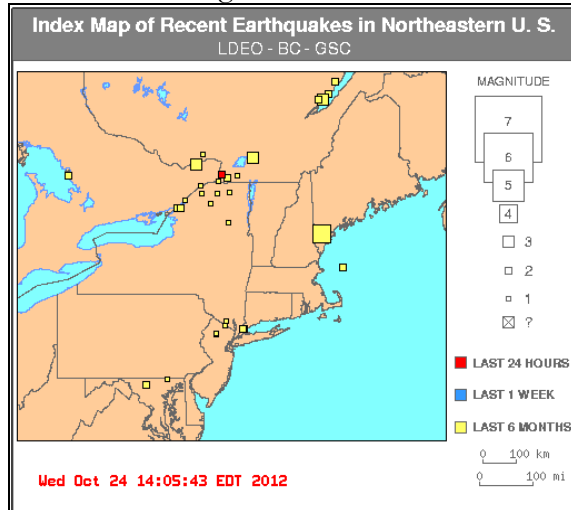
Location	Date	MMIntensity	Magnitude
New Ipswich	March 18, 1926	5	-
Lebanon	March 5, 1905	5	-
Rockingham County	August 30, 1905	5	-
Concord	December 19, 1882	5	-
Exeter	November 28, 1852	5	-
Portsmouth	November 10, 1810	5	4
Off Hampton	July 23, 1823	4	4.1
15km SE of Berlin	April 6, 1989	-	4.1
5km NE of Berlin	October 20, 1988	-	4
W. of Laconia	January 19, 1982	-	4.7
Central NH	June 11, 1638	-	6.5

Earthquakes in the Northeast³⁸

1990 – 2010



During the last six months



Damage from an earthquake generally falls into two types; Structural and Nonstructural.

- **Structural Damage** is considered any damage to the load bearing components of a building or other structure.
- **Nonstructural Damage** is considered any portion not connected to the superstructure. This includes anything added after the frame is complete.

According to the NH Division of Homeland Security and Emergency Management, some of the issues likely to be encountered after a damaging earthquake could be:

- Total or partial collapse of buildings, especially un-reinforced masonry structures and those not built to seismic codes.
- Damage to roads and bridges from ground settlement and structural damage.
- Mass Casualties.
- Loss of electric power.

³⁸ Lamont-Doherty Cooperative Seismic Network <http://www.ldeo.columbia.edu/LCSN/index.php>, accessed October 24, 2012

- Loss of telecommunication systems.
- Fires from gas line ruptures and chimney failures.
- Total or partial loss of potable and fire fighting water systems from pipe ruptures.
- Hazardous Material incidences.
- Loss of critical capabilities from structural and nonstructural damages.
- Lack of mutual aid support.

The NH HSEM also notes that a “cascade of disasters” typically occurs after a damaging earthquake. For example:

- Damage to gas lines and chimneys result in fires that are difficult to extinguish due to damage to the road, water systems, fire and police stations.
- Structural and Nonstructural damage cause many injuries, but because of damage to health care facilities and emergency response facilities, there is a slow or nonexistent response.
- Responders are slowed in their response because of Hazardous Material incidents.
- Flooding due to dam failures.

Landslide

A landslide is the downward or outward movement of slope-forming materials reacting to the force of gravity, including mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. Landslides may be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Seismic activity may play a role in the mass movement of landforms also. Although New Hampshire is mountainous, it consists largely of relatively old geologic formations that have been worn by the forces of nature for eons. Consequently, much of the landscape is relatively stable and the exposure to this hazard type is generally limited to areas in the north and north central portion of the state. Formations of sedimentary deposits and along the Connecticut and Merrimack Rivers also create potential landslide conditions.

Although the overall vulnerability for landslides in the state is low, there is considerable terrain susceptible to landslide action. This was exemplified in May of 2003 when the Old Man of the Mountain collapsed. The continuous action of freezing and thawing of moisture in rock fissures causes it to split and separate. This action occurs frequently on the steeply sloped areas of the state, increasing the risk of landslides. In addition to being susceptible to this freeze/thaw process, the Ossipee Mountain Range, Squam Range, and other mountains throughout the Lakes Region are also close to seismic faults and at risk to increased pressure to development. Consideration must be given to the vulnerability of man-made structures in these areas due to seismic- and/or soils saturation-induced landslide activity. Landslide activities are also often attributed to other hazard events. For example, during a recent flood event, a death occurred when a mass of saturated soil collapsed. This death was attributed to the declared flood event.³⁹ Also, during the 2007 Nor’easter a landslide occurred in Milton, NH resulting in the temporary closure of NH Route 101.

