

Town of Sanbornton, New Hampshire Hazard Mitigation Plan Update, 2021

Prepared by the:

Sanbornton Hazard Mitigation Update Committee



February 2021

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EXECUTIVE SUMMARY

The *Sanbornton Hazard Mitigation Plan Update* (the Plan) serves 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 many of the hazards identified in the 2014 Plan continue today; with some modifications partly due to expansion of the hazard descriptions. 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:

Hazards identified as <i>High to Moderate Risk (Natural/Human-Caused)</i>	
Tropical & Post-Tropical Cyclones	Aging Infrastructure
Severe Winter Weather	Transport Accident
High Wind Events	Mass Casualty Incident
Lightning	Long Term Utility Outage
Earthquake	Cyber Event
Infectious Diseases	Hazardous Materials
Extreme Temperatures	Known and Emerging Contaminants
Inland Flooding	Terrorism/Violence
Solar Storms & Space Weather	
Wildfire	

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 2014	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	Local Emergency Operations Plan

Roughly sixty percent of the 38 Actions recommended in the 2014 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 19 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 Chapter 5: *Implementation Schedule for Mitigation Actions*.

CHAPTER I: PLANNING PROCESS

A. BACKGROUND

Municipalities are required to have an approved hazard mitigation plan as a condition of receiving hazard mitigation assistance funding as well as some other federal funding programs. Such plans are locally developed and adopted and approved by the Federal Emergency Management Agency (FEMA). Funds from these grants are to be used for hazard mitigation projects and actions that will ultimately reduce and mitigate future losses from natural or human hazard events. The NH Department of Safety's Division of Homeland Security and Emergency Management (HSEM) makes funding available to assist municipalities with plan development and update. Municipalities are provided the opportunity to select a contractor. 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 committee also chose to include some technological and human-caused hazards in this update.

F. METHODOLOGY

The Lakes Region Planning Commission (LRPC) corresponded with the Sanbornton Emergency Management Director (EMD) in early 2020 to initiate the hazard mitigation update process in the town of Sanbornton. The EMD established the Sanbornton Hazard Mitigation Planning Update Committee in June 2020 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, Health Officer, the Town Administrator, a member of the Board of Selectmen, a Planning Board member, and the Zoning Enforcement Administrator and Planning Board Assistant.. All meetings were open to the public.

Using FEMA's *Local Mitigation Plan Review Guide (2013)*, *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 2014 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 I. Data on property valuation was provided by the Town Administrator.

The Committee held meetings from June through December, 2020. Due to COVID-19, all meetings were held via Zoom. 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 announcements were posted at the Town Office, on the town website, and at the LRPC web page and are included in Appendix D. Meeting announcements were also published in the *Laconia Daily Sun*.

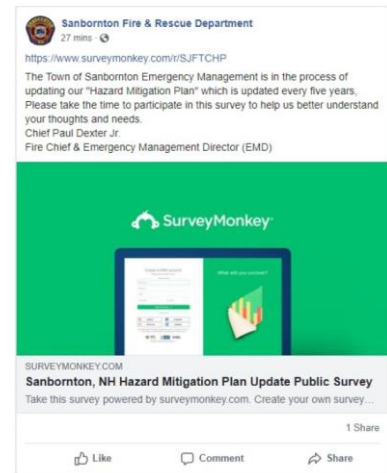
Committee Meetings

June 15, 2020 :	<i>Introductory Committee Meeting:</i> Overview of update process and objectives Discussion of Development Trends since 2014 Identify Hazard Events since 2014
July 13, 2020:	<i>Committee Meeting:</i> Existing Plans and Policies Status of 2008 Mitigation Actions Asset Assessment
August 10, 2020:	<i>Committee Meeting:</i> Impact of Hazards Vulnerability Review of Community Goals Mitigation Strategies
August 24, 2020:	<i>Committee Meeting:</i> Mitigation Strategies Prioritization of Mitigation Actions
December, 2020:	<i>Committee Meeting:</i> Review

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, various department heads, members of several town committees, and the Town Administrator.

An survey was made available to the public for individuals to register their concerns and opinions regarding hazards, methods of protection, and outreach; ten people did respond and these were shared with the committee (Appendix D). A couple members of the public attended meetings. 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). Input on road/stream crossings was provided by staff at Belknap County Conservation District. A local business representative also attended the July meeting, expressing interest in water quality (and speaking positively regarding the meeting process).



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 review December 19, 2020 – January 7, 2021. Comments regarding formatting, terminology, hazard events – cases of corona virus and a local cyber event were received and incorporated into the text of the plan.

G. ACKNOWLEDGMENTS

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

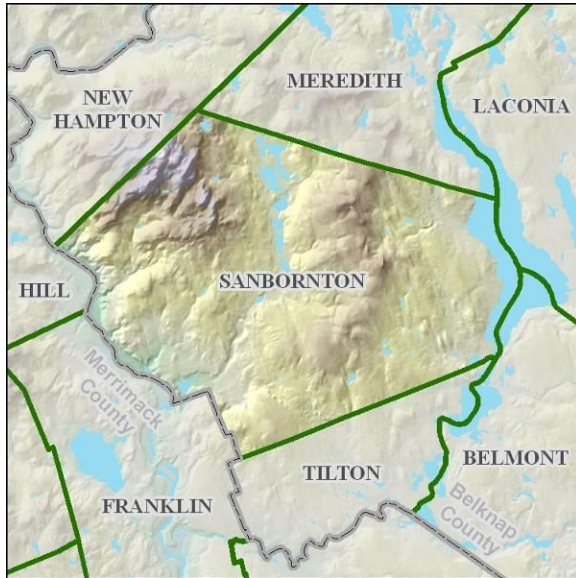
Jim Dick	<i>Selectman, Sanbornton Board of Selectman</i>
Trish Stafford	<i>Town Administrator, Sanbornton</i>
Paul Dexter, Jr.	<i>Chief, Sanbornton Fire Department and Emergency Management Director (EMD), Sanbornton</i>
Stephen Hankard	<i>Chief, Sanbornton Police Department</i>
Johnnie VanTassel	<i>Public Works Director, Sanbornton Department of Public Works,</i>
Andy Sanborn	<i>Planning Board member, Citizen, Sanbornton</i>
Stephen Laurin	<i>Zoning Enforcement Officer and Planning Board Assistant, Sanbornton</i>
Mike Capsalis	<i>Health Officer, Sanbornton</i>
Mary Baxter	<i>Fire Department Administrative Assistant, Sanbornton</i>

Additional information was provided by:

David Jeffers	<i>Regional Planner, Lakes Region Planning Commission</i>
Jennifer Gilbert	<i>Floodplain Management Coordinator, NH Office of Energy and Planning</i>
Nancy McGrath	<i>Programs Information Officer, NH Dam Bureau, NH Department of Environmental Services</i>

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 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 US Route 3 & NH Route 11 corridor contains most of the commercial and industrial use in Town. There are also numerous home occupations located throughout Town. Most of the community facilities are 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 surrounding land, it 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

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

B. WEATHER CONDITIONS

Like many New England towns, Sanbornton'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 40 and 44 inches, where the distribution is slightly lower in the winter months when compared to summer months. Sanbornton 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 "combination" Fire & Rescue Department consisting of one full time Fire Chief, two full time Firefighter/EMS providers, one part time administrative assistant and 18 "on call/per diem" Firefighter/EMS providers. The Police Department consists of a full-time Police Chief, six 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 significantly.. Population growth is projected to actually increase somewhat in the foreseeable future. The median age of residents continues to rise (31.6 years in 1980, 40.1 years in 2000, and 46.5 years in 2010).

Year-Round Population, 1980-2018³

Year	1980	1990	2000	2010	2018
Sanbornton Population	1,679	2,136	2,581	2,966	3,006
Sanbornton Change	---	27%	21%	15%	1.18%
Belknap County Change	---	15%	14%	7%	1.2%
NH Change	---	20%	11%	7%	3%

² <http://www.city-data.com/city/Sanbornton-New-Hampshire.html>, visited January 17, 2020.

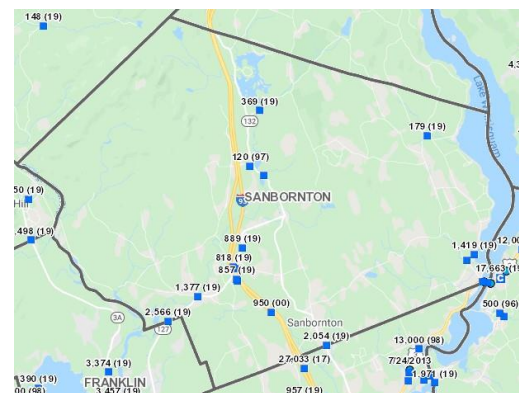
³ New Hampshire Office of Strategic Initiatives, 2018 <https://www.nh.gov/osi/data-center/population-estimates.htm>.

Sanbornton, NH Projected Year-Round Population, 2020-2040⁴

Year	2010	2020	2030	2040
Population	2,966	3,073	3,226	3,329
Change	---	3.6 ⁰ %	5%	3.2 ⁰ %

The 2010 Census reported 1,612 housing units in Sanbornton, an increase of 253 units since the 2000 Census. The 2010 Census identified 387 of Sanbornton's housing units (24%) as seasonal. Because Sanbornton does have some seasonal housing and the increase in the use of "short term" rental housing, it is important to acknowledge that the actual number of people residing in town can fluctuate a bit. NH OSI estimated that by 2018 Sanbornton had granted an additional 46 permits for housing units, mainly single-family units⁵. The Fire Chief noted that many of the new housing units are on the eastern side of town, near Lake Winnisquam. Since the primary fire station is in the center of town, this development could have an impact on emergency response services.

Town or City	Housing Type	Dwelling Units	Residential Permits, Net Change of Units										Total Estimated Housing Units
			2010 Census	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018
Sanbornton	Single Family	1,548	0	5	6	4	2	6	0	3	6		1,580
	Multi-Family	58	0	0	0	0	0	0	0	0	2	0	60
	Manufactured Housing	6	2	0	0	0	0	0	0	0	0	0	8
	Total Housing	1,612	2	5	6	4	2	6	0	5	6		1,648



The map at right shows the location of annual traffic counts in Sanbornton. As noted in the table below, there has been some variability over the years within the Traffic Volume Reports from the NH Department of Transportation. These indicate no dramatic changes in traffic volumes in the last several years along the major roadways in Sanbornton. That being said, exit ramps on I-93 have seen an increase in annual average daily traffic (AADT). 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. The only sections that showed a decrease of traffic was the intersection of US Route 3 and Route 11, Hermit Woods Road, and Lower Bay Road.

Location ID	Location	2014	2015	2016	2017	2018	2019
81403055	RAMP TO REST AREA I-93 SB	*	*	*	*	*	*
81403063	I-93 SB Exit 22 Off ramp (NH 127)	660	675	695	827	839	857
81403064	I-93 SB Exit 22 On ramp (NH 127)	860	879	904	922	936	956
81403065	I-93 NB Exit 22 On ramp (NH 127)	670	685	705	789	801	818
81403066	I-93 NB Exit 22 Off ramp (NH 127)	780	797	820	857	870	888
82403050	Hale Rd	*	*	*	*	*	*
82403051	NH 127 (NEW HAMPTON RD) AT FRANKLIN TL (SB-NB) (81403010-81403011)	2,337	2,388	2,392	2,437	2,474	2,566
82403052	NH 132 (SANBORN RD) AT TILTON TL	1,524	1,558	1,848	1,883	1,911	2,054
82403056	LOWER BAY RD NORTH OF BAY RD	1,524	1,558	1,628	1,659	1,684	1,419
82403057	BAY RD WEST OF LOWER BAY RD	1,524	1,558	1,840	1,875	1,903	1,943
82403058	US 3/NH 11 (LACONIA RD) AT TILTON TL	17,272	17,652	16,493	16,803	17,058	15,452
82403059	PRESCOTT RD OVER SALMON BROOK	1,118	1,143	1,156	1,178	1,196	1,377
82403060	HERMIT WOODS RD OVER HERMIT BROOK	356	364	331	337	342	369
82403061	NH 132 (STAGE RD) SOUTH OF ISSAC COLBY RD	1,219	1,246	1,300	1,325	1,345	1,278
82403062	LOWER BAY RD EAST OF HUSE RD	224	229	179	157	159	179
82403067	NH 127 (NEW HAMPTON RD) NORTH OF PERLEY HILL RD	860	879	904	858	871	889

⁴ New Hampshire Office of Strategic Initiatives, Population Projections (2016) <https://www.nh.gov/osi/data-center/population-projections.htm>.

⁵ New Hampshire Office of Strategic Initiatives, December 2019, *Current Estimates and Trends in New Hampshire's Housing Supply*. <https://www.nh.gov/osi/data-center/documents/housing-estimates-trends.pdf>.

CHAPTER III: RISK & VULNERABILITY ASSESSMENT

A. INVENTORY ASSETS

The list of critical infrastructures for the town of Sanbornton was updated by the committee. The critical infrastructure list is divided into four categories, 1) Essential Services (ES); 2) Structures & Services (S&S); 3) Populations to Protect (PP); and 4) Emergency Shelters (SH). The first category contains facilities essential in a hazard event, including the Emergency Operation Centers. The second contains valuable resources that would become vital to disaster recovery. The third category is a list of facilities associated with populations that could require particular protection during and following a disaster. The last category contains structures that could serve as shelters in an emergency, note that some of these are quite temporary, as they do not have a generator.

Critical Facilities

TYPE	NAME	ADDRESS	CLASS.	2020
EOC	Public Safety Building	565 Sanborn Road	ES	Has generator.
Public Service	Town Office	573 Sanborn Road	ES	Secondary EOC. In process of shifting to Highway Dept.
DPW	Highway Department	60 Hunkins Pond Road	ES	New facility. Becoming secondary EOC (with new generator)
Fire Station	Second Fire Station	Weeks Road	ES	No Generator, not needed.
Emergency Fuel	Irving Station	US3/NH Rte. 11 & NH 132 intersection	ES	in Tilton
Regional Shelter	Winnisquam Reg. Middle School	Tilton	SH	Has generator.
School	Sanbornton Central School	16 Hunkins Pond Road	PP/SH	Not overnight - no generator
Shelter	1st Baptist Church	934 New Hampton Rd	SH	Not overnight - no generator
Shelter	2nd Baptist Church	322 Upper Bay Road	SH	Not overnight - no generator
Shelter	Congregational Church	21 Meeting House Hill Rd	SH	Not overnight - no generator
Shelter/Unique Resource	Steele Hill Resort	516 Steele Hill Road	SH	No Generator
School	Sant Bani Ashram	179 Osgood Road	PP	Not overnight - no generator
Congregate Care	1190 New Hampton	1190 New Hampton Rd	PP	Home care for 1-2 individuals with disabilities
Elderly Housing	Pyareo (assisted living)	333 Brook Road	PP	Generator
Seasonal Campground	Dulac Land Trust	117 Osgood Road	PP	
Public Beach	Town Beach	68 Doctor True Road	PP	
Public Beach	Hermit Lake Beach	677 Stage Road	PP	
Park	Town Park	Shaw Hill Road	PP	
DayCare/Kinder	Saplings	Upper Bay Rd	PP	New Preschool & Daycare (40 students & staff)
Public Service	Sanbornton Public Library	27 Meeting House Hill Rd	S&S	No generator
Public Service	Old Town Hall	19 Meeting House Hill Rd	S&S	

TYPE	NAME	ADDRESS	CLASS.	2020
Public Service	U.S. Post Office	542 Sanborn Road	S&S	
DPW	Transfer Station	184 Shaw Hill Road	S&S	
City Sewer	Pump Station #1	Bay Road	S&S	Owned and maintained by WRB Facility
City Sewer	Pump Station #2	Warrens Barn Road	S&S	Owned and maintained by WRB Facility
Bridge	Mosquito Bridge	Rte. 3 over Lake Winnisquam	S&S	State owned and maintained
Bridge	Turkey Bridge	Rte. 127/ Burleigh Hill Road	S&S	Replaced 2014
Bridge	Knox Mtn Bridge	Knox Mtn Road	S&S	Replaced 2014
Bridge	Chapman Rd Bridge	Chapman Road	S&S	Replaced 2019
Bridge	Huse Rd Bridge	Huse Road	S&S	Replaced 2014
Bridge	Shute Hill Bridge	Shute Hill Road	S&S	Replaced 2014
Bridge	Hermit Woods Bridge	Hermit Woods Road	S&S	Replaced 2019
Bridge	Bay Road	State	S&S	State owned and maintained
Bridge	Plummer Bridge		S&S	Replaced 2019
Dam	Hermit Lake Dam	Southern end of Hermit Lake	S&S	State owned and maintained
Dam	205 Johnson Road Dam	End of Johnson Road	S&S	Turkey Bridge
Evacuation Route	I-93	South/North central Sanbornton	S&S	
Evacuation Route	Rte. 132	South/North central Sanbornton	S&S	
Evacuation Route	Rte. 127	East/West central Sanbornton	S&S	
Evacuation Route	Rte. 3	1/4 mile in western Sanbornton	S&S	
Historic Resources	Town Center/Square	Meeting House Hill Road	S&S	Sanborn Road
Commercial Center	Industrial/Commerce	Rte. 3 near Winnisquam Bridge	S&S	
Other				
	Cell phone tower	Steele Hill	S&S	
	Cell phone tower	Brook Road	S&S	
	Cell phone tower	Bay Rd	S&S	New
	Town Forest & hiking trails			
	Bed and Breakfast	Lower Bay Road	PP	
	Bed and Breakfast	Shute Hill Road	PP	
	Bed and Breakfast	Lower Smith Road	PP	
	Bed and Breakfast	Brook Road	PP	
	Mobile Home Park	Leighton Estates	PP	Potential for conflagration
	Mobile Home Park	Bayshore/Broadview	PP	Potential for conflagration

The Town Administrator provided the structural value (2019) for about a dozen specific critical facilities. Also provided was the value of all structures throughout town as reported in the town's MS-1 report. These figures can be utilized to project the potential impact of a hazard on the community in the next section of this document.

Facility	Values of Structures 2018
Public Library	\$720,700
Old Town Hall	\$111,100
Post Office	\$186,000
Town Office/ Public Safety Building	\$462,700
Sanbornton Central School	\$2,686,400
Sant Bani School	\$2,502,100
Pyareo (assisted living)	\$442,200
Transfer Station	\$92,500
Highway Department	\$346,000
Irving Station	\$383,300

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 2018 assessed value of all of the structures in Sanbornton is \$277,844,530. The value of the residential structures in town totals \$245,105,007 (88% of the total). The value of the commercial/industrial structures in Sanbornton is \$24,160,200 and the value of the tax-exempt structures is \$83,723. An additional \$8,495,600 of structural value is classified as public utilities. The table below shows these values and percentages that will be utilized in estimating potential impacts from hazards.