III. Severe Wind

The Lakes Region is at risk of several types of natural events associated with high winds, including nor’easters, downbursts, hurricanes and tornadoes. The northeast is located in a zone that should be

³⁹ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> visited February 8, 2011.

built to withstand 160 mile an hour wind gusts. A large portion of the northeast, including the Lakes Region, is in a designated hurricane susceptible region.

Tornado/Downburst

Although tornadoes are locally produced, damage paths can be in excess of one mile wide and 50 miles long.⁴⁰ The Fujita Scale is used to measure the intensity of a tornado (or downburst) by examining the damage caused in the aftermath, shown in Table E-3.⁴¹ An F2 tornado ripped through a 50-mile section of central NH in July of 2008 from Epsom to Ossipee leading to requests for federal disaster declarations in several counties.⁴²

Table G-3: The Fujita Scale

F-Scale #	Intensity Phrase	Wind Speed	Type of Damage
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies.

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

The major damage from downbursts come from falling trees, which may take down power lines, block roads, or damage structures and vehicles. New Hampshire experienced three such events in the 1990s. One event occurred in Moultonborough on July 26, 1994 and was classified as a macroburst. It affected an area one-half mile wide by 4-6 miles in length.

The tornado/downburst risk for an individual community in New Hampshire is relatively low compared to many other parts of the country. Though the danger that these storms present may be high, the frequency of these storms is relatively low to moderate.

Hurricane

⁴⁰ FEMA Hazards: Tornadoes <http://www.fema.gov/business/guide/section3e.shtm>, visited February 8, 2011.

⁴¹ <http://www.tornadoproject.com/fscale/fscale.htm> visited March 8, 2011.

⁴² <http://www.fema.gov/news/newsrelease.fema?id=45525> visited March 8, 2011.

Hurricanes are severe tropical storms that have winds at least 74 miles per hour. In the Lakes Region they could produce heavy rain and strong winds that could cause flooding or damage buildings, trees, power lines, and cars.⁴³ Hurricanes are measured by the Saffir-Simpson Hurricane Scale: a 1-5 rating based on a hurricane's intensity using wind speed as the determining factor (Table E-4). The scale is used to give an estimate of the potential property damage and flooding expected from a hurricane landfall.

Table G-4: Saffir-Simpson Hurricane Scale

Category	Characteristics
1	Winds 74-95 mph (64-82 kts or 119-153 km/hr). Storm surge generally 4-5 ft above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage.
2	Winds 96-110 mph (83-95 kts or 154-177 km/hr). Storm surge generally 6-8 feet above normal. Some roofing material, door, and window damage of buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center. Small craft in unprotected anchorages break moorings.
3	Winds 111-129 mph (96-113 kts or 178-209 km/hr). Storm surge generally 9-12 ft above normal. Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris. Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more. Evacuation of low-lying residences with several blocks of the shoreline may be required.
4	Winds 130-156 mph (114-135 kts or 210-249 km/hr). Storm surge generally 13-18 ft above normal. More extensive curtainwall failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Low-lying escape routes may be cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of structures near the shore. Terrain lower than 10 ft above sea level may be flooded requiring massive evacuation of residential areas as far inland as 6 miles (10 km).
5	Winds greater than 156 mph (135 kts or 249 km/hr). Storm surge generally greater than 18 ft above normal. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of all structures located less than 15 ft above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5-10 miles (8-16 km) of the shoreline may be required.

Source: <http://www.nhc.noaa.gov/aboutshs.shtml>

According to NOAA, while 2010 was one of the busiest hurricane seasons on record, 2013 was one of the least active hurricane seasons.⁴⁴ New Hampshire has not experienced a severe hurricane since 1938. On September 21, 1938, a Category 3 hurricane claimed 13 lives in New Hampshire and many more throughout New England. Official records at the Weather Bureau in Concord show sustained winds of 56 miles per hour, but around the state, gusts around 100 miles per hour were reported, mostly due to topographical acceleration. The Merrimack River rose nearly 11 feet above its flood stage, *The Hanover Gazette* reported that in New Hampshire, 60,000 people were homeless and many

⁴³ http://www.fema.gov/hazard/hurricane/hu_about.shtm, visited January 25, 2011.