Sanbornton Structural Assessment			Source: 2018 MS-1				
	Residential*	Manufactured Housing	All Housing	Comm/ Indust	Exempt	Utilities	Total
Value structures	\$242,774,907	\$2,330,100	\$245,105,007	\$24,160,200	\$83,723	\$8,495,600	\$277,844,530
1%	\$2,427,749	\$23,301	\$2,451,050	\$241,602	\$837	\$84,956	\$2,778,445
2%	\$4,855,498	\$46,602	\$4,902,100	\$483,204	\$1,674	\$169,912	\$5,556,891
5%	\$12,138,745	\$116,505	\$12,255,250	\$1,208,010	\$4,186	\$424,780	\$13,892,227
*Residential includes Duplex, Multi-Family, and Condominium							

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

B. PROFILING HAZARD EVENTS

The town of Sanbornton is prone to a variety of natural, technological, and human-caused hazards. The 2014 Plan identified the following hazards of concern to the town at that time.

Hazards identified in the 2014 Sanbornton Hazard Mitigation Plan

High	Moderate	Low
Blizzard/Snowstorm	Earthquake	Epidemic
Ice Storm		Flood
Lightning		High Wind
MV Accident w/ Hazardous Materials		Rabies
		Wildfire

While updating the 2020 Plan, the committee considered the hazards identified in the *2018 State of New Hampshire Multi-Hazard Mitigation Plan*, developed by the New Hampshire Department of Safety's Division of Homeland Security and Emergency Management, for identification and definition of hazards that might affect the town. The 2018 State Plan updated the hazard nomenclature, grouping some hazard types together, adding several hazards, and deleting some. For example, tornado, downburst, and thunderstorm were grouped as High Wind Event, and Radon was deleted. Below is a list of natural hazards from the *2018 State of New Hampshire Multi-Hazard Mitigation Plan*, which assessed the hazard risk to Belknap County (see table below).

New Hampshire Hazards Profile 2018

Hazard	State Probability	State Severity	State Relative Threat	Belknap Co. Risk
Inland Flooding	High	High	High	High
Coastal Flooding	<i>Coastal only</i>	<i>Coastal only</i>	<i>Coastal only</i>	<i>n/a</i>
Dam Failure	High	High	Moderate	Moderate
Drought	Low	Moderate	Low	Moderate
Wildfire	Moderate	Low	Low	Low
Earthquake	Moderate	Low	Moderate	Moderate
Landslide	High	Low	Low	Low
High Wind Event	High	High	Moderate	Moderate
Tropical & Post-Tropical Cyclone	Low	Low	Moderate	Moderate
Lightning	High	Low	Low	Moderate
Severe Winter Weather	High	High	Moderate	Moderate
Snow Avalanche	Moderate	Low	Low	Low
Epidemic	Moderate	Low	High	High
Fire and Hazardous Materials	Moderate	Low	Low	Low
Terrorism	Low	High	Low	Low

Each of the natural hazards that the committee identified as likely affecting Sanbornton is profiled below, including a **description** of the likely location of each hazard, the **probability** of an occurrence in Sanbornton, the **extent** of the hazard, and its **impact** on the town.

Probability is the likelihood of recurrence over a 10-year period and described as *Highly Likely*, *Likely*, *Occasional*, or *Unlikely*.

Extent is a description of “how bad the hazard could get,” considering three factors: magnitude, onset, and duration. *Magnitude* is size of the hazard, such as depth of floodwaters or wind speed. *Onset* is how quickly the hazard approaches. For example, depending on geography as well as the nature of a rainstorm, floodwaters might rise over a period of days, or it might take just a few hours to build up a concentrated flow. *Duration* is a matter of how long the hazard is present. A downburst or tornado exists for minutes or hours, while a hurricane or tropical depression is usually around for days. Descriptive levels include *Weak*, *Moderate*, *Severe*, and *Extreme*.

The **impact** of a hazard is the potential degree of damage that could occur in Sanbornton. This incorporates the assessed value of each impacted 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 potential intensity and scope of an event, as defined below:

- Low: There is little likelihood that injury or death will result, damage to land and property is likely to be limited, and services will not be interrupted.
- Moderate: There is some likelihood that injury or death could result, some damage to land and property is likely to result, and services will likely be interrupted for hours or days.
- High: substantial structural damage, the town’s ability to respond is greatly compromised, state or federal assistance is necessary to survive and/or recover
- It is quite likely that injury or death will result from this event, there will be damage to multiple properties, and services will likely be interrupted days.
- Catastrophic: multiple injuries or deaths are likely, widespread and extensive property damage, essential and other services disrupted for days or weeks

As the Sanbornton committee rated the various natural hazards that might impact Sanbornton, the probability of hazard occurrences ranged from Unlikely to Highly Likely (1-4). The extent of the hazards ranged from weak to severe (1-3) and the average impact ranged from low to moderate (1-2). Overall risk ranged from low to high (1-18).

NATURAL HAZARDS

The committee discussed each of the natural hazards included in the *2018 State of New Hampshire Multi-Hazard Mitigation Plan Update* and, because of geography, determined that Coastal Flooding, landslide, and avalanche are not natural hazards of concern in Sanbornton. Dam failure is discussed along with flooding. While drought can and does occur around the state and region, the committee felt the impacts to Sanbornton are minimal and so it is not considered a natural hazard of concern. Each of the Natural hazards determined to be of medium or high risk (top two-thirds of the total scoring) are discussed below. The complete summary table of hazard Risk is provided at the end of Section C of this chapter.

Sanbornton Natural Hazard Ranking		
HAZARD	TOTAL	RISK
Tropical & Post-Tropical Cyclones	18.00	High
Severe Winter Weather	16.00	High
High Wind Events (Torn./Downb.)	13.33	High
Lightning	13.33	High
Earthquake	10.00	High
Infectious Diseases	8.00	Medium
Extreme Temps	6.67	Medium
Inland Flooding	5.00	Medium
Solar Storms & Space Weather	5.00	Medium
Wildfires	5.00	Medium

TROPICAL & POST TROPICAL CYCLONES

Tropical and Post-Tropical cyclones are localized, very intense low-pressure wind system, forming over tropical oceans with winds of hurricane force. There are many stages throughout the life cycle of a tropical cyclone.

- Potential Tropical Cyclone
- Tropical Disturbance: Cluster of thunderstorms usually 100-300 miles wide
- Tropical Storm: Wind levels between 34 and 64 knots (39 to 74 MPH)
- Hurricane: Wind levels rise between 64 and 96 knots (74 to 111 MPH)
- Major Hurricane: Wind levels above 96 knots (111 MPH)
- Post-Tropical Cyclone: Cyclone that no longer possess wind speeds and precipitation that tropical cyclones do and tend to form into frontal boundaries.

Extent: 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.⁶ 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 (see table below). The scale is used to give an estimate of the potential property damage and flooding expected from a hurricane landfall.

⁶ http://www.fema.gov/hazard/hurricane/hu_about.shtm

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.

Extent was considered severe.

History: No hurricanes have hit Sanbornton or the region in the past five years. By the time a hurricane reaches central New Hampshire, it is rare that it will retain the characteristics that make it a hurricane, but remnants of hurricanes have been experienced and can still cause damage to the region. The remnants of hurricanes Irene and Sandy caused damage in New Hampshire, but not to Sanbornton.

Probability of Occurrence: Likely

Location: A cyclone could affect all areas of Sanbornton, especially steam crossings, floodplains, and steep slopes.

Impact: Tropical and post-tropical cyclones in the Lakes Region could produce heavy rain and strong winds that could lead to flooding and damage to property and infrastructure. Tropical and post-tropical cyclones can cause the same damage that high wind events cause, with the added hazard of possible flooding. Assuming 1% to 5% town-wide damage to buildings, high winds could result in \$2,778,445 to \$13,892,227 in damages. Impact was seen as moderate.

SEVERE WINTER WEATHER

Sanbornton experiences four types of severe winter weather: heavy snow, blizzards, nor'easters, and ice storms.

Extent: A heavy snowstorm is defined as one that deposits four or more inches of snow in a 12-hour period.⁷ Heavy snows can cause damage to property, disrupt services, and make for unsafe travel, even for emergency responders. Due to poor road conditions, residents may be stranded for several days. Extra pressure is placed on road crews and emergency services under these conditions. Snow load in severe winter storms is of concern as well. This is particularly true for flat-roofed structures. Several small storms can produce the same snow load as a single larger storm and the combined weight of the snow load can damage rooftops. Ice adds additional weight as well. It is not uncommon in New Hampshire to experience mixes of winter precipitation as temperatures fluctuate above and below the freezing mark. While not widespread, instances of collapsed roofs are not uncommon.

Snowfall Categories

CATEGORY	RSI VALUE	DESCRIPTION
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme

Snowstorms are a common occurrence throughout the Lakes Region. Blizzards, which may dump 12 to 36 inches or more of snow in a one- to three-day period are less frequent, but can have a serious impact on structures, utilities, and services. The region typically receives greater than 66 inches of snow annually.⁸ Records indicate that there is a strong potential for Sanbornton to experience at least one snowfall of 12 inches or more in any given year.⁹

An ice storm coats trees, power lines, streets, vehicles, and roofs with a very slick and heavy coating of ice.

The Sperry-Piltz Ice Accumulation (SPIA) Index (right) is 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 5.¹⁰ 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 major threats to a community due to ice storms

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

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised October, 2011	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.
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.
3	0.25 - 0.50	15 - 25	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 - 5 days.
4	0.10 - 0.25	>= 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 - 10 days.
5	0.25 - 0.50	>= 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.50 - 0.75	>= 25	
	0.75 - 1.00	>= 15	
	1.00 - 1.50	>= 15	
	> 1.50	Any	

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

⁷ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html>,

⁸ Northeast States Emergency Consortium, <http://www.nesec.org/>,

⁹ <http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KCON&StateCode=NH&SafeCityNa>

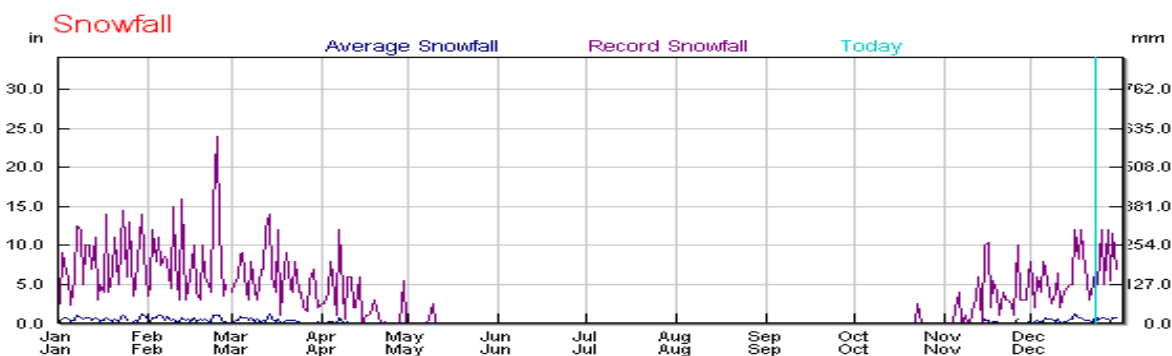
¹⁰ SPIA Northeast webpage, <http://www.spia-index.com/neIce.php>.

include structural damage due to heavy loads on roofs, interruptions of services such as electricity, fuel, water, and communications, as well as hazardous road conditions. In the winter of 1998, a major ice storm crippled much of New Hampshire, coating everything with as much as three inches of ice. This storm was the costliest FEMA/Presidential Declared disaster in New Hampshire's history. The ice load bent trees and power lines and led to massive power outages throughout the state. The U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory estimates a 40- to 90- year return period for an event with a uniform ice thickness of between 0.75 and 1.25 inches. Ten years later, however, New Hampshire was struck again by another severe ice storm. The December 2008 ice storm caused more damage than any other storm in the state's history. The President declared this storm as a major disaster and the state received \$15 million in federal aid for recovery.¹¹

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. Infrastructure, including critical facilities, may be impacted by these events, and power outages, communications, and transportation disruptions (i.e., snow and/or debris-impacted roads, as well as hazards to navigation and aviation) are often associated with the event.

In the winter months, the state may experience the additional coincidence of blizzard conditions with many of these events. 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.¹⁰ The added impact of the masses of snow and/or ice upon infrastructure often affects transportation and the delivery of goods and services for extended periods. 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.

Average and Record Snowfalls at Laconia Airport in Gilford, NH¹²



¹¹ <http://www.fema.gov/news/newsrelease.fema?id=48384>

¹² Weather Underground, Season Weather Averages

[http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KLCL&SafeCityName=Sanbornton&StateCode=NH&Units=none&IATA=LCL](http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KLCI&SafeCityName=Sanbornton&StateCode=NH&Units=none&IATA=LCL)

History:

Hazard	Date	Location	Magnitude	Description
Severe Winter Weather	1/2/2014	County Wide	6 to 14 inches	Heavy snow
Severe Winter Weather	2/5/2014	County Wide	6 to 12 inches	Heavy snow
Severe Winter Weather	2/13/2014	County Wide	6 to 14 inches	Heavy snow
Severe Winter Weather	2/18/2014	County Wide	6 to 14 inches	Heavy snow
Severe Winter Weather	3/19/2014	County Wide	6 to 18 inches	Heavy snow
Severe Winter Weather	1/26/2015	County Wide	6 to 14 inches	Heavy snow
Severe Winter Weather	2/2/2015	County Wide	8 to 14 inches	Heavy snow
Severe Winter Weather	2/7/2015	County Wide	6 to 15 inches	Heavy snow
Severe Winter Weather	2/14/2015	County Wide	6 to 12 inches	Heavy snow
Severe Winter Weather	2/5/2016	County Wide	4 to 10 inches	Heavy snow
Severe Winter Weather	12/11/2016	County Wide	4 to 8 inches	Heavy snow
Severe Winter Weather	12/17/2016	County Wide	4 to 7 inches	Heavy snow
Severe Winter Weather	12/29/2016	County Wide	6 to 16 inches	Heavy snow
Severe Winter Weather	2/9/2017	County Wide	6 to 15 inches	Heavy snow
Severe Winter Weather	2/12/2017	County Wide	6 to 16 inches	Heavy snow
Severe Winter Weather	2/15/2017	County Wide	4 to 12 inches	Heavy snow
Severe Winter Weather	3/14/2017	County Wide	12 to 20 inches	Heavy Snow - Laconia observed at least 3 hours of blizzard conditions Presidential Disaster Declared (DR-4316)
Severe Winter Weather	3/31/2017	County Wide	6 to 12 inches	Heavy snow
Severe Winter Weather	4/1/2017	County Wide	6 to 12 inches	Heavy snow
Severe Winter Weather	12/22/2017	County Wide	3 to 10 inches	Heavy snow
Severe Winter Weather	1/4/2018	County Wide	10 to 15 inches	Heavy snow
Severe Winter Weather	2/7/2018	County Wide	6 to 10 inches	Heavy snow
Severe Winter Weather	2/17/2018	County Wide	2 to 9 inches	Heavy snow
Severe Winter Weather	3/7/2018	County Wide	10 to 18 inches	Heavy snow
Severe Winter Weather	3/13/2018	County Wide	12 to 24 inches	Heavy snow
Severe Winter Weather	11/20/2018	County Wide	6 to 10 inches	Heavy snow
Severe Winter Weather	01/19/2019	County Wide	6 to 10 inches	Heavy snow
Severe Winter Weather	01/30/2019	County Wide	5 to 7 inches	Heavy snow
Heavy Snow	12/1/2019	County Wide	5 to 12 inches	Heavy snow
Winter Storm	12/29/2019	County Wide	6 to 10 inches	Snow and sleet
Heavy Snow	1/16/2020	County Wide	5 to 7 inches	Wet, heavy snow
Winter Storm	3/23/2020	County Wide	5 to 7 inches	
Winter Weather	5/9/2020	County Wide	3 inches	
Severe Winter Weather	11/27/2014	Statewide - Belknap Co.	4 to 15 inches 10 to 15 in	Heavy snow
Severe Winter Weather	1/7/1998	Statewide	\$12.4M statewide 1 injury	Ice Storm
Severe Winter Weather	12/11/2008	Belknap County	\$359,000 Ice Storm	Ice

While the town of Sanbornton certainly experienced many of the county-wide storms noted above, there were no known extra impacts to Sanbornton due to severe winter weather since the last plan update.

Probability of Occurrence: Highly Likely

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.

Impact: 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 \$2,778,445 to \$13,892,227 in damages annually.

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

HIGH WIND EVENTS

Sanbornton is likely to experience two types of high wind events that usually result from other severe storms and can occur at any time of the year: tornados and straight-line winds. A **tornado** is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. It is hard to see a tornado unless it forms a condensation funnel made up of water droplets, dust and debris. Tornadoes are the most violent of all atmospheric storms.¹³ **Straight-line winds** describes any thunderstorm wind that is not associated with rotation and is usually used to differentiate from tornadic winds. There are several sub-types of straight-line winds, including **downdraft**, which is a small-scale column of air that rapidly sinks towards the ground; and **downburst**, which is the result of a downdraft, referred to as a **macroburst** when the area affected is greater than 2.5 miles and **microburst** when less than 2.5 miles.¹⁴

Extent: Sanbornton is at risk of several types of natural events associated with high winds, including hurricanes, microbursts, macrobursts, tornadoes, and nor'easters. 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.¹⁵ 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.

¹³ <http://www.nssl.noaa.gov/education/svrwx101/tornadoes/>

¹⁴ <http://www.nssl.noaa.gov/education/svrwx101/wind/types>

¹⁵ *Weather Glossary*. National Oceanic and Atmospheric Administration, <http://www.weather.gov/glossary/index.php?letter=d>

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. The most recent

Enhanced Fujita Scale						
EF Number	0	1	2	3	4	5
3-Second Gust (mph)	65-85	86-110	111-135	136-165	166-200	Over 200
Damage Indicator		Small barns, Farm Outbuildings	One or two-family residences	Single-Wide Mobile Home	Double-Wide Mobile Homes	Apt, Condo, Townhouse (3 Stories or less)

damaging tornado to touch down in New Hampshire was on July 24, 2008, classifying around 100 homes “uninhabitable” and killing one person. The tornado traveled from Epsom to Effingham, missing Sanbornton by 50 to 55 miles. It transitioned from EF1 to EF2 multiple times and caused significant damage to 83 homes in Alton and Barnstead which, like Sanbornton, are located in the Lakes Region of central New Hampshire. Since 2012, there have been 25 recorded high wind events in the Belknap region. According to NOAA, High wind events affected specifically Sanbornton on July 3, 2014 and July 23, 2016 both of which downed trees and utility wires.

History:

Hazard	Date	Location	Magnitude	Damage	Notes	Source
High Wind	7/3/2014	County Wide	50 kts.		Thunderstorm Wind downed tree onto a building in Sanbornton	NOAA
Tornado	7/24/2014	Center Harbor	EF0		Waterspout spotted on Lake Winnepesaukee	NOAA
High Wind	7/28/2014	County Wide	50 kts.		Thunderstorm Wind	NOAA
High Wind	10/8/2014	County Wide	50 kts.		Thunderstorm Wind	NOAA
Thunderstorm Wind	7/19/2015	Belmont	50 Knots (kts)		Severe storm downed trees in Belmont	NOAA
Thunderstorm Wind	8/3/2015	Belmont	50 Knots (kts)		Severe storm downed trees in Belmont	NOAA
High Wind	6/7/2016	County Wide	50 kts.		Thunderstorm Wind	NOAA
High Wind	7/1/2016	County Wide	50 kts.		Thunderstorm Wind	NOAA
High Wind	10/30/2017	County Wide	61 kts.		50-60 mph winds/ 2 to 5 inches of rain	NOAA
Thunderstorm Wind	7/23/2016	County-wide	50 knots (kts)		Downed power lines in Sanbornton	NOAA
High Wind	10/30/2017	County-wide	50 knts.			NOAA
Thunderstorm Wind	8/3/2018	Tilton, Belmont, and Gilmanton	50-70 Kts.		Downed power lines in Sanbornton	NOAA
Thunderstorm Wind	8/7/2018	Meredith	56 Kts.		Downed trees and wires	NOAA
Thunderstorm Winds	6/6/2020	County-wide	50 kts.		Gusts downed trees and wires on Cram Rd. in Sanbornton	NOAA

Probability of Occurrence: The probability of a high wind event in Sanbornton is highly likely.

Location: All areas of town are susceptible to damage from high winds. 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.

Impact: Tornadoes 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 \$2,778,445 to \$13,892,227 in damages.

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

LIGHTNING

Lightning is a giant spark of electricity that occurs within the atmosphere, or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the Sun. During a lightning discharge, the sudden heating of the air causes it to expand rapidly, resulting in thunder.¹⁶ Exactly where and when lightning will strike is unknown. These giant sparks of electricity can result in fire, damage to electronic equipment, injury/death to people.

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.¹⁷

The National Weather Service does utilize a six-point scale for characterizing lightning activity called the Lightning Activity Level (LAL) based on frequency of ground strikes along with rainfall and ground conditions.¹⁸

¹⁶ <http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-3.pdf> accessed September 16,

¹⁷ *National Lightning Safety Institute webpage*, http://www.lightningsafety.com/nlsi_lls/nlsi_annual_usa_losses.htm visited February 8, 2011.

¹⁸ NWS Definitions webpage, <http://graphical.weather.gov/definitions/defineLAL.html>. Accessed June 3, 2014.

Lighting 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	Remarks/Description	Source
Lightning	6/24/2013	West Alton/Gilmanton	30 people were injured by lightning at a Boy Scout camp in Gilmanton. Large hail and wet microbursts were main concerns.	NOAA
Lightning	7/18/2013	Melvin Village (Tuftonboro, Carroll County)	Lightning struck two sailboats causing them to catch fire and sink in Lake Winnepesaukee. Wind damage and heavy rain were the main concerns as the storm moved through the region.	NOAA
Lightning	5/15/2020	Meredith	House was struck by lightning and caused a fire. \$20K in property damages.	NOAA

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 Office in the past, steps have been taken to the Town Office and its communication systems against lightning. There have been no known impacts due to lightning in Sanbornton since the last plan update. 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

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.

Impact: 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 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 \$2,778,445 in damages. The potential impact to the town due to lightning is moderate.

EARTHQUAKE

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.

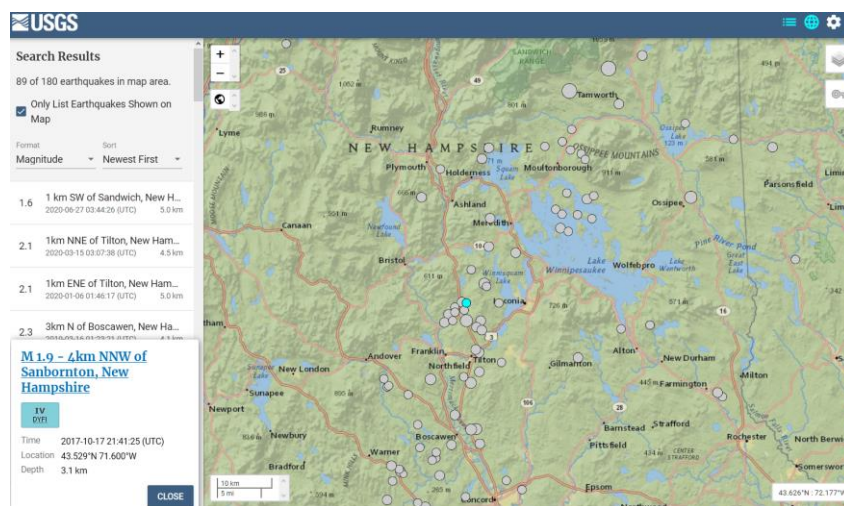
Extent: An earthquake is a series of vibrations induced in the Earth's crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating. Earthquakes are commonly measured using *magnitude*, or the amount of seismic energy released at the epicenter of the earthquake. The Richter magnitude scale is a mathematical device used to compare the size of earthquakes, shown below.¹⁹

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 an area of moderate seismic activity compared 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.²⁰ 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

¹⁹ <http://pubs.usgs.gov/gip/earthq4/severitygip.html>, visited February 8, 2011.

²⁰ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> visited February 8, 2011.

were felt over an area of 400,000 square miles.

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.²¹ A search of the USGS National Earthquake Information Center database shows that since 2000 there have been 8 earthquakes with a magnitude of at least 2.5 within a 100 km (62 mi.) radius of Sanbornton.²² Two 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. There have been no known impacts to Sanbornton due to earthquake since the last plan update.

Probability of Occurrence: Likely

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

Impact: 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.²³

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 \$2,778,445 in damages any given year.

INFECTIOUS DISEASE

Infectious diseases are illnesses caused by organisms—such as bacteria, viruses, fungi or parasites. Some infectious diseases can be passed from person to person, some are transmitted by bites from insects or animals, and others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism

²¹ <http://des.nh.gov/organization/commissioner/pip/factsheets/geo/documents/geo-3.pdf>, pg. 3, visited January 25, 2011.

²² USGS. <https://earthquake.usgs.gov/earthquakes/map/?extent=-34.16182,-178.94531&extent=75.88809,-11.07422&range=month&listOnlyShown=true&timeZone=utc&settings=true>

²³ USGS <http://earthquake.usgs.gov/earthquakes/eventpage/usb000d75b#pager>, accessed October 17, 2012.

causing the infection, but often include fever and fatigue. Mild infections get better on their own without treatment, while some life-threatening infections may require hospitalization.

While some diseases are so rare in each population that a single case warrants an epidemiologic investigation (e.g., rabies, plague, polio), there are other diseases that occur more common so that only deviations from the norm (i.e. seeing more cases than expected) warrants investigation.

Extent: The magnitude and severity of infectious diseases is described by its speed of onset (how quickly people become sick or cases are reported) and how widespread the infection is. Some infectious diseases are inherently more dangerous and deadly than others, but the best way to describe the extent of infectious diseases relates to the disease occurrence.²⁴

- Endemic – Constant presence and/or usual prevalence of a disease or infection agent in a population within a geographic area
- Hyperendemic – The persistent, high levels of disease occurrence
- Cluster – Aggregation of cases grouped in place and time that are suspected to be greater than the number expected even though the expected number may not be known
- Epidemic – An increase, usually sudden, in the number of cases of a disease above what is normally expected
- Outbreak – The same as epidemic, but over a much smaller geographical area
- Pandemic – Epidemic that has spread over several countries or continents, usually affecting many people

The NH Department of Health and Human Services (DHHS) developed an epidemic response plan in February 2007, so that communities can be prepared and respond to outbreaks.²⁵

History: While there have been minor outbreaks of flu in Sanbornton, no major outbreaks of this or any other infectious disease was identified since the 2014 Plan update. In 2016, the DHHS was notified and responded to a total of 102 outbreaks: 73 gastrointestinal illnesses (5 of which were foodborne), 23 respiratory illnesses, and 6 other types of illness. The current COVID-19 pandemic (2020) has eclipsed that with more than 31,000 state-wide and 600 deaths in eleven months. In Sanbornton there have been more than 50 cases to date.

Date	Description	Impacts	Location	Additional Info
Fall 2014	Enterovirus D-68	>40 ill children in New Hampshire	Statewide	A rare strain of enterovirus resulting in infections in children nationwide.
2016	Gonorrhea	465 people infected	Statewide	465 cases reported; 250% higher than previous years
2017-2018	Seasonal Influenza Outbreak	63 influenza related deaths were identified in NH	Statewide	A particularly damaging flu season impacted the region, overall effectiveness of the flu vaccine was 36% ²⁶
Annually	Foodborne outbreaks	Ill individuals associated with outbreaks	Statewide	5-10 outbreaks per year

²⁴ <https://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson1/section11.html>

²⁵ <https://www.dhhs.nh.gov/dphs/cdcs/avian/documents/pandemic-plan.pdf>

²⁶ CDC <https://www.cdc.gov/mmwr/volumes/67/wr/mm6706a2.htm>

Annually	Influenza and other respiratory virus outbreaks	Ill individuals associated with outbreaks	Statewide	25-50 outbreaks per year primarily to vulnerable populations
Annually	Norovirus and other gastrointestinal virus outbreaks	Ill individuals associated with outbreaks	Statewide	60-80 outbreaks a year primarily to vulnerable populations
2020	Coronavirus (COVID-19)	NH >48,000 cases and >800 deaths Sanbornton – at least 95 cases (1/8/21)	World-wide	In addition to physical impacts, economic impacts

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

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.

Impact: The concerns associated with an epidemic include local capacity to respond to not only the residents of Sanbornton but also any visitors. There needs to be an effort to not only treat those who are suffering but also prevent the further spread of the disease. As we have learned in 2020, the actions necessary to limit the spread can have substantial impacts upon our daily lives and the economy.

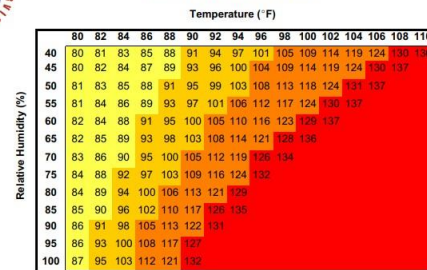
The community does partner with Lakes Region Partnership for Public Health (<http://www.lrp-ph.org/>) for resources and training. A health emergency would not impact structures but the facilities providing services that would be impacted the most are the schools, the Public Safety Building, and the shelters. There is some concern that there may be some impact to the town's forestry and agriculture sector from an insect-borne disease as well as some of the tourism sector. The impact of an epidemic on the town would be moderate while the impact of rabies or an insect-borne disease would be low.

EXTREME TEMPERATURES

Extreme temperatures are a period of prolonged and/or excessive hot or cold that presents a danger to human health and life. **Extreme Heat** events occur as a result of above normal temperatures, which often coincide with high relative humidity, that increase the likelihood of heat disorders with prolonged exposure or strenuous activity. **Extreme Cold** events are caused by the southern transport of arctic airmasses into the Northeast. This effect is exacerbated when there are winds present that effectively lower the temperature that is perceived by the human body, known as the wind chill. The risk comes from when the body is losing heat faster than it can produce it. Wind acts to carry heat away from the body, therefore amplifying the perceived temperature by the human body and reducing the body's core temperature. Cold disorders can include frostbite and hypothermia.



National Weather Service
Heat Index Chart



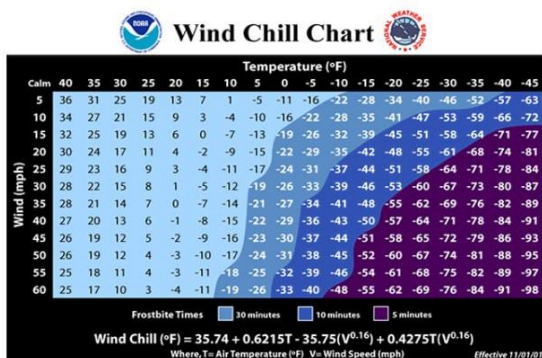
Likelihood of Heat Disorders with Prolonged Exposure and/or Strenuous Activity
 Caution Extreme Caution Danger Extreme Danger

Extent: Severity and magnitude relates to how extreme the temperature is, how long it is expected to remain extreme, and exacerbating factors such as humidity or wind. The National Weather Service alert criteria signals when temperatures are extreme²⁷.

Extreme Heat Some of these values from the National Weather Service are specific to the Northeastern Forecast Region, which includes New Hampshire²⁸.

- Heat Advisory –Two or more consecutive hours of Heat Index values of 95-99 degrees Fahrenheit for two or more days OR any duration of Heat Index values of 100- 104 degrees Fahrenheit. A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Warning – Two or more hours with Heat Index values of 105 degrees Fahrenheit or greater. An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Watches – Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
- Excessive Heat Outlooks—Issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead time to prepare for the event.

Extreme Cold Some of these values from the National Weather Service are specific to the Northeastern Forecast Region, which includes New Hampshire²⁹.



- Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are *possible*. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half a tank of gas and update your winter survival kit.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values but not extremely cold values are

expected or occurring. Be sure you and your loved ones dress appropriately and cover exposed skin when venturing outdoors. A Wind Chill Advisory is issued for New Hampshire if wind chill values are expected to be -20°F to -29°F and winds are greater than 5 mph.

- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. A Wind Chill Advisory is issued for New Hampshire if wind chill values are expected to be -30°F and winds are greater than 5 mph.
- Freeze Watch: NWS issues a freeze watch when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.

²⁷ <https://www.dhhs.nh.gov/media/pr/2017/05102017-heat-index-study.htm>

²⁸ <http://www.nws.noaa.gov/om/heat/ww.shtml>

²⁹ <http://www.nws.noaa.gov/om/heat/ww.shtml>

- **Frost Advisory: Be Aware:** A frost advisory means areas of frost are expected or occurring, posing a threat to sensitive vegetation.
- **Freeze Warning:** When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a freeze warning. This temperature threshold kills some types of commercial crops and residential plants.
- **Hard Freeze Warning:** NWS issues a hard freeze warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.

History:

Date	Description	Impacts	Location	Additional Info
September 2017	Heat Wave	Record high temps set statewide	Statewide	Locations around the state including Mount Washington set record high temps on four consecutive days
December 2017	Cold Wave	Record low temps set statewide	Statewide	Many locations saw record lows (Portsmouth -1°F and Mount Washington -33°F) Wind chill warnings and advisories were posted through the state
February 2018	One Day Winter Heat Wave	Record high temps set statewide	Statewide	Exceptionally strong high-pressure ridge in place across the region setting temp records

Sanbornton has experienced periods of extreme heat and extreme cold annually since the 2015 Plan update.

Probability of Occurrence: Occasional

Location: The entire town of Sanbornton is vulnerable to extremes of both heat and cold and usually experiences each on an annual basis.

Impact: Heat related disorders include heat cramps, heat exhaustion, and heat stroke. Extreme heat can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy. Frostbite occurs when uncovered skin and extremities are exposed to extreme cold and body tissue is either injured or killed. Hypothermia occurs when the body is unable to heat itself at the rate it is being cooled and the body's core temperature begins to drop below normal values. A normal core body temperature is 98.6°F. Mild hypothermia occurs when core body temperature drops between 90 and 95° F, and severe hypothermia occurs at core body temperatures of below 90° F. If left untreated, hypothermia can result in unconsciousness and eventually death. Extreme cold can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy. It was noted that many Sanbornton residents have a generator of some sort to soften the bite of extreme temperatures. Overall impact of extreme temperatures was considered low to moderate.

INLAND FLOODING AND DAM FAILURE

Inland flooding is generally defined as a high flow, overflow, or inundation by water, which causes or threatens damage. Flooding results from the overflow of rivers, their tributaries, and streams, primarily from high precipitation events. Flash flooding is a flow with a rapid rise in water level and

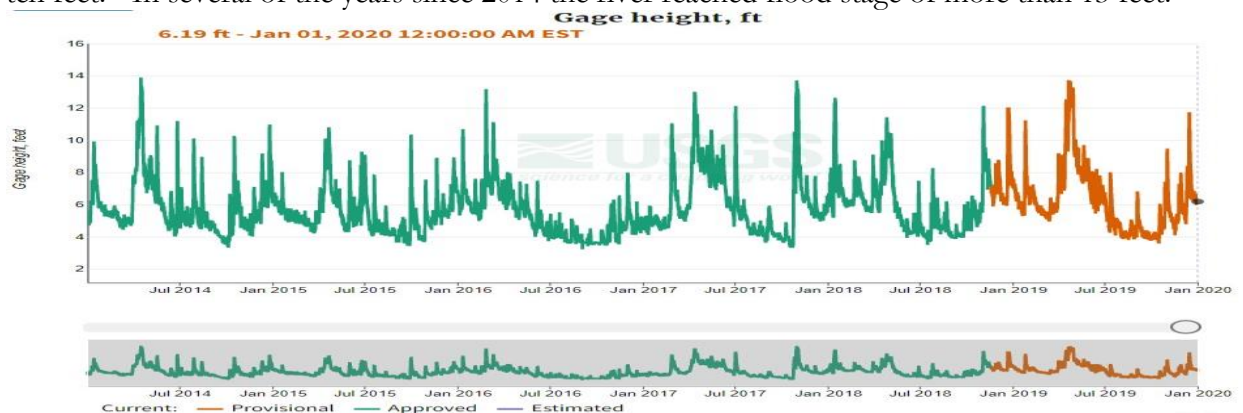
extreme velocities in a river or stream, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam).³⁰

Extent Flooding is most commonly associated with structures and properties located within the 1% annual flood hazard area. The term 100-year flood does not mean that flood will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase “1% annual chance flood,” which means that there is a 1% chance of a flood of that size happening in any year.