⁴⁴ http://www.noaa.gov/stories/2010/20101129_hurricane_season.html visited January 25, 2011 and http://www.noaa.gov/stories/2013/20131125_end_of_hurricane_season.html.

areas were without power. Damages were estimated at \$22 million.⁴⁵ Hurricane Bob, a category 2 storm, in 1991, was declared a major federal disaster in New Hampshire and is recorded as a severe storm in the state's history.⁴⁶

In the past five years no hurricanes have hit the region. By the time that a hurricane reaches central New Hampshire, it is rare that it retains the characteristics of a hurricane. Wind speeds usually dissipate but they can still bring a great deal of rainfall to the region.

ICE JAM

Ice forming in riverbeds and against structures often presents significant hazardous conditions for communities. Meltwater or stormwater may encounter these ice formations and apply lateral and/or vertical force upon structures. Moving ice may scour abutments and riverbanks. Ice may also create temporary dams. These dams can create flood hazard conditions where none previously existed. As indicated by the stream gauge record (below right), ice jams can lead to very rapid changes in river levels (in this case a fifteen foot increase in twelve hours).



March 2011 Ice Jam at NH Route 175A bridge across the Pemigewasset River



Stream gauge at bridge indicating change in river level in early March 2011.

Between 1835 and 2008 there were 42 ice jams reported in the Holderness/Plymouth area of the Pemigewasset. According to the Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL), 43% of New Hampshire ice jams have occurred in March and April during the ice breakup on the rivers, while 47% of ice jams occurred in January and February during either ice freeze up or ice break up periods.⁴⁷

RADON

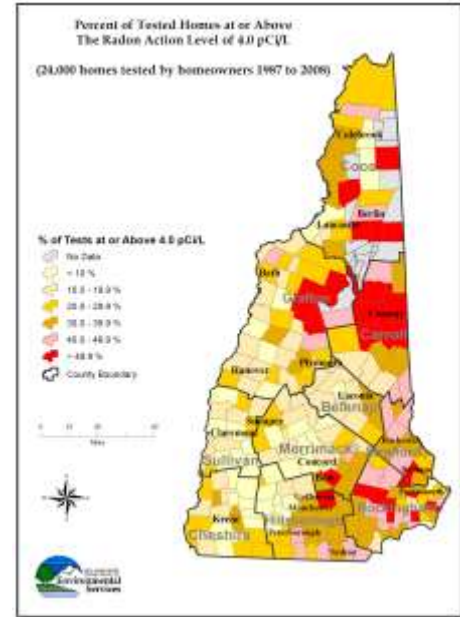
Radon is a naturally occurring colorless, odorless radioactive gas usually associated with granite rock formations. The gas can seep into basements through the air. It can also be transported via water and is released once the water is aerated, such as during a shower. Extended exposure to radon can

⁴⁵ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html>, visited January 25, 2011.

⁴⁶ <http://www.fema.gov/news/event.fema?id=2118> visited January 25, 2011

⁴⁷ "Ice Jams in New Hampshire," CRREL, <http://icejams.crrel.usace.army.mil/tectran/IERD26.pdf>
Visited July 25, 2013

lead to higher rates of cancer in humans. Radon is not a singular event – it can take years or decades to see the effects. The NH Office of Community and Public Health’s Bureau of Radiological Health indicates that one third of homes in New Hampshire have indoor radon levels that exceed the US Environmental Protection Agency’s “action level” of 4 pCi/l.⁴⁸ The map at the right indicates that 10-19.9% of the homes in Holderness exceeded the recommended limit of 4.0 pCi/l in state-wide testing conducted over the past twenty years.⁴⁹



⁴⁸ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> visited February 8, 2011.

⁴⁹ NH DES Radon Program <http://des.nh.gov/organization/divisions/air/pehb/ehs/radon/index.htm>, accessed October 9, 2012.

APPENDIX H: EXISTING PLANS, STUDIES, REPORTS, AND TECHNICAL INFORMATION

Sanbornton Hazard Mitigation Plan, 2008

Sanbornton Master Plan, 2012

Sanbornton Zoning Ordinance

Sanbornton Subdivision Regulations

Sanbornton Site Plan Regulations

“Development Activity in the Lakes Region, 2011 Annual Report”, Lakes Region Planning Commission.