The US Army Corps of Engineers maintain stream gauges including one on the Winnepesaukee River in Tilton, downstream of Lake Winnisquam, one along the Pemigewasset River in Plymouth (upstream of Sanbornton), and one . The image below is from a graph depicting water levels from 2014 to 2019. The first depicts stream gauge readings at a Merrimack River site indicates periods of elevated discharge from the Winnepesaukee River in Tilton gauge located upstream.



The US Geological Survey (USGS) stream gauge on the Pemigewasset River 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.³¹ In several of the years since 2014 the river reached flood stage of more than 13 feet.³²



³⁰ <https://w1.weather.gov/glossary/index.php?letter=f>

³¹ US Geological Survey, Current Water Data for New Hampshire <http://waterdata.usgs.gov/nh/nwis/rt>.

History:

			EXTENT	IMPACT	
Hazard	Date	Location	Magnitude/ Description	Damage	Source
Flash Flood	6/19/2017	<u>BELKNAP - Laconia</u>	2 to 3 inches of rain in 3 hours	\$10,000 estimated property damage	NOAA
Flash Flood	6/19/2017	<u>BELKNAP - Gilford</u>	2 to 3 3 inches of rain in 3 hours	\$35,000 estimated property damage	NOAA
Severe Storm and Flooding	Oct. 29 – Nov. 1 2017	<u>Belknap, Carroll, Coos, Grafton, & Sullivan Co.</u>	Uprooted trees and heavy rains downed power lines leading to roughly 290K power outages	Presidentially Declared Disaster DR-4355	NH HSEM

As a result of the Oct. 29 – Nov. 1 2017 severe weather event, the Sanbornton fire department did run 25 calls in a 36-hour period with multiple trees and wires down, road closures, a house that was struck by a falling tree with minor damage on Hermit Lake Rd and a flooded basement due to a sump pump failure. The town did not request federal disaster aid from this incident.

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 sixteen active or exempt dams in Sanbornton; none are High or Significant Hazard dams, four are Low Hazard, and twelve dams are classified as Non-Menace or Exempt. Since the last plan update there have been no known impacts to people or property in Sanbornton due to inland flooding or dam failure.

Dams in and near Sanbornton (NH DES Dam Bureau, 2019)

DAM	HAZCL	STATUS	TOWN	NAME	LATITUDE	LONGITUDE
D211001	L	ACTIVE	SANBORNTON	HERMIT LAKE DAM	43.5552	-71.6075
D211022	L	ACTIVE	SANBORNTON	BAYARD HENRY DAM	43.54382	-71.670306
D211007	L	ACTIVE/MULTIPLE	SANBORNTON	MOUNTAIN POND NORTH DAM	43.5788	-71.6397
D211008	L	ACTIVE/MULTIPLE	SANBORNTON	MOUNTAIN POND SOUTH DAM	43.5747	-71.638
D211003	NM	ACTIVE	SANBORNTON	CARPENTER FARM DAM	43.5161	-71.6208
D211006	NM	ACTIVE	SANBORNTON	GRAY FIRE POND DAM	43.5272	-71.5313
D211010	NM	ACTIVE	SANBORNTON	HUNCKINS POND FISH SCREENS DAM	43.5044	-71.5575
D211012	NM	ACTIVE	SANBORNTON	CONSERVATION POND DAM	43.5555	-71.5758
D211013	NM	ACTIVE	SANBORNTON	WILDLIFE POND DAM	43.5502	-71.5747
D211014	NM	ACTIVE	SANBORNTON	STONE WILDLIFE POND DAM	43.47799	-71.596817
D211015	NM	ACTIVE	SANBORNTON	HOLDING POND DAM	43.5025	-71.5275
D211018	NM	ACTIVE	SANBORNTON	RUTTER FARM POND DAM	43.5036	-71.5841
D211019	NM	ACTIVE	SANBORNTON	MOREY DAM	43.538	-71.5261
D211004		EXEMPT	SANBORNTON	TROUT POND DAM	43.5141	-71.6205
D211016		EXEMPT	SANBORNTON	GOLF COURSE POND DAM	43.5002	-71.6094
D211021		EXEMPT	SANBORNTON	MANDIE HAGAN DET POND DAM	43.5333	-71.55
D211002		RUINS	SANBORNTON	PIPERS MILL DAM	43.5527	-71.6063
D211005		RUINS	SANBORNTON	SALMON BROOK III DAM	43.515	-71.6238
D211011		RUINS	SANBORNTON	KIEVIT FARM POND DAM	43.5275	-71.5333
D211017		RUINS	SANBORNTON	THRESHING MILL BROOK DAM	43.493	-71.6183
D211009		NOT BUILT	SANBORNTON	BLACK BROOK DAM	43.5461	-71.5477
D211020		NOT BUILT	SANBORNTON	SUROWIEC FARM POND DAM	43.5077	-71.5986

Probability of Occurrence: Flooding – Likely, Dam Failure Unlikely

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.

Impact: 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.



USACE Franklin Falls Recreation Area

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. Digital mapping for the watersheds covering Sanbornton is underway and is expected to be complete in the next couple of years.

The town's Floodplain Ordinance was revised in 2020 in coordination with the NH State Floodplain Manager 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.

There are currently 2 properties with NFIP flood insurance policies in force. These are both residential properties (one single family, one 2-4 family) and with an insurance value \$368,000. Since 1979 there have been three losses paid out for a total of \$12,383, with no repetitive losses.³³ One of the insured properties is in the AE-Zone (1% chance of an annual flood), the other property is in the B, C, or X Zones (less than 1% chance of an annual flood - Moderate to Low Risk Areas).

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

³³ NFIP State Coordinator, 2020.

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 Zoning 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 Office as well as at the FEMA Flood Map Service Center³⁴. 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.

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.

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.

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.

SOLAR STORMS & SPACE WEATHER

The term space weather is relatively new and describes conditions in the Earth's outer space environment. Space weather includes conditions and events on the sun, in the solar wind, in near-Earth space, and in Earth's upper atmosphere that can affect space-borne and ground-based technological systems.³⁵ Although space weather has occurred since the beginning of time, little was understood about the causes and impacts of these instances on the planet. It has only been in the last 200 or so years where multiple science fields have come together to study space weather.³⁶ Not all space weather is damaging or effects humans or technology. Perhaps one of the most

Radio Blackout				
Scale	Description	Effect	Physical measure	Average Frequency (1 cycle = 11 years)
R 5	Extreme	HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	X20 (2×10^{-5})	Less than 1 per cycle
R 4	Severe	HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	X10 (10^{-5})	8 per cycle (8 days per cycle)
R 3	Strong	HF Radio: Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. Navigation: Low-frequency navigation signals degraded for about an hour.	X1 (10^{-6})	175 per cycle (140 days per cycle)
R 2	Moderate	HF Radio: Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. Navigation: Degradation of low-frequency navigation signals for tens of minutes.	M5 (5×10^{-6})	350 per cycle (300 days per cycle)
R 1	Minor	HF Radio: Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. Navigation: Low-frequency navigation signals degraded for brief intervals.	M1 (10^{-6})	2000 per cycle (950 days per cycle)

³⁴ <https://msc.fema.gov/portal/home>

³⁵ https://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html#q12

³⁶ https://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html#q12

well-known effects of space weather on the Earth's atmosphere is the Aurora Borealis (aka Northern Lights – northern hemisphere) and the Aurora Australis (southern hemisphere). Aurora displays are a result of solar wind where some of the charged particles become trapped in the Earth's atmosphere.

Extent: The *2018 State of New Hampshire Multi-Hazard Mitigation Plan Update* describes three different types of events: Geomagnetic Storms, Solar Radiation Storms, and Radio Blackout. Each of these is then rated on a five-level scale (minor, moderate, strong, severe, extreme), with descriptions of increasing impacts on power, spacecraft, biological, satellite, high frequency radio, and navigation systems. A solar storm may exacerbate radio communications problems. The Radio Blackout Scale (right)³⁷ offers a measure of the extent of solar storms on radio communications.

History: There have not been any known occurrences in Sanbornton of solar storms or space weather, and no significant events have been reported statewide. Nearby events include Quebec, Canada, which experienced a 9-hour blackout in March 1989 when solar winds caused a fluctuation in the Earth's magnetic field and caused Hydro-Quebec's transmission to go down.³⁸

Probability of Occurrence: Likely

Location: All of Sanbornton and the entire State of New Hampshire are at risk of solar storms and space weather. While the Earth is somewhat protected from solar storms and space weather by its upper atmosphere, the potential for a loss of communications, power, and GPS exists on a daily basis.

Impact: Solar storms and space weather impact the Earth daily, although the effects are not often felt. It is difficult to estimate the impact of this hazard on Sanbornton as knowledge of this hazard is evolving, but committee members have already identified the vulnerability of communications infrastructure to other hazards. The committee rated this a low to moderate impact.

WILDFIRE

A wildfire is any non-structural fire, other than prescribed fire, that occurs in the wildland areas consisting of vegetation or natural fuels. Wildfires can be referred to as brush fires, wildland fires, or grass fires depending on the location and what is burning.

Extent: A wildfire is any non-structural fire, other than prescribed fire, that occurs in the wildland areas consisting of vegetation or natural fuels. Wildfires can be referred to as brush fires, wildland fires, or grass fires depending on the location and what is burning.³⁹

Much of the Lakes Region is forested and susceptible to fire. New Hampshire has about 500 wildland fires each year: most burn less than half an acre.

³⁷ https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf, p. 141

³⁸ Adapted from the *State of New Hampshire Multi-Hazard Mitigation Plan Update (2018)*, https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf.

³⁹ https://www.nwccg.gov/glossary/a-z#letter_w

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.

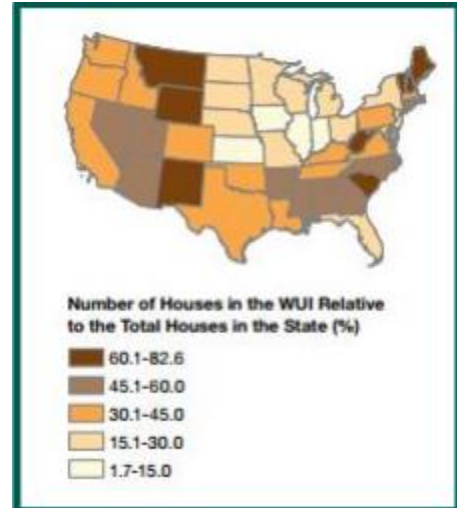
Extent was considered weak.

History: According to data from the New Hampshire Fire Incident Reporting System (NHFIRS) provided by the New Hampshire Fire Marshal's Office (NHFMO), there were 6,001 vegetation fires reported between 2013 and 2017. Larger scale wildfires have not been reported in Belknap County. There have been no known impacts in Sanbornton due to wildfire since the last plan update.

Probability of Occurrence: Likely

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

Impact: 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 \$2,778,445 in damages. Potential impact to the town due to wildfire is moderate.



TECHNOLOGICAL AND HUMAN-CAUSED HAZARDS

While the focus of the Hazard Mitigation Plan is on natural hazards, committee members felt it was important to discuss several technological and human-caused potential hazards. This section includes a discussion of the technological and human-caused hazards that the committee ranked as high or medium risk.

As the committee rated the various human-caused hazards that might impact Sanbornton, the probability of hazard occurrences ranged from Unlikely to Likely (1-3). The extent of the hazards ranged from weak to severe (1-3) and the average impact ranged from low to moderate (1.33-2). Overall risk ranged from low to high (1.33-12).

Sanbornton Human-Caused and Technological Hazard Ranking		
HAZARD	TOTAL	RISK
Aging Infrastructure	12.00	High
Transport Accident	10.00	High
Mass Casualty Incident	10.00	High
Long Term Utility Outage	6.67	Medium
Cyber Event	6.67	Medium
Hazardous Materials	5.33	Medium
Known and Emerging Contaminants	5.33	Medium
Terrorism/Violence	5.00	Medium

AGING INFRASTRUCTURE

Town roads, drainage structures, town facilities, utility lines, communication infrastructure, and the small section of the Winnepesaukee River Basin (WRB) project serving the southeastern corner of town could all be considered aging infrastructure. While it is important that they function properly on a regular basis to provide basic services, it is particularly important that this infrastructure function during a hazard event, enabling emergency response services to be coordinated and delivered.

The roads are a major investment by the town that require frequent maintenance, repair, and sometimes reconstruction; half are unpaved. These roads, of course, serve as the lifeline corridors to reaching residents, supplies, and for evacuation. The town recently had a road and culvert analysis conducted, resulting in a documented plan for maintenance, repair, reconstruction, and replacement and the associated long-term costs for planning and budgeting purposes. Wires and communication equipment are owned and maintained by the utilities, see “Long-term Utility Outage” below.

Probability of Occurrence: Likely

TRANSPORT ACCIDENT

A transport accident is any accident that occurs during transportation, including passenger vehicles, tractor trailers, airplanes and other modes of transportation. Several major roadways run through Sanbornton, including I-93, US 3/NH 11, NH 127, and NH 132. The average traffic volumes were listed in Chapter II (p.8); the actual volume can be much higher depending on the season and individual events, such as Laconia’s Motorcycle Week or events at the New Hampshire International Speedway in Loudon. The primary impact of a transportation incident would be on response capabilities of emergency services. No quantitative calculations of impact were made as part of this plan.

Probability of Occurrence: Likely

MASS CASUALTY INCIDENT

Any large number of casualties produced in a relatively short period of time, usually as the result of a single incident such as a military aircraft accident, hurricane, flood, earthquake, or armed attack that exceeds local logistic support capabilities is considered a mass casualty event.⁴⁰ According to FEMA's Fire/Emergency Medical Services Department, since the Columbine High School shooting in 1999 up through 2013 there were a reported 250 deaths connected to an active shooter/mass casualty incident.⁴¹ This number has shown an exponential increase in the past five-year period with 2017 alone seeing over 725 mass casualties.⁴² Public gathering places, schools, hospitals, and similar locations are vulnerable to a mass casualty incident.

No mass casualty incidents have been recorded in Sanbornton, but in the recent years there have been a few in New Hampshire.

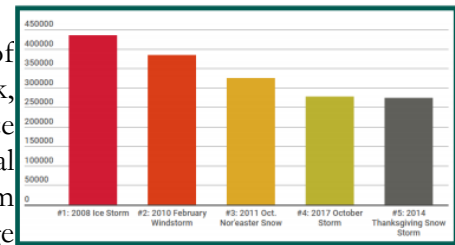
History:

Date	Event	Location	Information
February 2014	Explosion	New Hampshire Ball Bearings Inc. Peterborough, NH	Firefighters from the surrounding area responded to a industrial explosion critically injuring two and seriously injuring four.
August 2017	Hospital Contamination	Exeter Hospital at Exeter, New Hampshire	Numerous staff members reported feeling dizzy and nauseous. Causing surrounding towns to get involved and closing parts of the hospital for decontamination.

Probability of Occurrence: Likely

LONG-TERM UTILITY OUTAGE

A long-term utility outage is a prolonged absence of any type of public utility that is caused by infrastructure failure, cyber-attack, supply depletion, distribution disruption, water source contamination, or a natural, human caused or technological disaster.⁴³ For the purpose of this plan is classifying a long-term utility outage as one that last several days or more or an outage that causes extreme impacts. The entire town of Sanbornton is at risk for this hazard, especially the Route 132 corridor which experiences downed trees and utility lines during high wind events and severe winter weather. Critical communications infrastructure is located in this area, and loss of power and communications has a great impact on municipal and emergency functions.



Top 5 power outages in New Hampshire history. Data provided by NH HSEM. Figure courtesy of NHPR.

⁴⁰ State Multi-Hazard Mitigation Plan https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf

⁴¹ State Multi-Hazard Mitigation Plan https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf

⁴² <https://www.fbi.gov/about/partnerships/office-of-partner-engagement/active-shooter-incidents-graphics>

⁴³ State Multi-Hazard Mitigation Plan https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf

Recent History

Date	Description	Impacts	Location	Additional Info
January 2014	Fred Fuller	The Fred Fuller oil company was unable to make deliveries to numerous customers	Statewide	Residents began to run out of fuel and were not able to fill their needs even pre-paid customers for the Fred Fuller oil company
Oct 29 – Nov 4, 2017	Severe Rain and Windstorm	Low pressure system merged with Tropical Storm Phillippe	Statewide	Uprooted trees and heavy rains downed power lines leading to roughly 290K power outages.

Probability of Occurrence: Highly Likely

CYBER EVENTS

The Department of Homeland Security (DHS) defines a cyber incident as an event occurring on or conducted through a computer network that actually or imminently jeopardizes the confidentiality, integrity, or availability of computers, information or communications systems or networks, physical or virtual infrastructure controlled by computers or information systems, or information resident thereon.⁴⁴ The National Cybersecurity and Communications Integration center (NCCIC) classifies a cyber incident using a scoring system of zero to 100 using the following factors:

- Functional Impact
- Observed Activity
- Location of Observed Activity
- Actor Characterization
- Information Impact
- Recoverability
- Cross-Sector Dependency
- Potential Impact

Approximately 75 cyber incidents affecting New Hampshire's public sector were reported in 2017-2018. In 2020 Sanbornton Police Department was the subject of a ransomware attack, preventing access to their system for several days. It is noteworthy that the Police and Fire Departments are on separate networks. Any location connected to the internet in the town of Sanbornton is at risk to a cyber event. Sanbornton is reliant on technology for regular municipal functions as well as emergency response. The locations that could pose the largest impact are the Town Offices of Sanbornton along with critical communications infrastructure.

Probability of Occurrence: Likely

HAZARDOUS MATERIALS

A hazardous material is any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.⁴⁵

⁴⁴ State Multi-Hazard Mitigation Plan https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf

⁴⁵ <https://www.ihmm.org>

Oil spills along many of the routes in Sanbornton could result in the contamination of wells or water bodies in the Lake Winnepesaukee or Pemigewasset River 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. While Sanbornton has several major transportation routes for hazardous material haulers, I-93, NH 132, NH 127, and US 3/NH 11, there have been few serious transportation incidents involving hazardous materials.

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.

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.

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 incident is seen as low to moderate.

Probability of Occurrence: Occasional

KNOWN AND EMERGING CONTAMINANTS

Emerging contaminants are chemicals that historically have not been monitored in drinking water due to the lack of laboratory capabilities to detect the compounds or a lack of knowledge about the use of certain compounds and their potential to cause human health impacts. Emerging contaminants are particularly concerning to the public in Sanbornton because all homes are on well water and the potential health impacts of these are sometimes uncertain.

Some contaminants found in New Hampshire's groundwater occur naturally due to geologic or soil conditions, while others are associated with human activities. For example, arsenic and radon are common contaminants found in bedrock and, consequently, in well water. Potential human sources of contamination include leaking underground fuel tanks, chemical spills, closed landfills, road salt and other land uses. Regardless of the source of contamination, water must be tested and treated to ensure it is safe to drink.

Probability of Occurrence: Occasional

TERRORISM/VIOLENCE

Events around the country demonstrate that one or more people intent on inflicting harm and terror on others can occur almost anywhere, not just in urban areas. Committee members also discussed an increase in general violence which included recent police officer-involved shootings. Such events may be limited to just one or two victims or the perpetrator(s) may be seeking to inflict damage on many people. The committee considered not only an armed terror attack but also intentional contamination of water resources. These resources include surface water as well as ground water and the infrastructure used to deliver potable water. It is also possible that cyber events could also fit within this potential hazard. Sanbornton has not experienced an armed attack in the past; nor have there been instances of intentional contamination of water supplies.

An armed attack could occur anywhere in town. The most likely locations are either areas where people congregate or where the most vulnerable people are (schools). Surface water might be contaminated from the bridges crossing the Winnepesaukee River, especially US Route 3/NH Route 11. While the groundwater might be contaminated through contamination of soils overtop of the aquifer, the most immediate threats would come through the compromising of infrastructure.

One or more people intent on doing harm could do so just about anywhere. Whether large or small, such an event would impact the people in the community. The impact of an armed attack comes through instilling fear and terror. Structural damages would be low. The most vulnerable places are those areas where many people congregate such as schools or Town Offices. Those most impacted by contamination of the town's water resources would be those in the Special Needs Population – the elderly, children, and the mentally challenged. Neither an armed attack nor water contamination would likely impact structures; rather the impact would be on people and the public safety system. No figure of losses has been calculated for this plan.

Probability of Occurrence: Likely

CONFLAGRATION

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

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.

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. Additionally, several of the buildings in the historic district are older, wooden structures. A fire could spread quickly through them. Over the course of the last 5 years, the trend has been to demolish existing small cottages and to rebuild larger multi-storied vacation homes. This leads to an increase in the fire load and a more likely threat of conflagration.



Alton Bay Christian Conference Center,
2009

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. 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.

Assuming 2% town-wide damage to buildings, fire could result in up to \$5,556,891 in damages. The potential impact to the town due to conflagration is low to moderate.

Probability of Occurrence: Occasional

C. VULNERABILITY AND SUMMARY OF RISK

The committee reviewed and revised the Critical Facilities/Hazard Vulnerability matrix from the 2014 plan assessing the susceptibility of each structure on the list of critical facilities to each of the identified hazards (p. 42). This gives a means of reviewing which hazards pose the greatest threat to those facilities. The updated matrix is shown on the following page.

This section concludes with a Risk Assessment matrix (p. 43) summarizing the risk of the various hazards to the town of Sanbornton. Taking into account 1) the likelihood of occurrence of an event, 2) the potential extent of the hazard, and 3) the potential impact of a particular hazard event, the risk of the various hazards that might occur in Sanbornton was determined. 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 (frequency of occurrence, hazard extent, and impact) 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 1, 2, 3, and 4, with 1 on the low end and 4 on the high end of the scale.

The overall risk rating associated with each hazard was determined by multiplying the three factors and then designating the top 1/3 of scores as high, the next third as medium, and bottom third as low risk. This resulted in risk ratings ranging from 1 to 18; 1-4 = low risk, 5-9 = moderate risk, 10-18 = 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.

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.

Critical Facilities Hazard - Vulnerability (Vulnerability Key: Low = 1, High = 3)										High - Top 20% score					Medium - Top 40% score					Hazards of Concern in 2014 Plan												
Sanbornton		Natural Hazards															Human-Caused & Technological Hazards															
Facility/Infrastructure	Inland Flood	Wildfire	Drought	Extreme Temps	Earthquake	Land-slide	Infectious Disease	Avalanche	Lightning	Trop. & Post-Trop. Cyclones	High Wind Events	Dam Failure	Severe Winter Weather	Solar Storms Space Weather	Aging Infrastructure	Long-Term Utility Outage	Conflagration	Transp. Incident	Haz Mat	Contaminants	Cyber Event	Terror Violence	Mass Casualty Incident	Radio-logical	TOTAL							
Essential Services/ Structures/Shelters																																
Sanbornton Public Library	1	2	1	1	2	1	2	1	3	1	3	1	3	2	1	3	3	1	1	1	2	1	1	1	1	39						
Old Town Hall	1	2	1	1	2	1	1	1	3	1	3	1	3	2	1	1	3	1	1	1	1	1	1	1	1	35						
U.S. Post Office	1	2	1	1	2	1	2	1	3	1	3	1	3	2	1	2	3	2	1	1	1	1	1	1	1	38						
Town Office	1	2	1	1	2	1	2	1	3	1	3	1	3	2	2	2	3	2	1	1	3	2	1	1	1	42						
Public Safety Building	1	2	1	1	2	1	3	1	3	1	3	1	3	3	2	2	3	2	1	1	3	2	1	1	1	44						
Transfer Station	1	2	1	1	2	1	1	1	1	1	2	1	3	1	2	2	2	1	1	1	1	1	1	1	1	32						
Highway Department	1	2	1	1	2	1	1	1	1	1	2	1	3	1	2	2	2	1	1	1	1	1	1	1	1	32						
Irving Station	1	2	1	1	2	1	3	1	2	1	2	1	3	1	1	1	2	2	1	1	1	1	1	1	1	34						
New DPW Garage	1	2	1	1	2	1	1	1	2	1	2	1	2	1	1	2	2	2	1	1	1	1	1	1	1	32						
Cell phone tower at Steele Hill	1	2	1	1	2	1	1	1	3	1	3	1	2	3	1	2	3	2	1	1	3	1	1	1	1	39						
Cell phone tower at Brook Road	1	2	1	1	2	1	1	1	3	1	3	1	2	3	1	2	3	2	1	1	3	1	1	1	1	39						
Evacuation Route																																
I-93 (South/North Central	1	2	1	1	2	1	1	1	1	2	1	1	3	1	2	1	1	3	2	1	1	1	1	3	1	35						
Route 132 (South/North Central	2	2	1	1	3	1	1	1	1	2	1	1	3	1	2	1	1	3	2	1	1	1	2	1	36							
Route 127 (East/West Central	1	2	1	1	3	1	1	1	1	2	1	1	3	1	2	1	1	3	2	1	1	1	2	1	35							
Route 3 (1/4 mile in Western	1	2	1	1	2	1	1	1	3	2	3	1	3	1	2	1	1	3	2	1	1	1	2	1	38							
Bridges and Dams																																
Mosquito Bridge	2	2	1	2	2	1	1	1	2	2	2	2	3	1	2	1	1	2	2	1	1	1	1	2	1	37						
Bridge: Turkey Bridge	2	2	1	2	2	1	1	1	2	2	2	2	3	1	2	1	1	1	2	1	1	1	1	2	1	36						
Bridge: Knox Mtn Bridge	2	2	1	2	2	1	1	1	1	2	1	2	3	1	2	1	1	1	2	1	1	1	1	2	1	34						
Bridge:Chapman Road	2	2	1	2	2	1	1	1	1	2	1	2	3	1	2	1	1	1	2	1	1	1	1	2	1	34						
Bridge: Huse Road	2	2	1	2	2	1	1	1	1	2	1	2	3	1	2	1	1	1	2	1	1	1	1	2	1	34						
Bridge: Shute Hill	2	2	1	2	2	1	1	1	1	2	1	2	3	1	2	1	1	1	2	1	1	1	1	2	1	34						
Bridge: Bay Road	1	2	1	2	2	1	1	1	1	2	1	2	2	1	2	1	1	1	2	1	1	1	1	2	1	32						
Bridge: Plummer Road	1	2	1	2	2	1	1	1	1	2	1	2	2	1	2	1	1	1	2	1	1	1	1	2	1	32						
Hermit Woods Bridge	2	2	1	2	2	1	1	1	1	2	1	2	3	1	2	1	1	1	2	1	1	1	1	2	1	34						
Dam: Hermit Lake	3	2	1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	1	2	1	1	1	1	2	1	33						
Dam: 205 Johnson Road	3	2	1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	1	2	1	1	1	1	2	1	33						
Shelters & Cooling Center																																
Winnisquam High School (Tilton)	1	2	1	1	2	1	3	1	2	1	2	1	2	1	2	1	2	2	1	1	2	2	2	1	1	37						
Library (Cooling Center)	1	2	1	1	2	1	2	1	3	1	3	1	3	1	2	1	3	1	1	1	1	1	1	1	1	36						
1st Baptist Church	1	2	1	3	2	1	2	1	2	1	2	1	1	1	2	1	2	1	1	1	1	1	1	1	1	33						
2nd Baptist Church	1	2	1	3	2	1	2	1	3	1	3	1	1	1	2	1	2	1	1	1	1	1	1	1	1	35						
Congregational Church	1	2	1	3	2	1	2	1	3	1	3	1	1	1	2	1	2	1	1	1	1	1	1	1	1	35						
Steele Hill Resort	1	2	1	3	2	1	3	1	3	1	3	1	3	1	2	1	2	2	1	1	1	1	1	1	1	39						
Special Populations & Other																																
Sanbornton Central School	1	2	1	1	2	1	3	1	3	1	3	1	3	1	2	2	1	1	1	1	1	2	2	1	1	38						
Sant Bani School	1	2	1	2	2	1	3	1	3	1	3	1	3	1	2	2	1	1	1	1	1	2	2	1	1	39						
Congregate Care - 1190 New	1	2	1	2	2	1	1	1	1	1	1	1	3	1	2	2	1	1	1	1	1	1	1	1	1	31						
Pyareo (assisted living)	1	2	1	2	2	1	2	1	2	1	2	1	3	1	2	2	1	1	1	1	1	1	1	1	1	34						
Dulac Land Trust	1	2	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27						
Town Beach	1	2	1	1	2	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28						
Hermit Lake Beach	1	2	1	1	2	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28						
Town Park	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26						
B & B: Lower Bay Road	1	2	1	2	2	1	2	1	3	1	3	1	2	1	1	2	1	2	1	1	1	1	1	1	1	35						
B & B: Shute Hill Road	1	2	1	2	3	1	2	1	2	1	2	1	2	1	1	2	1	2	1	1	1	1	1	1	1	34						
B & B: Lower Smith Road	1	2	1	2	2	1	2	1	3	1	3	1	2	1	1	2	1	2	1	1	1	1	1	1	1	35						
B & B: Brook Road	1	2	1	2	2	1	2	1	2	1	2	1	2	1	1	2	1	2	1	1	1	1	1	1	1	33						
Leighton Estates	1	3	1	2	2	1	1	1	3	1	3	1	2	1	1	2	2	2	1	1	1	1	1	1	1	36						
Bayshore/Broadview	1	3	1	2	2	1	1	1	3	1	3	1	2	1	1	2	2	2	1	1	1	1	1	1	1	36						
																										0						
SUM TOTAL	58	94	46	74	95	46	71	46	93	61	95	57	108	56	75	66	73	70	61	46	56	51	65	46								

*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.

Risk Assessment

Sanbornton 2020 Hazards	Probability	Extent	Human Impact	Property Impact	Business Impact	Average Impact	Risk	Geographic Area				Specific Areas of Concern
Definition	Likelihood this will occur w/in 10 yrs	(Magnitude/Strength)	Probability of Death or Injury	Physical Loss or damage	Interruption of Service	Average of Human, Property, Business	Probability x Extent x Avg. Impact					Exact areas where a given hazard occurs more often
Scale	1: Unlikely Occasional Likely Highly Likely	2: Weak, Moderate, Severe, Extreme	1: Low 2: Moderate High Catastrophic	1: Low 2: Moderate High Catastrophic	1: Low 2: Moderate High Catastrophic	1: Low 2: Moderate High Catastrophic	Low Medium High	Localized	Town-wide	Regional	State-wide	Location Listed
Tropical & Post-Tropical Cyclones	3	3	2	2	2	2.00	18.00			X		More Summer Storms, recent example hit VT
Severe Winter Weather	4	2	2	2	2	2.00	16.00			X		Moving towards rain/freezing rain (worse than snow), more costly to address.
High Wind Events (Torn./Downb.)	4	2	1	2	2	1.67	13.33	X				
Lightning	4	2	1	2	2	1.67	13.33			X		
Earthquake	3	2	1	2	2	1.67	10.00			X		
Infectious Diseases	2	2	2	1	3	2.00	8.00	X				COVID-19 has had limited human impact locally. Business impacts are mainly indirect, such as supply lines.
Extreme Temps	2	2	2	1	2	1.67	6.67				X	
Inland Flooding	3	1	1	2	2	1.67	5.00					
Solar Storms & Space Weather	3	1	1	1	3	1.67	5.00				X	
Wildfires	3	1	1	3	1	1.67	5.00					
Drought	2	1	1	1	1	1.00	2.00				X	
Landslide	2	1	1	1	1	1.00	2.00	X				
Avalanche	1	1	1	1	1	1.00	1.00	X				
Dam Failure	1	1	1	1	1	1.00	1.00	X				
Human-Caused & Technological Hazards	Probability	Extent	Human Impact	Property Impact	Business Impact	Average Impact	Risk					
Aging Infrastructure	3	2	2	2	2	2.00	12.00	X				
Mass Casualty Incident	2	3	3	1	1	1.67	10.00	X				
Transport Accident	3	2	2	2	1	1.67	10.00	X				
Cyber Event	2	2	1	1	3	1.67	6.67			X		
Long Term Utility Outage	2	2	2	1	2	1.67	6.67			X		
Hazardous Materials	2	2	2	1	1	1.33	5.33	X				
Known and Emerging Contaminants	2	2	2	1	1	1.33	5.33		X			
Terrorism/Violence	1	3	3	1	1	1.67	5.00	X				
Conflagration	2	1	2	2	1	1.67	3.33	X				
Radiological	1	1	2	1	1	1.33	1.33	X				
High Risk - Top 1/3 score			Medium Risk - Top 2/3 score									

Probability of Future Events

- **Unlikely:** <10% probability of occurrence in the next year or a recurrence interval of more than every ten years
- **Occasional:** 10 - 25% probability of occurrence in the next year or a recurrence interval of three to ten years
- **Likely:** 25 - 80% probability of occurrence in the next year or a recurrence interval of two to three years
- **Highly Likely:** 80-100% probability of occurrence in the next year or a recurrence interval of nearly every year

Extent - How bad could it get?

- **Weak:** limited magnitude, slow onset, short duration, little damage.
- **Moderate:** moderate magnitude, moderate onset speed, moderate duration, some damage/loss of service for days.
- **Severe:** Severe magnitude, fast speed of onset, long duration, devastating damage and loss of service for weeks
- **Extreme:** Extreme magnitude, immediate onset, extended duration, catastrophic damage, uninhabitable conditions.

Impact - Human, Property, Business

- **Low:** There is little likelihood that injury or death will result from this hazard. The damage to land and property will likely be limited. Essential services and other services that residents and visitors depend upon will not be interrupted.
- **Moderate:** There is some likelihood that injury or death will result from this hazard. There will likely be some damage to land and property. There will likely be some interruption of essential services and other services that residents and visitors depend upon for hours of days.
- **High:** It is quite likely that injury or death will result from this hazard. There will be damage to multiple properties. Essential services and other services that residents and visitors depend upon be likely be interrupted for days.
- **Catastrophic:** Multiple injuries or deaths will likely result from this hazard. Damage to properties will be widespread and extensive. Essential services and other services that residents and visitors depend upon be likely be interrupted for days or weeks.

CHAPTER IV: 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 2014 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.

The review of Existing Protections and Policies (below) and the status of the 2014 Actions (p.52) utilized these categorizations:

Poor *The policy, plan or mutual aid system does **not work as well as it should** and **often** falls short of meeting its goals.*

Fair *The policy, plan or mutual aid system does **not work as well as it should** and **sometimes** falls short of meeting its goals.*

Good *The policy, plan or mutual aid system **works well** and **is achieving its goals**.*

Excellent *The policy, plan or mutual aid system **works very well** and **often exceeds its goals**.*

Untested *The policy, plan or mutual aid system has not yet been utilized or tested.*

Existing Protections and Policies

Entity	Description	Comments	Effectiveness	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	Revised in 2020 to comply with current NFIP requirements
	(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.

Entity	Description	Comments	Effectiveness	Improvements/ Changes
	(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.
	(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	No PB discussions at this time.
	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	The Sanbornton FD inspects all Multi-Family, Commercial and new single family homes for issuance of a "Certificate of Occupancy"
Floodplain protection - ordinance	National Flood Insurance Program (NFIP)	Regular Participant since 6/15/1979	Good	The 2020 Zoning amended made the Town fully compliant with NFIP requirements.
	FIRM & FBFM (Flood Boundary Floodway Map) 6/15/1979	Maps are 35 years old. This task is FEMA's responsibility.	Poor	Updated field surveys and flood hazard analyses for new flood maps for Belknap Co. are in progress.
	Current Flood Insurance Study (Belknap County) - 12/1/1978	Study is 35 years old. This task is FEMA's responsibility.	Poor	Updated field surveys and flood hazard analyses for new flood maps for Belknap Co. are in progress.
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.
	[G] Flood Hazard Areas	Protects new structures from flooding.	Good	No changes necessary at this time.

Entity	Description	Comments	Effectiveness	Improvements/ Changes
	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 Planning Board Assistant.	Reviews plans and advises the Planning Board.		No changes necessary at this time.
	No local Building Code - Use State Code	State Code is based upon the International Building Code (IBC), 2009.	Fair	Questions about the State Building/Residential Codes are referred to the State Fire Marshall's Office.
	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]	Currently no enforcement of the state building code by the town, but the Fire Chief does enforce the state fire code and inspects all new structures A process to notify the Fire Chief of all new building permit applications has been established	Fair	No changes necessary at this time. (CZC approvals for new homes are sent to the Fire Chief to review applicable codes, and issues 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	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.
	Belknap County Sheriff's Department	Cost effective means of sharing resources.	Good	No changes necessary at this time.