FEMA Community Information System

Sanbornton Assessor Database, 2013

State of New Hampshire Multi-Hazard Mitigation Plan, Update 2013

National Oceanic and Atmospheric Administration website, <http://www.ncdc.noaa.gov/>

NH Division of Forests and Lands <http://www.nhdf.org/fire-control-and-law-enforcement/fire-statistics.aspx>

NH Department of Transportation Traffic Volume Reports,

<http://www.nh.gov/dot/org/operations/traffic/tvr/locations/index.htm>

APPENDIX I: FEMA WEBLIOGRAPHY

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/MSK/statemap.htm
Flood Map Modernization	http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization
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 Earthquake 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,	http://magic.lib.uconn.edu/connecticut_data.html

"Connecticut GIS Data", University of Connecticut	
2012 Maine earthquake	http://www.huffingtonpost.com/2012/10/17/main-earthquake-2012-new-england_n_1972555.html

WIND-RELATED HAZARDS

ATC Wind Speed Web Site	http://www.atcouncil.org/windspeed/index.php
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/hurricane/chp/hp.htm
National Severe Storms Laboratory, 2009, "Tornado Basics",	http://www.nssl.noaa.gov/primer/tornado/tor_basics.html

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

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

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	http://nisconsortium.org/
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practices	
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=stelpdb1042901
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

SUSTAINABILTY/ADAPTATION/CLIMATE CHANGE

Planning for a Sustainable Future: the Link Between Hazard Mitigation and Livability	http://www.fema.gov/media-library-data/20130726-1454-20490-3505/fema364.pdf
Why the Emergency Management Community Should be Concerned about Climate Change: A discussion of the impact of climate change on selected natural hazards	http://www.cna.org/sites/default/files/research/WEB%2007%2029%2010.1%20Climate%20Change%20and%20the%20Emergency%20Management%20Community.pdf
NOAA RISA for the Northeast (Regional Integrated Sciences and Assessments)	http://ccrun.org/home
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/
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
NEclimateUS.org	http://www.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
EPA State and Local Climate and Energy Program	http://www.epa.gov/statelocalclimate/index.html

PLANNING

American Planning Association	http://www.planning.org
PlannersWeb - Provides city and regional planning resources	http://www.plannersweb.com

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

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

FEMA RESOURCES

Federal Emergency Management Agency (FEMA)	www.fema.gov
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 provides up to \$30,000 for elevation and design requirements to repeatedly or substantially damaged property.	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
Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning	http://www.fema.gov/media-library/assets/documents/4317

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
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

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Connecticut; Maine; New Hampshire

APPENDIX J: MONITOR, EVALUATE, & UPDATE

Table A: Periodic Hazard Mitigation Plan Review Record

Meeting Schedule (dates)	Tasks Accomplished	How well (or not-so-well) is implementation progressing?	Lead Parties	Public Involvement (citizens, neighboring communities)

There is a new tool called “Action Tracker” for Mitigation Actions. The Action Tracker is a new data system FEMA is using to document mitigation ideas and progress for all communities. Check this link to obtain and set up a profile to follow and maintain your community’s selected mitigation actions/projects: <http://fema.starr-team.com/Account/Login.aspx?ReturnUrl=%2f> or <http://fema.starr-team.com>.

Table B: Project Implementation Checklist

Hazard	ID	Mitigation Actions	Time Frame	Potential Funding	Responsible Party	Status 2015	Status 2016	Status 2017	Status 2018
Flood	2	Encourage FEMA to update (Flood Insurance Rate Maps) FIRM maps with aerial overlays.	2014	FEMA	Plan. Board				
All	40	Draft an ordinance that requires free municipal access [on the top 1/3] for any cell/communications tower installed in town.	2014	Town Budget (Planning)	Plan. Board				
All	38	Identify companies that can assist with debris removal and snow plowing in emergencies	2014	FEMA, Town Budget	DPW				
Fire	9	Create and implement dry hydrant/cistern installation and maintenance plan.	2014	Town Budget (Fire Dept.)	Fire Chief				
All	33	Incorporate the 2014 Hazard Mitigation Plan in the Emergency Operations Plan.	2014	Town Budget	EMD				
Wind/ Severe Winter	18	Work with the tree warden to develop a tree maintenance plan for town roads.	2014	Town Budget (DPW)	DPW				
Health	New 41	Research insect-borne disease outbreaks and the various measures that the town might take.	2014	Town Budget (EMD/Health Officer)	Health Officer				
Health	21	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	2014	Town Budget	EMD				