Entity	Description	Comments	Effectiveness	Improvements/ Changes
	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	With the improvements in daily staffing, the Fire Chief is able to conduct inspections and concentrate on administrative needs.	Good	No changes necessary at this time.
	2 Full Time Firefighter/EMS providers 2 Per Diem Firefighter/EMS providers 1 Part Time Administrative Assistant	2 full time positions added in 2017, which increased daily staffing to 1 full time and 1 per diem for 12 hr. shift (7am-7pm), In 2020 a part time admin. assistant was added for 3 - 8 hour days per week.	Good	No changes necessary at this time.
	18 On Call / Per Diem Firefighter/EMS providers	Train regularly	Fair	A plan is being developed to improve the recruitment and retention of on call / per diem members
	Have an Inspection/Replacement 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 needed at this time.
	Trails have been mapped	Salmon Brook Trailriders	Good	No changes needed at this time.
	Logging roads have been mapped	Salmon Brook Trailriders	Good	No changes needed at this time.
	Capital Reserve fund supported annually for apparatus replacement & Ambulance Revenue Fund (supported by ambulance billing) for ambulance replacement and equipment upgrades	Targeted funding for large equipment purchases. The board of selectman are the expending agents for both funds.	Good	No changes needed at this time.
	Schools have Emergency Plans and conduct drills	Preparedness	Good	No changes needed at this time.
	Member of Regional Swift Water Rescue Team	Cost effective sharing of resources and training.	Good	No changes necessary at this time.

Entity	Description	Comments	Effectiveness	Improvements/ Changes
	There is a regional support network for health emergencies.	Laconia has mass casualty trailers at Lakeport Station for pandemic. Note: due to staffing, there has been limited involvement by the EMD/Health Officer.	Fair	Should be more time for Health Office to be involved
	The Fire Chief conducts all mechanical inspections including oil, gas, generators and all solid burning fuels	All permit and fees are collected at the FD	Good	No changes necessary at this time.
	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	No changes necessary at this time.
Police Department	Full time PD Chief	No change since 2014	Good	No change needed
	Six full time officers	No change since 2014	Fair	Add full time position to return to 24-hour coverage
	Five part time officers	No change since 2014	Fair	Fill empty positions
	One administrative staff	No change since 2014	Good	No change needed
	Member of Belknap Regional Special Operations Group	Cost effective sharing of resources	Good	No change needed
	Prosecution contracted with the Tilton Police Department	Cost effective sharing of resources	Good	No change needed
	Operate LEAD Program in the school	Cost effective sharing of resources	Good	No change needed
	90% NIMS/ICS certified	Enhances communication and coordination	Good	Continue to provide training opportunities for staff
	Formal mutual aid/extended authority agreements with all of Belknap County and surrounding agencies	Cost effective sharing of resources	Good	No change needed
Emergency Operations Plan	EOP was last updated in 2020	Should be updated every five years.	Good	No changes necessary at this time.
Department of Public Works (DPW)	Full-time Director of DPW	No change since 2008.	Good	The position of DPW Director has been changed to Director of Highways and only manages highway department

Entity	Description	Comments	Effectiveness	Improvements/ Changes
	Five full-time staff	No change since 2008.	Fair	The residents are more demanding of services i.e. snow removed more often and other projects that need more personnel
	Projects are incorporated into the town's C.I.P.	Helps the community plan for and manage large capital expenses.	Good	No changes necessary
	0% NIMS/ICS Certified	Enhances communication and coordination	Poor	Same
	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	Same
	Members of State-wide DPW Mutual Aid through UNH T2	Cost effective sharing of resources.	Good	No changes necessary
	Repair/maintain roads as needed	Road maintenance is limited to maintaining gravel roads due to funding constraints. No rebuilding.	Good	Most paved roads are ready to move into a preservation program and we have just started to do work on gravel roads
	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	We now have \$20,000 per year still no written plan
	No written debris plan.	Having local and regional contacts identified in advance can facilitate recovery.	Poor	No changes have been made at this time
	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.	Fair	There is a possible project on going with BCCD that may help some run off in Black Brook
Power	Generators: town office, Life Safety Building, central school	Maintains continuity of operations	Fair	A generator should be installed at the Highway garage
	Improved tree trimming policy near wires, especially PSNH	Reduces downed wires and power outages. Less expensive than repair.	Good	The power companies are doing about the same

Entity	Description	Comments	Effectiveness	Improvements/ Changes
Transfer Station	One full-time, two part-time staff	Handles waste and debris	Good	Transfer Station is a separate department now
	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.
	Central School	short-term shelter	Good	No changes needed at this time.
	Town Library	short-term shelter	Good	No changes needed at this time.
	1st Baptist Church	short-term shelter	Good	No changes needed at this time.
	2nd Baptist Church	short-term shelter	Good	No changes needed at this time.
	Congregational Church	short-term shelter	Good	No changes needed at this time.
	Steele Hill Resort	short-term shelter	Good	No changes needed 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 Office 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. Therefore, the Town of Sanbornton has chosen to become a participating community in the National Flood Insurance Program, and agrees to comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended) as detailed in this Floodplain Conservation District ordinance. Relief is available in the form of flood insurance as authorized by the National Flood Insurance Act of 1968.”

B. STATUS OF 2014 ACTIONS

The 2014 HMP contained nearly 40 recommendations. A review of the status of these actions reveals that eleven have been completed and eleven others are no longer considered pertinent. The status of the mitigation actions recommended in the 2014 plan is indicated in Status of Mitigation Actions matrix (below) as either, Completed, Deleted, or Deferred. Some of the deleted Actions are now listed above as “Current Plans, Policies, and Regulations”. Deferred Actions (or deferred portions of Actions) were carried forward to be considered as new Mitigation Actions (p. 61).

Status of Mitigation Actions from the 2014 Hazard Mitigation Plan

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
			Under \$10,000 or under 200 hrs.				
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.	No	Yes	Delete	<ul style="list-style-type: none"> • Updated field surveys and/or flood hazard analyses for new flood maps for Belknap County are currently in progress through FEMA. • Still Fair access to maps, but very good that the mapping update is in process.
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.	No	Partially	Delete	<ul style="list-style-type: none"> • In Article 4.G.3(a) of Zoning Ordinance for public property. The PB typically requires it with any project as a condition of approval. • Delete Action. Now have Good communication, but this must be maintained.
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	Addressed through alternate action	No	Delete	Now done annually through CIP Committee

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
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.	Yes	No	Delete	Zoning Ordinances and Planning Board approvals are enforced by the Zoning Enforcement Officer.
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".	Yes	No	Delete	Applications reviewed by the Planning Board Assistant
All	35	Local/regional hazard planning and response efforts are enhanced w/ digital and GIS (Geographic Information Systems) data.	Obtain GIS software and components for municipal offices	Addressed through alternate action	No	Delete	Utilize 3rd parties
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	Addressed through alternate action	No	Delete	Utilize 3rd parties
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.	Addressed through alternate action	No	Delete	<ul style="list-style-type: none"> • Not a current recommendation - Now greater involvement by FD in each individual application. • Works well

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
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.	Yes	Yes, ongoing	Completed	<ul style="list-style-type: none"> • LEOP Completed, HMP referenced • Works well. Continue to cross-reference Plans and consider referencing in next Master Plan update.
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.	Yes	Yes	Completed	Liability questions have been addressed.
Fire	10	There is an inadequate water supply system for fire suppression, leaving people & property at risk to fire hazards.	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	Yes	Yes	Completed	About \$2,000 annually for hydrant maintenance
Fire	15	There is an inadequate water supply system for fire suppression, leaving 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.	Addressed through alternate action	Not due to this Action.	Completed	Plans go to FD for comments
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.	Yes	Partially	Completed	Inspection requirement found in Section VI of the Site Plan Regulations. The PB may require inspection of subdivision construction by condition of approval.
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.	In process	No	Completed	Being Completed in 2020. EMPG grant. Construction cost to renovation as match (\$70K for match)

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
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)	Yes	Yes	Completed	We had a roadway evaluation study done by Underwood Engineers
All	30	The ability to inspect properties for potential hazards is quite limited.	Improve the town's code enforcement process through an enhanced permitting & inspection system.	Yes	No	Completed	Works well
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.	Yes	No	Completed	Works well
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.	Yes	Exists for new hydrants	Partially Complete	Completed Plan, working on implementing plan, three per year
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	No	Yes	Defer	The town departments have been working closer to help in some of these events
Wind/ Severe Winter	18	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Route 3 & local roads.	Work with the tree warden to develop a tree maintenance plan for town roads.	No	Yes	Defer	Plan has not been developed. In the coming years the highway department will come up with a plan.
Health	New 41	Insect -borne disease outbreaks seem to be on the rise in NH & 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.	No	Yes	Defer	Now a responsibility of new Health Officer

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
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.	No	Yes	Defer	Address in near term.
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.	No	Yes	Defer	The planning board has a draft copy that will help this, it has been on the agenda close to 3 years
All	28	The ability to inspect properties for potential hazards is quite limited.	Prepare a local Building Code for local adoption.	No	Yes	Defer	Encourage PB & BoS to embrace. Town does not come in to inspect state code. Permit for Zoning Compliance. Problem - Potential for substandard structure that may need to be addressed through permitting and enforcement.
			\$10,000 - \$99,999 or 200 - 2,000 hours				
All	37	Local/regional hazard planning & response efforts are enhanced with digital GIS data.	Digitize information for emergency response, hazard mitigation (i.e. tax maps, parcel data, co-occurrence of natural hazards, fault lines, etc.)	Yes	No	Delete	Most has been resolved with remote data - for Emergency Response
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.	Delete	No	Delete	Ponds are accessible

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
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.	Yes	No	Completed	Rebuilt ditches, reclaimed, and repaved the road
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.	Yes	No	Defer	Health Officer
Flood	5	Hermit Woods Road and Knox Mountain Road are all deteriorating. They flood or wash out.	Culverts should be replaced and enlarged and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	In process	Yes	Defer	We have completed the ditch work on some of the roads. Funding is an issue.
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.	Addressed through alternate action	Action needs to continue	Defer	<ul style="list-style-type: none"> • Now have prevention and outreach - schools & social media. • Works well
Wind/ Severe Winter	20	High winds, ice, and heavy snow can bring down trees and wires, especially along NH Rte 3 and local roads.	Adopt and fund roadside tree maintenance as a normal town expenditure.	No	Yes	Defer	The highway dept. has \$20K per/yr, but a plan is still in the works
Fire	16	Access to potential wildfire areas is limited.	Increase the Fire Department's resources to access wildfires.	In process	No	Defer	CIP approved replacement of Forestry Truck in 2022
Lightning	23	Lightning can cause damage to both structures and electronic equipment and data.	Install lightning protection systems on high risk structures.	No	Yes	Defer	

Hazard	ID	Problem	Mitigation Actions	Action been completed?	Problem still exist?	Completed, Delete, Defer	Comment 1
			\$100,000 or more or > 2,000 hrs				
Fire	6	Access to wildfires for control and suppression is limited.	Upgrades to the forestry truck are included in the 2016 CIP.	In process	No	Delete	Duplicate of ID #16
Fire	7A	Some feel that the response time to eastern portion of town is too long.	Increase EMS and fire staffing/hours within town.	Yes	Yes	Completed	<ul style="list-style-type: none"> • Hired FT. Call volume has increased. Staff no longer have to come to main station during daytime hours. • Note - on-call staff are getting stressed. • Works well, support.
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.	Yes	Yes	Defer	The staffing implemented in #7A is working for now. Will maintain communication with neighboring departments.
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	No	Yes	Defer	Fire Chief - if the trend in calls continues, there will be need for a fire truck & ambulance housed on eastern side of town in 5-10 yrs.
Flood	1	Chapman Pond Road and Black Brook Road washout.	Rebuild Chapman Pond Road to reduce flooding and washouts.	No	Yes	Partially Complete	<ul style="list-style-type: none"> • The bridge repair is complete • New Mitigation Action addressing Black Brook Road

It was noted in Chapter II that there is continued residential development in Sanbornton, especially on the easter side of town. This does raise some concerns regarding protection of these structures against fire. Some have also raised concerns about impacts to roads due to development leading to the potential for increased vulnerability. However, actions taken since the last plan update have worked to reduce the vulnerability of Sanbornton to hazards. These include actions such as updating the town's Floodplain Ordinance, development of a roadway evaluation, and improving EMS and fire staffing (Action #7).

C. MITIGATION GOALS AND TYPES OF ACTIONS

In the 2014 Plan, the committee affirmed its support for the goals stated in the State HMP at the time. The overall goals of the town of Sanbornton have not changed substantially since then. 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 (Check)

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. The table below lists the problems and actions along with the hazard(s) that they address. Also listed are 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. As noted earlier, actions or portions of actions which were deferred from the previous plan were brought forward in this table and considered along with new ideas; all were then treated as potential actions and prioritized in a similar manner (Section E). Note: The goals and their numbers are listed on the previous pages.

Problems and Mitigation Actions indicating Structure, Goal, Type of Action

ID	Hazard	Recommended Action	New/ Existing Structure	Goal(s)	Type(s)
		Under \$10,000 or under 200 hours			
1	Fire	Create and implement dry hydrant/cistern installation and maintenance plan.	Existing	2,5,7	Long-Term Continuity
2	All	Identify companies that can assist with debris removal and snow plowing in emergencies	Existing	2,3,4,10,11	Response
3	Wind/ Severe Winter	Work with the tree warden to develop a tree maintenance plan for town roads.	Existing	2,5,10, 11	Long-Term Continuity
4	Health	Research insect-borne disease outbreaks and the various measures that the town might take.	n/a	1	Prevention
5	Lightning & Solar/Space Weather	Investigate protection of all public buildings and equipment against power surges, communications interruptions, and structural damage due to lightning and solar/space weather.	Existing	2,9	Long-Term Continuity
6	All	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	New	1,4,7	Prevention
7	All	Prepare a local Building Code for local adoption.	New	1,2,5	Prevention
8	Earthquake	Education and outreach through town website	New	1,2,4,,5,13	Education & Awareness
9	Extreme Temps	Education and outreach through town website	New/ Existing	1,2,3,5,10	Education & Awareness

ID	Hazard	Recommended Action	New/ Existing Structure	Goal(s)	Type(s)
10	Infectious Diseases	Education and outreach through town website	n/a	1,3,,5	Education & Awareness
		\$10,000 - \$99,999 or 200 - 2,000 hours			
11	Health	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	n/a	1,3,12	Education & Awareness
12	Flood	Culverts should be replaced and enlarged 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
13	Fire	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 & New	1,3,5,7	Education & Awareness
14	Wind/ Severe Winter	Adopt and fund roadside tree maintenance as a normal town expenditure.	Existing	1,2,3,4, 10,11	Long-Term Continuity
15	Fire	Increase the Fire Department's resources to access wildfires.	Existing	1,3,4,7	Response
16	Lightning	Install lightning protection systems on high risk structures.	Existing	2,3,4,9	Property Protection
		\$100,000 or more or more than 2,000 hours			
17	Flood	Rebuild Chapman Pond Road to reduce flooding and washouts.	Existing	2,5,6	Long-Term Continuity
18	Fire/ Conflagration	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	Existing	1,3,4,7	Response
19	Fire/ Conflagration	Construct a fire sub-station in the eastern portion of town to improve response time	Existing	1,2,7	Response

E. PRIORITIZATION OF ACTIONS

After considering the Pros and Cons of each project, the Committee prioritized the various projects which had been identified. The committee considered the Social, Technical, Administrative, Political, Legal, Environmental, and Economic aspects of each action.

While many of the priorities of the town have not changed regarding hazard mitigation since 2014, the current Sanbornton HMP Update Committee placed a good deal of emphasis on whether a project was both publicly acceptable as well as financially feasible. In the end, the final scores were arrived at by group consensus. The table below 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 seven 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 seven category scores were summed for an overall project total. A maximum total score is 7, the minimum is -7. For a detailed table of the STAPLEE scores, see Appendix H.

The actions were scored within the three divisions based on the cost of implementation. In the lower cost group prioritization scores ranged from -1 to 6, in the medium cost group scores ranged from 1 to 7, and in the high cost group scores ranged from 0 to 3.

Recommended Mitigation Actions in Ranked Order

ID	Hazard	Recommended Action	TOTAL
		Under \$10,000 or under 200 hours	
3	Wind/ Severe Winter	Work with the tree warden to develop a tree maintenance plan for town roads.	6
2	All	Identify companies that can assist with debris removal and snow plowing in emergencies	5
6	All	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	5
4	Health	Research insect-borne disease outbreaks and the various measures that the town might take.	4
5	Lightning & Solar/Space Weather	Investigate protection of all public buildings and equipment against power surges, communications interruptions, and structural damage due to lightning and solar/space weather.	4

ID	Hazard	Recommended Action	TOTAL
8	Earthquake	Education and outreach through town website	3
9	Extreme Temps	Education and outreach through town website	3
10	Infectious Diseases	Education and outreach through town website	3
1	Fire	Create and implement dry hydrant/cistern installation and maintenance plan.	2
7	All	Prepare a local Building Code for local adoption.	-1
\$10,000 - \$99,999 or 200 - 2,000 hours			
15	Fire	Increase the Fire Department's resources to access wildfires.	7
14	Wind/ Severe Winter	Adopt and fund roadside tree maintenance as a normal town expenditure.	6
12	Flood	Culverts should be replaced and enlarged and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	5
13	Fire	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
16	Lightning	Install lightning protection systems on high risk structures.	2
11	Health	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	1
\$100,000 or more or more than 2,000 hours			
17	Flood	Rebuild Chapman Pond Road to reduce flooding and washouts.	3
18	Fire/ Conflagration	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	1
19	Fire/ Conflagration	Construct a fire sub-station in the eastern portion of town to improve response time	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 below is a matrix indicating the estimated cost of implementation, potential funding sources, the parties responsible for bringing about these actions, and implementation time frame.

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.