Hazard	ID	Mitigation Actions	Time Frame	Potential Funding	Responsible Party	Status 2015	Status 2016	Status 2017	Status 2018
Wind/ Severe Winter	19	Clarify any issues of liability associated with roadside tree maintenance.	2014	Town Budget (DPW, Town Admin)	Town Admin.				
All	37	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	2014,'15, '16,'17,'18	911 mapping, LR Mutual Aid, FEMA, HSEM, Town Budget	EMD				
Fire	10	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	2014,'15, '16,'17,'18	Town Budget (Fire Dept.)	Fire Chief				
Earthquake	New 42	Develop public outreach materials about earthquakes and what can be done to protect structures and people.	2015	Town Budget	EMD				
Lightning	22	Investigate protection of all public buildings against power surges and structural damage due to lightning.	2015	Town Budget	Town Admin.				
Fire	15	Encourage referral to the Water Resources Plan and maps by the Planning Board when reviewing subdivision proposals.	2015	Town Budget (Fire & Planning)	EMD				
All	39	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	2015	Town Budget (Planning)	EMD, DPW				
All	4	Develop an infrastructure maintenance schedule	2015	Town Budget (DPW)	Select.				
All	31	Ensure that development projects comply with the existing mitigation strategies of the subdivision and site plan review regulations.	2015	Town Budget (Planning)	Plan. Board				

Hazard	ID	Mitigation Actions	Time Frame	Potential Funding	Responsible Party	Status 2015	Status 2016	Status 2017	Status 2018
All	32	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a "no net adverse impact".	2015	Town Budget (Planning)	Plan. Board				
All	35	Obtain GIS software and components for municipal offices	2015	Town Budget	Town Admin.				
All	29	Recommend that the Planning Board adjust the Site Plan Regulations to require inspection of all new construction.	2015	Town Budget (Planning)	CEO				
Fire	7A	Increase EMS and fire staffing/hours within town.	2015*	Town Budget (Fire Dept.), Grant	Fire Chief				
Fire	7B	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	2015*	Town Budget (Fire), Warrant Article	Fire Chief				
Fire	8	Construct a fire sub-station in the eastern portion of town to improve response time	2015*	Town Budget (Fire Dept.)	Fire Chief				
Fire	6	Upgrades to the forestry truck are included in the 2016 CIP.	2016	Town Budget (Fire Dept.)	Fire Chief				
All	27	Complete the update of the Emergency Operations Center to its full functioning capacity as the town's communications and coordination hub.	2016	Town Budget, HSEM	EMD				

Hazard	ID	Mitigation Actions	Time Frame	Potential Funding	Responsible Party	Status 2015	Status 2016	Status 2017	Status 2018
All	36	Obtain GIS data layers for emergency services/high hazard areas in town	2016	Data sources: GRANIT, State Agencies, LRPC	EMD				
Flood	3	Create a roads/infrastructure inventory (including culverts, bridges, dams)	2017	Town Budget (DPW)	DPW				
Flood	5	Culverts should be upgraded and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	2017	FEMA, Town Budget (DPW)	DPW				
Fire	17	Develop a formal process to educate homeowners on the "Firewise Communities" program which encourages the use of fire ponds, maintenance of vegetation, and appropriate access to reduce the risk of fire damage.	2017	Town Budget (Fire)	Fire Chief				
All	30	Improve the town's code enforcement process through an enhanced permitting and inspection system.	2017	Town Budget (Planning/ Select.)	CEO				
Wind/ Severe Winter	20	Adopt and fund roadside tree maintenance as a normal town expenditure.	2017	Town Budget (DPW)	DPW				
Fire	16	Increase the Fire Department's resources to access wildfires.	2017	Town Budget (DPW) NH Fish & Game	Fire Chief				
Fire	11	Construct new dry hydrants at Steele Hill Resort and Hermit Lake Road.	2018	Town Budget (Fire Dept.)	Fire Chief				

Hazard	ID	Mitigation Actions	Time Frame	Potential Funding	Responsible Party	Status 2015	Status 2016	Status 2017	Status 2018
Fire	12	Install cisterns at Steele Hill Resort and Sant Bani School.	2018	Property owner, Town Budget (Fire Dept.), FEMA	Fire Chief				
Fire	14	Recommend that the Planning Board amend the Subdivision Regulations to require on-site water storage, minimum fire flow, and fire breaks in wildland/urban interface areas.	2018	Town Budget (Fire & Planning)	Fire Chief				
Lightning	23	Install lightning protection systems on high risk structures.	2018	Town Budget	DPW				
Flood	5A	A drainage study should be conducted to develop a clear understanding of the best options for mitigating flooding and washouts along Lower Bay Road, a high density residential area.	2018	Town Budget	DPW				
All	28	Prepare a local Building Code for local adoption.	2018	Town Budget (Planning)	Plan. Board				
Flood	1	Rebuild Chapman Road to reduce flooding and washouts.	2018	Town Budget (DPW), FEMA, DOT	DPW				