Implementation Schedule for Mitigation Actions by Time Frame

ID	Hazard	Recommended Action	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding (Responsible Party)
		Under \$10,000 or under 200 hours			
1	Fire	Create and implement dry hydrant/cistern installation and maintenance plan.	2021	40 hours Staff Time	Town Budget (Fire Dept.)
2	All	Identify companies that can assist with debris removal and snow plowing in emergencies	2021	20 hours Staff Time	FEMA, Town Budget (EMD)
3	Wind/ Severe Winter	Work with the tree warden to develop a tree maintenance plan for town roads.	2021	20 hours Staff Time	Town Budget (Highway Dept.)
4	Health	Research insect-borne disease outbreaks and the various measures that the town might take.	2021	20 hours Staff Time	Town Budget (EMD/Health Officer)
5	Lightning & Solar/Space Weather	Investigate protection of all public buildings and equipment against power surges, communications interruptions, and structural damage due to lightning and solar/space weather.	2023	± 100 hours Staff Time	Town Budget (Building Maint.)
6	All	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	2021	20 hours Staff and volunteer time	Town Budget (Highway Dept. & Planning)

ID	Hazard	Recommended Action	Time Frame	(in dollars or Staff/Volunteer Hours)	Potential Funding (Responsible Party)
7	All	Prepare a local Building Code for local adoption.	2024	60 hours Staff time	Town Budget (Planning)
8	Earthquake	Education and outreach through town website	2021	20 hours Staff Time	Town Budget (EMD/Health Officer)
9	Extreme Temps	Education and outreach through town website	2021	20 hours Staff Time	Town Budget (EMD/Health Officer)
10	Infectious Diseases	Education and outreach through town website	2021	20 hours Staff Time	Town Budget (EMD/Health Officer)
		\$10,000 - \$99,999 or 200 - 2,000 hours			
11	Health	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	2021	30 hours/year Staff Time	Town Budget (EMD/Health Officer)
12	Flood	Culverts should be replaced and enlarged and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	2021	ditch work - \$8/ft	FEMA, Town Budget (Highway Dept.)
13	Fire	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.	2021	40 hours/year Staff Time	Town Budget (Fire)
14	Wind/ Severe Winter	Adopt and fund roadside tree maintenance as a normal town expenditure.	2021	\$30,000/year	Town Budget (Highway Dept.)
15	Fire	Increase the Fire Department's resources to access wildfires.	2023	\$165,000	Town Budget (Fire Dept. & DRED)
16	Lightning	Install lightning protection systems on high risk structures.	2024	Potentially >\$10,000	Town Budget (Building Maint.)
		\$100,000 or more or more than 2,000 hours			
17	Flood	Rebuild Chapman Pond Road to reduce flooding and washouts.	2024	\$500K - \$1M	Town Budget (Highway Dept., FEMA, DOT)
18	Fire/ Conflagration	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	2025	> \$500,000 + \$100,000 annually	Town Budget (Fire), Warrant Article
19	Fire/ Conflagration	Construct a fire sub-station in the eastern portion of town to improve response time	2025	\$500,000 + staffing	Town Budget (Fire Dept.)

CHAPTER V: 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.

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 IV - 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 2024 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 Office, Fire Station, Library, and on the town website;
- ❖ Submit press releases for publication in the *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

The Sanbornton Board of Selectmen by majority vote does hereby adopt the Sanbornton Hazard Mitigation Plan, as a statement of policy. Actions for implementation under this statement of policy are set forth in priority order in the "*Implementation of Mitigation Actions*" and "*Plan Maintenance*" (page 66) sections of this document. All other sections of this Plan are supporting documentation for informational purposes only and not included as the statement of policy.

Date

Seal

SANBORNTON BOARD OF SELECTMEN

John Olmstead (Chair)

Jim Dick

Tom Salatiello

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.strafford.org/	
Upper Valley Lake Sunapee Regional Planning Commission.....	448-1680
http://www.uvlsrpc.org/	
NH Governor's Office of Strategic Initiatives	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.nhdf.org/	
Natural Heritage Inventory	271-2215
http://www.nhdf.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 OSI, 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 Sustainable Initiatives
 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.erdc.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

Agency	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 local daily paper *Laconia Daily Sun* prior to the Committee meetings. Several informational handouts and the 2014 Hazard Mitigation Plan were distributed to the committee and available at all meetings.

Town of Sanbornton Hazard Mitigation Plan Meeting

The Sanbornton Hazard Mitigation Plan Committee is in the process of updating its 2014 Hazard Mitigation Plan. The committee is represented by a variety of local interests including the Fire, Police, and Highway departments, along with the Planning and Select Boards and the Capital Improvements Committee. The group is reviewing the various 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 meet on July 13 at 1:00 PM via Zoom (Info below). 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 are being reviewed and evaluated through this process; in the 2014 Plan these included flooding, severe wind, and the transportation of hazardous materials.

With the update to the Hazard Mitigation Plan, town leaders will be able to evaluate the status of current plans, policies, and actions then develop and 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 contact Chief Paul Dexter, Emergency Management Director at (603) 286-4819 or David Jeffers, Planner, Lakes Region Planning Commission at 279-5341.

Via Zoom Conference – No Physical Location

Due to the COVID-19/coronavirus outbreak, the Sanbornton EMD has determined that the Sanbornton Hazard Mitigation Planning Committee will meet electronically as allowed under Governor Sununu's Emergency Order #12 pursuant to Executive Order 2020-04 and as extended by Executive Order 2020-14. The meeting will be accessible by the public via phone or video conference using Zoom. The meeting will be adjourned if the public is unable to access the meeting.

Join Online <https://us02web.zoom.us/j/84530859253>

Join By Phone Dial: 1-929-205-6099 (New York)

Meeting ID: 845 3085 9253

Who To Call For Help: If the meeting is not accessible, please call or email 603-279-5334 or admin@lakesrpc.org so that the EMD may be alerted

Town of Sanbornton Hazard Mitigation Plan Meeting

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Hazard Mitigation Plan Meeting »
The Town of Sanbornton is in the process of updating the Hazard Mitigation Plan; more information can be found...

RFP - Sale of Town Property »
More information on the requirements of the RFP - On Tax Deeded Property Sale 2020-03 can be found...

Updated Covid-19 Guidance for Sanbornton Town Office »
Please see the...

+ VIEW ALL

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Sanbornton Town Office
573 Sanborn Road, Sanbornton, NH 03269
Selectmen: 603-286-8303 Town Clerk: 603-286-4034

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Home

Hazard Mitigation Plan Meeting
Monday July 13th at 1pm
POSTED ON: JULY 10, 2020 - 4:02PM

The Town of Sanbornton is in the process of updating the Hazard Mitigation Plan; more information can be found [here](#). On **Monday, July 13th; at 1pm** the planning committee will be meeting and they are seeking residents input. The agenda for the zoom meeting can be found [here](#).

Sanbornton Town Office
573 Sanborn Road, Sanbornton, NH 03269
Selectmen: 603-286-8303 Town Clerk: 603-286-4034

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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

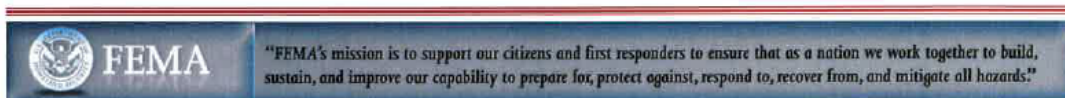
- **Public involvement** – In addition to government agencies involved in incident management, floodplain management and economic development, the planning process usually involves a range of stakeholders, including representatives of neighborhood groups, civic organizations, academia, environmental 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: AGENDAS, MINUTES, SURVEY, AND PARTICIPATION

This section contains copies of the Committee meeting agendas and a summary of participation. All Committee meetings were held on Zoom due to the COVID-19 pandemic. A five-question informational survey was made available through the town website and the Fire Department's popular Facebook page. Agendas were developed by the LRPC planner and meetings were chaired by the Emergency Management Director.

Sanbornton Hazard Mitigation Plan Update

July 13, 2020 1:00 PM

Via Zoom Conference – No Physical Location

Due to the COVID-19/coronavirus outbreak, the Sanbornton EMD has determined that the Sanbornton Hazard Mitigation Planning Committee will meet electronically as allowed under Governor Sununu's Emergency Order #12 pursuant to Executive Order 2020-04 and as extended by Executive Order 2020-14. The meeting will be accessible by the public via phone or video conference using Zoom. The meeting will be adjourned if the public is unable to access the meeting.

Join Online <https://us02web.zoom.us/j/84530859253>

Join By Phone Dial: 1-929-205-6099 (New York)
Meeting ID: 845 3085 9253

Who To Call For Help: If the meeting is not accessible, please call or email 603-279-5334 or admin@lakesrpc.org so that the EMD may be alerted

AGENDA

1. Introductions
2. Review and update on Committee member assignments
3. Plan Update Process
 - a. Hazard Identification
 - b. Risk Analysis
 - c. Identify Problems
 - d. Identify Mitigation Actions
 - e. Prioritize Mitigation Actions
 - f. Address Implementation
 - g. Draft Plan
 - h. Review & Adoption
4. Hazards
5. Opportunities for Public Input
6. Scheduling



FEMA



Sanbornton Hazard Mitigation Plan Update

August 10, 2020 1:00 PM
Via Zoom Conference – No Physical Location

Due to the COVID-19/coronavirus outbreak, the Sanbornton EMD has determined that the Sanbornton Hazard Mitigation Planning Committee will meet electronically as allowed under Governor Sununu's Emergency Order #12 pursuant to Executive Order 2020-04 and as extended by Executive Order 2020-15. The meeting will be accessible by the public via phone or video conference using Zoom. The meeting will be adjourned if the public is unable to access the meeting.

Join Online <https://us02web.zoom.us/j/87513663649>

Join By Phone Dial: 1-929-205-6099 (New York)
Meeting ID: 875 1366 3649

Who To Call For Help: If the meeting is not accessible, please call or email 603-279-5334 or admin@lakesrpc.org so that the EMD may be alerted.

AGENDA

1. Introductions
2. Status of Committee member assignments
3. Hazards
4. Risk Analysis
5. Problem Identification
6. Opportunities for Public Input
7. Scheduling

Plan Update Process

- A. Hazard Identification
- B. Risk Analysis
- C. Identify Problems
- D. Identify Mitigation Actions
- E. Prioritize Mitigation Actions
- F. Address Implementation
- G. Draft Plan
- H. Review & Adoption



FEMA



Sanbornton Hazard Mitigation Plan Update

August 24, 2020 1:00 PM
Via Zoom Conference – No Physical Location

Due to the COVID-19/coronavirus outbreak, the Sanbornton EMD has determined that the Sanbornton Hazard Mitigation Planning Committee will meet electronically as allowed under Governor Sununu's Emergency Order #12 pursuant to Executive Order 2020-04 and as extended by Executive Order 2020-16. The meeting will be accessible by the public via phone or video conference using Zoom. The meeting will be adjourned if the public is unable to access the meeting.

Join Online <https://us02web.zoom.us/j/86489972258>

Join By Phone Dial: 1-929-205-6099 (New York)
Meeting ID: 864 8997 2258

Who To Call For Help: If the meeting is not accessible, please call or email 603-279-5334 or admin@lakesrpc.org so that the EMD may be alerted.

AGENDA

1. Introductions
2. Review of Problems
3. Review of Potential Mitigation Actions
4. Costs associated with Potential Mitigation Actions
5. STAPLEE Evaluation of Potential Mitigation Actions
6. Opportunities for Public Input
7. Scheduling

Plan Update Process

- A. Hazard Identification
- B. Risk Analysis
- C. Identify Problems
- D. Identify Mitigation Actions
- E. Prioritize Mitigation Actions
- F. Address Implementation
- G. Draft Plan
- H. Review & Adoption



FEMA



Public Input Survey

A survey of the public was made available through the Town website and Public Safety Facebook page. Ten responses were received and the input was shared with the Committee early on in the process. Nine respondents were residents of Sanbornton, seven were homeowners, and three work in Sanbornton. The results are show below.

1. How concerned are you about the following disasters affecting Sanbornton?

Natural Hazards	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned	Number of responses	Total	Average
Value	4	3	2	1	0			
Avalanches	0	0	0	1	9	10	1	0.10
Drought	3	0	3	1	3	10	19	1.90
Earthquake	0	3	2	3	2	10	16	1.60
Extreme Temperature	0	3	1	0	6	10	11	1.10
Flooding	2	2	1	2	3	10	18	1.80
High Wind Events	3	2	2	1	2	10	23	2.30
Infectious Disease	0	3	1	3	3	10	14	1.40
Landslide	0	0	3	0	7	10	6	0.60
Lightning	1	3	2	3	1	10	20	2.00
Severe Winter Storm	2	3	2	1	1	9	22	2.44
Solar Storms and Space Weather	0	1	2	1	6	10	8	0.80
Tropical and Post-Tropical Cyclones	0	2	4	0	4	10	14	1.40
Wildfires	2	3	3	0	2	10	23	2.30
Technological Events								
Aging Infrastructure	2	1	3	0	4	10	17	1.70
Conflagration - Urban Fire	1	1	1	0	6	9	9	1.00
Dam Failure	1	2	0	0	7	10	10	1.00
Hazardous Materials	1	3	1	2	3	10	17	1.70
Known and Emerging Contaminates	0	4	1	2	3	10	16	1.60
Long Term Utility Outage	2	2	0	2	4	10	16	1.60
Radiological	0	0	1	4	5	10	6	0.60
Human-Related Events								
Cyber Event	1	2	1	2	4	10	14	1.40
Mass Casualty Incident	1	1	3	2	3	10	15	1.50
Terrorism/Violence	1	0	3	2	4	10	12	1.20
Transport Accident	2	1	3	1	3	10	18	1.80

2. What is the most effective way for you to receive information about how to make members of your household and you home safer from disasters? (Check up to three)

Newspaper			schools	
Radio	1		mailings	
Television	2		fire department	3
Internet	5		public workshops	
town website	1		town hall/building permit	1
electronic newsletter			text message	6
social media	9		Other	

3. Natural hazards can have a significant impact on a community but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in Center Harbor.

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important	Number of responses	Total	Average
	4	3	2	1	0			
Protecting private property	4	4	1	1	0	10	31	3.10
Protecting critical facilities (such as transportation networks, fire stations, medical facilities)	4	3	1	1	1	10	28	2.80
Limiting development in hazard areas	2	3	4	0	1	10	25	2.50
Enhancing the functions of natural features (such as streams and wetlands)	2	4	3	0	1	10	26	2.60
Protecting historical and cultural landmarks	3	6	1	0	0	10	32	3.20
Protecting and reducing damage to utilities	4	5	0	0	1	10	31	3.10
Strengthening emergency services (police, fire, ambulance)	4	2	0	0	4	10	22	2.20
Disclosing natural hazards during real estate transactions	2	4	2	1	1	10	25	2.50
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	2	4	3	0	1	10	26	2.60

Additional comments included:

1. Concerned with health of lakes and streams, especially from farming and logging activities as well as invasive species.
2. Standing dead trees and dying trees really need to be removed before they cause problems. I think the unwillingness of the road agent to start paving some of the 40 miles of roads in Sanbornton is dangerous and already leaves many residents stranded in or out of their homes during not only the winter season but also times of heavy rain and during mud season each year.

Meeting Minutes

Minutes of each Committee meeting were kept by the Fire Department's Administrative Assistant. These were circulated to the committee members and made available at the town website.

Hazard Mitigation Plan Sanbornton, NH 03269 Update 2020 Meeting Minutes

Date: June 15, 2020 1300 Hours

Tele-Audio Conference Attendees:

Chief Dexter – SFD Chief - pdexter@sanborntonfire.com
Trish Stafford – S Town Administrator - townadministrator@sanborntonnh.org
Chief Hankard – SPD - Chief - shankard@sanborntonpolice.org
Dave Jeffers – LR Planning Commission - djeffers@lrpc.org
Andy Sanborn – Planning Board Representative - sanbornelectric@gmail.com
Mike Capsalis – Health Officer - mikecapsalis@gmail.com
Steve Laurin – Zoning - planner@sanborntonnh.org
Jim Dick – Selectman Representative - navy87guy@gmail.com
Johnny Van Tassel – Highway - sanborntonhw@metrocast.net
Mary Baxter – SFD Admin Assistant - mbaxter@sanborntonfire.com

Dave opens discussion with explaining the necessity of updating mitigation plan every 5 years as directed from FEMA. He has been chosen to assist with mitigation planning fund and qualifying assistance. This town document must be also approved by town and meet requirements of a FEMA approved plan.

21 items will need to be checked off. This lengthy and cumbersome process used to also include out of state checks (Boston, MA) which would greatly prolong the finished document. Homeland Security Management has currently streamlined the process and additionally stays in-state throughout the duration of updates. Julia Chase and Kayla Henderson review plans in final format along with other tasks associated with emergency management. Prior to today's conference, Chief Dexter, circulated the 2014 HMP document via email to all attendees. Everyone has received document and will review recommendations and streamline.

The state of NH updated their HMP in 2018. Note that some national hazards were removed, such as "radon", and a few were combined or condensed, such as, "Cyclonic Events", instead of listing thunderstorm, tornadoes, etc separately. Be mindful of such changes to see how we can best fit these types of appropriate changes into our own town plan update.

Facilitating meetings, compiling information, sharing results electronically, should assist in creating an updated document that you and the community can use for support, guidance, and planning. Committee members shall follow up on tasks, generate ideas and actions, and evaluate them.

Identifying and confirming natural hazards, such as, floodplains emphasis, opportunities for public input via press releases, public surveys, posting online town website and facebook repost, and following a planning process are considerations for this. Critical facilities, new or

reclassified, landmarks, housing, development plans, zoning revisions, new roads, budgeting, town priorities, mitigating potential hazards and what they might cause. Rate, implement, and time frame to ensure meeting all checkmarks, board to Emergency Management for review, approval ending to adoption, adopted by Selectmen then FEMA for final approval.

Suggestion made that public participation and involvement for committee include town churches and schools. A detailed list is currently being compiled of all businesses, churches, schools, and will be distributed to all committee members soon.

Other considerations include, culverts, generator purchases w/ mitigation funds, hazardous events within 5 years, ice storms, and other that have impacted the town.

Consider 2008 HMP to 2014 HMP with changes/actions listed as “transfers or listings” on a separate appendix area instead of “deletions”. With this, it is easier to identify and capture past modifications and accomplishments. Could also act as a guide for future decision makers.

Geography demographics will be distributed soon which will also aid in our collection of necessary informational data.

Considerations for mention of Covid-19 in new update as this has had both a health and economic impact. Businesses, staffing issues, budgets, and general running of town, should be reviewed.

Our structure in moving forward with this HMP update process will consist of “ZOOM”, emails, and teleconferences. Previously, six to seven meetings for updates and then delays would extend the process of finalization. We are aiming for five to six meetings, possibly four, depending on production and progress.

The streamline process of approval can be state approved pending adoption (APA) then to Board of Selectmen and can follow with, a roughly or possible 45 day turn around time for final approval.

Email will be sent from Dave with information to get us started for updated plan.

This is a grant from the state of NH. It is important to “track your time” during this project. A “soft match” portion ties into this. We will keep an attendance for meeting, however, keep track of your total time invested on working on particulars of the updates.

Next Meeting:

MONDAY - JULY 13, 2020 “ZOOM” 1 PM

Thank You! – Meeting Adjourned: 1420
MB

Hazard Mitigation Plan
Sanbornton, NH 03269
Update 2020 Meeting Minutes

Date: July 13, 2020 1300 Hours

Tele-Audio Conference Committee Attendees:

Chief Dexter – SFD Chief - pdexter@sanborntonfire.com
Trish Stafford – S Town Administrator - townadministrator@sanborntonnh.org
Chief Hankard – SPD - Chief - shankard@sanborntonpolice.org
Dave Jeffers – LR Planning Commission - djeffers@lakesrpc.org
Andy Sanborn – Planning Board Representative - sanbornelectric@gmail.com
Steve Laurin – Zoning - planner@sanborntonnh.org
Jim Dick – Selectman Representative - navy87guy@gmail.com
Johnny Van Tassel – Highway - sanborntonhw@metrocast.net
Mary Baxter – SFD Admin Assistant - mbaxter@sanborntonfire.com

(9)

Public Attendees:

Donna Hepp – Chair, Belknap County Conservation District – dhepp3@gmail.com

(1)

Dave Jeffers opens meeting reiterating the Governor's Executive Orders with permissions and guidelines to run this meeting during Covid-19. A public notice had also been posted with regards to access for these meeting. Intent today was also to have a quick and thorough meeting. LRPC has Tracy, their Admin. Asst., to co-host on the line to assist with any technical needs and to help the public.

Andy suggests for a "folder" to be created that would include all information and documents in relation to this update and for it to be easily accessible for the public and ourselves. Trish remarks that, yes, this is possible.

Dave shares his documents on screen and reiterates his recent email information with attachments. Review, Updates, and member assignments.

In regards to Table #1 provide update on housing data, population. Dams and utilities to follow. Stephen provided additional 2018-2019 information. In reference to pages 6 & 7 in plan, some of this information could just be updated. Critical / Structural Values MS1 Form with general guidelines for estimates.

Dave will convert ops to a spreadsheet for ease of editing in regard to pages 23 & 24 sec 4 vulnerability to essential services, bridges, 911 shelters, public safety building (emergency center). Generators town office, public safety building. Chief Dexter mentions "EOP" was recently updated and he will pass these updates to HMP. With Identifying critical facilities, some of this information will also overlap from "EOP" to "HMP".

MITIGATION STRATEGIES A. CURRENT PLANS, POLICIES, AND REGULATIONS. For pages 34-40 Provide policies and operations. Policies are lengthy in general and will not be fully listed in revised plan. Zoning Ordinance will not be listed in its entirety, rather, reference certain ordinances as necessary is acceptable. Identify how effective it is. Is the zoning doing

what it is expected to do? In general, is it accurate and rated effectively resulting as good, fair, poor, or excellent? Ratings are located on page 34.

Under Planning, refer to flood plain ordinance, revise the term "P/T Planner".
Identify communications issues, electronic, that are poor in particular areas of town.

Fire Dept - update staffing changes, improvements, etc. and reiterate Capital Reserve findings at that time.

Regional Health Network was listed as "fair" last time. Update any change.
Make note or consider any necessary reference to oil burner installations.

Police – Certifications, Training, and "EOP" – make any necessary updates and additions to HMP.

Public Works – List staff, training, tree maintenance.

Town Administration – Coordinating and grounding against power surges, lightning strikes, etc. for preserving and protection with town records and library necessities.

Planning Dept – Updates needs, improvements, and comments.

Both Chief Dexter & Hankard will review and update communications.

Review and update hazardous events from 2014 to current. Examples include: Tornado Center Harbor 2014, Belmont event in this timeframe, and Sanbornton winds, downed powerlines, and microbursts 2016.

"NOAA" updates countywide since 2014. If there were events that did impact Sanbornton what were the effects regarding culverts? Were FEMA funds addressed? Were there injuries or fatalities? Be as specific to the town of Sanbornton as possible.

Consider "measurable impacts" such as thunderstorms, winter storms, heavy rain, extreme temperatures, and utility outages, etc.

Trish – Town match incomes (base pay) and all payroll burden including benefits as they report it. UTD for July and last fiscal year.

2014 Actions – Appendix, Tracking, Review annually. Continue to measure progress.

Donna responds to Drainage and culvert inventories. Refers to Black Brook Road Watershed. FEMA reviews a plan and looks at response and actions to mitigation hazards. Refer to pages 62 – 67.

Has it been completed? Does problem still exist? Updates from FEMA in reference to floods.

Everyone - Review and comment on your recognized areas and overlaps.
Color coding refers to similar problems of zoning and municipal issues.

Identify Hazards and update. There may not be many modifications. HSEM and FEMA regrouped. Use table to identify risks.

Dave will send new spreadsheet for committee to fill in. Consider natural hazards, aging infrastructure, solar storms, and more.

Questions with problems to solve, mitigation concerns, and working on updated plan? Email Dave. Information for future meetings will be distributed earlier prior to meeting.

The survey, that is a component for this update, was posted for public participation earlier this year. It had a result of 10-12 completed surveys. It will be re-posted on facebook soon. Press releases are viewed on the town website, "Daily Sun" newspaper, LRPC website, and facebook pages.

Donna - will provide if possible, a culvert assessment update in general, specifics for Black Brook watershed, and problem culvert on Black Brook Road.

Andy – Consider Turner Associates generated report. Report on website.

Johnny – Consider needs for Lower Bay Rd., Hughes Rd., Woodman Rd., Black Brook Rd., and more.

As a whole Update draft, edit, and return information with updates.

In parting, Chief Dexter reminds all to "Track your Time" during your "Homework assignments". Andy makes himself available with any material needs for zoning dept also.

Next Meeting:

MONDAY – AUGUST 10, 2020 "ZOOM" 1 PM

Thank You! – Meeting Adjourned: 1415
MB

Hazard Mitigation Plan
Sanbornton, NH 03269
Update 2020 Meeting Minutes

Date: August 10, 2020 1300 Hours

Tele-Audio (ZOOM) Conference Committee Attendees:

Chief Dexter – SFD Chief - pdexter@sanborntonfire.com

Trish Stafford – S Town Administrator - townadministrator@sanborntonnh.org

Chief Hankard – SPD - Chief - shankard@sanborntonpolice.org

Dave Jeffers – LR Planning Commission - djeffers@lakesrpc.org

Andy Sanborn – Planning Board Representative - sanbornelectric@gmail.com

Steve Laurin – Zoning - planner@sanborntonnh.org

Johnny Van Tassel – Highway - sanborntonhw@metrocast.net

Mary Baxter – SFD Admin Assistant - mbaxter@sanborntonfire.com

(8)

Public Attendees:

(0)

Dave Jeffers opens meeting reiterating the Governor's Executive Orders under Emergency Order #12 (extended EO 2020-15) with permissions and guidelines to run this meeting during Covid-19.

Dave received feedback on Zoning Floodplains. Dept. P Works policies, Updated spreadsheets on hazardous material in "Critical Facilities" problem identification and opportunities for public input. Has anyone had time to look at these? #3 (HMP Table #3)

Trish made materials available for all on public webpage. Link is on Main Page of Town's website. Currently they are all in PDF Form.

Conversation shifts to Generator Accountability and needs.

Johnny – DPW Garage - NO Generator - Need One.

(Delete Item #6 Duplicate)

Fire Dept. - Central Station - YES Have Generator

Fire Dept. - Chapel Station - NO Generator

SCS - School - NO Generator

(SCS IS an Emergency Shelter / Town Office is secondary EOC)

Delete Item #16 - Montessori School is no longer a school, is currently a private residence

#8 Emergency Fuel is NO longer available at Sanbornton Store (Irving). Fleet Cards are no longer accepted there. Only Tilton Irving now. Highway dept. has Diesel, however, if there is no power there is no fuel access.

WRHS (High School) is a Regional shelter.

We Need a Generator status on this location.

SCS is NOT a secondary EOC and reiterate NO generator currently. (Chief)

3 Churches are listed as Emergency Shelters. It is believed they currently are. They do NOT have generators. (Hankard)

Pyareo Home - Assisted Living facility - YES has Generator
 New Hampton Rd. Convalescent Home – NO Generator
 Public Library - NO Generator

#22 Town Park (2) Portable Classrooms are NO Longer available.

#29 – 37 Bridges (Johnny) Conversation
 Replaced Chapman, Brook, Hermit Woods, Plummer.
 No information on NHDOT Mosquito Bridge.

Main Evacuation Routes remain: I93, Rt 132, Rt 127, Rt 3
 2 Pump Stations: Bay Rd / Warrens Barn Rd
 Dulac Land Trust is still considered a “Seasonal Campground”

WRMS is considered a “Warming Area”

Consider Populations to protect Bed & Breakfasts. Inquiry about Shute Hill Rd Bed & Breakfast.

Cell Towers. 3rd Cell Tower is on Bay Rd.

This list is important to have in Plan. Next List Criteria is Critical Facility Vulnerabilities / Titles / 2018 Plan.

Delete Item 43 – Montessori School (?) (Hankard)

Orange Color indicates highest vulnerability / any issues with criteria – not many changes since 2014.

Leighton Estates / Broadview are “Population to protect”

(Steve L) questions about possible Charter School in the future on March Rd
 “Saplings” Preschool, Upper Bay Rd, “Population to protect” Additions 40+ students with 10 staff

Reminder that some wording has been replaced/omitted such as “Hurricane” is now “Post Tropical and Tropical”

2nd TABLE: Impact on Communications / Natural Hazard Updated Titles / Human Caused Cyber Events

3rd TABLE: Hazards IF Event occurs, How strong would it be?
 Impacts on human and property.

Line #19 Aging Infrastructure “Likelihood” there will be some sort of event related to aging infrastructure. (3) is high and lower number for less chance.
 BOS has supported improvements. Road assessment has been done.

FEMA will look at natural Disasters

Infectious Disease – Looking a “Covid 19” issue even though it is considered a National event. Locally has not been as big an issue. Does has Economic Impact. Supply Chain Issues / Shortages. *Business Change it to (3) probability occurring in ten years (2)*

Severe Winter Weather / Lightening / High Wind / Freezing Rain (3)

Financial Impact? (Johnny) Only received grants nothing particular to weather. Julia Chase is Field Representative and suggested Johnny speak to her about this. Declaration of Emergencies. Belknap County or State declared Emergency Events may have funds available.

Pg 4

Actions. Half +/- have been addressed. Continue to check if still exist, been completed, and comment etc.

#6 Inadequate Water Suppression System. Dry Hydrant Maintenance Plan has been completed. Problem still exists for new ones. (3) maintenance this year (3) on deck for next year

#7 Municipal Mitigation Risks. EOC is completed, reference for HMP.

#9 Insect Born Diseases – Ticks, Lyme Disease, EEE, etc
Research outbreaks and steps town would take for these

#10 Clarify Issues: Liability Roadside tree Maintenance.

YES Problem still exists. There was a plan when tree warden was active.

Johnny's plan is working areas branches and has his own plan with new warden. Trees on right of way are property owners, permission or public hearings. Property owner mostly has responsibility. In essence, (Johnny) no questions are asked if it is a real hazard.

YES need to develop plan and clarify liability of tree maintenance.

Dry Hydrants ALL still functioning. Time frame annually, \$2000 +/- to maintenance hydrants. \$3000 will replace one long one next year.

Existing Plan for specific road areas referenced for next five years, please send.

Table 2 Implementation Line #12 Investigate Protection been implemented? Exists? Situation still no lightning rods etc.

Adequate Water Supply Line #13 Planning Board. Site Plan review has come across Chief's desk.

#4 CIP Committee / Plan: No Formal Plan Infrastructure

#35 Local Regional Digital Data. GIS Software, 911 Mapping. Local 911 maps w/ overlay for dry hydrants (Do we need as a town to keep on list) Conversation with Julia – being completed 2020 EMPG (?) Grant

\$125,000 threshold for Grant, \$30-40,000 for new generator.

LINES

#36 GIS in town

#11 & #14 Inadequate Water Supply

#24 YES

#14 On site Water storage

Planning board must give permission reference sprinklers

Not Completed, Town does not inspect, Building Code is not enforced

Zoning Compliance, vulnerable builders/can take advantage

Inspection is done by Fire Chief \$216
Lack of Building and Code Enforcement

Town active participant in Public Health, Chief and Health Officer and health emergencies, GIS data, digitized tax maps.
(Chief) Resolved with remote data. IPADS in vehicles have been completed.
Problem No Longer Exists.

#17 Homeowners Prevention / Fire Hazards
YES – Plan Prevention through social media.

#16 Access Wildfire Areas
YES – CIP Approved. Forestry truck will be replaced in two years.
(Permission Approved Process)

#12 Cisterns – *NO Need* at those locations

#7ab & 8 – Response time to eastern portion of town. *Completed 1st one.* Increased the staffing to F/T. *Problem Still Exists* due to “Call Volume” Increase. 2nd one on Eastern Side “Is Improved” by F/T.

Staff no longer have to come during daytime. Improved “Bulk Call Volume” Still covering but “On-Call” Staff is Stressed. 28%
Sub-Station in future. 10-15 years Fire truck and Ambulance and Staff are long range plans. Currently we are 20+ calls over last year at this time.

Completed Forestry Truck Update – CIP 2016 Plan

In closing, Dave will put it out to all “cleaned up” and send any existing problems from there back to Dave. Reducing because of completion and no longer exists and suggested actions return.

Next Meeting:
MONDAY – AUGUST 24, 2020 “ZOOM” 1 PM

Thank You! – Meeting Adjourned: 1500
MB

Pg

Hazard Mitigation Plan
Sanbornton, NH 03269
Update 2020 Meeting Minutes

Date: August 24, 2020 1300 Hours

Tele-Audio Conference Committee Attendees:

Chief Dexter – SFD Chief - pdexter@sanborntonfire.com
 Chief Hankard – SPD - Chief - shankard@sanborntonpolice.org
 Dave Jeffers – LR Planning Commission - djeffers@lakesrpc.org
 Steve Laurin – Zoning - planner@sanborntonnh.org
 Jim Dick – Selectman Representative - navy87guy@gmail.com
 Mary Baxter – SFD Admin Assistant - mbaxter@sanborntonfire.com

(6)

Public Attendees:

Lisa Martin – Den Brae Representative

(1)

Dave Jeffers opens meeting Directing to Table #4 and attention on STAPLEE Method Rating system. Chief Dexter and Dave prepare to conduct meeting in an organized fashion. Dave shares his screen and discusses problem statements, cost evaluate with STAPLEE system. The list of actions that remain in the existing plan will break out into a list of costs and problem s to address. Mitigation action and what has been completed since last meeting and still exists. What has been filled in and / or deleted, or still a problem, deferred or additional comments. Pay attention to last column, “How well does it work?” Dave has added a light-yellow column on his own sheet.

S-Social T-Technical A-Administrative P-Political L-Legal E-Economic E-Environmental.

The first half dozen no longer needed thru CIP committee in town, seems to be working well.

#31 Ensure that project complies with enforcing zoning/planning ordinance working well (Steve) Town Engineer would proceed.

#32 (Steve/Chief D) Yes, part of typical review, looking at its Life Safety, DOT, PD,911, involved in the plan review. Critical that plans get out to all depts, so it conforms with HMP. Light yellow column clarify, liability, seems like it works well.

#10 & #15 Hydrants / H2O resource planning. \$2K annually devoted to hydrant maintenance.

(Chief D.) Yes, working well. \$3K as we have to replace them. Total= \$5K for that current year. #15 review by dept. heads specific by FD, subdivision proposals – cistern completed.

Insect born diseases, Dave did not reach out to Mike and will need to do this.

Lightening-on rated risk list.

Has action=noted, investigate all public buildings against lightening.

Not completed. Slow progress / surge suppressors. Yes – deferred / ongoing Keep in Plan.

Higher dollar = digitized emergency response/remote data.

(Chief) = Yes, works well.

Sant Bani systems work well.

Town has not been active in regional planning – Mike C. has he been sufficient in doing this?

Deferred, (Chief D.) says and has concerns about time and money allowed in budget. Leave it

there. Working poor, insufficient hours/time available. 2020 – Problem solved? No – Price Tag or under \$10K or 200 hours.

#20 Roadside Tree Maintenance – working fair – CIP good.

Install lightening protection, rods, on high risk structures. No (Chief D.) and not on the radar. Johnny would have been, now it is Transfer Station.

Forestry Truck is duplicate - getting rid

FT works well but volume increase cause increase stress call staff.

Winnisquam Station does not exist. Regionalization has not been talked about. (Chief D.) –

Problem does exist – Dave will save it, defer it, and leave as is.

Action Plan 2020 Final Plan will carry over comments from action evaluation. Would like to get rid of “completed or deleted”.

List of hazards / risks = Natural, Earthquake, Problems such as extreme temps, infectious disease, insects. High Mid-Range Score: Top or Mid third.

Solar storms – communication, Tropical and Post Cyclone – Food / Heavy Wind.

Default – to ensure education and outreach through website with public safety. Earthquake fault runs through the center of town. Earthquake resistant building? Do we have heating / cooling centers? Not officially (Chief D.) People generally shelter in place, they own generators.

We can educate through the town website. Solar Storm, space weather – leave it to State?

How to approach – State, Regional, Local Communications.

Infectious Diseases – Education / Outreach.

Carry over to STAPLEE page - Costs and responsible parties involved with each action.

Numbers will not change all that much. 40 hours of regional planning sessions unless I hear from you directly and adjust timeframes. (Chief D.) will adjust time frames and return.

STAPLEE – Move Health Officer up and appropriate money amount. Dave has done this.

STAPLEE begins at scoring 0=Neutral, Negative = -1, Positive = +1.

STAPLEE scoring complete scribed on chart by Dave.

Mentions include, regarding “Adopt and fund roadside tree maintenance as a normal town expenditure”, Doing a better job in last 5 years large trees still need limbs and/or take down remaining. Roadside maintenance vs. Tree maintenance.

Regarding, “Rebuild Chapman Pond Rd. to reduce flooding and washouts”, Check why Chapman Rd is still in here. Check with Johnny on completion of work.

Look at values and potential funds. Dave will work on Draft Plan. Chief D. will work on time frame to complete the Table. The Table will then be circulated to committee. Please chime in for further input and additional comments.

The next meeting date will be planned after a period of review time.

Next Meeting:

Date: TBD

Format: TBD

Thank You! – Meeting Adjourned: 1500

MB

Committee Member	Position	1/29/20	6/15/20	7/13/20	8/10/20	8/24/20	Dec.2020/ Jan. 2021
Chief Dexter	Sanbornton EMD, Fire Chief	X	X	X	X	X	X
James Dick	Sanbornton Selectman, Budget Committee		X	X		X	X
Mary Baxter	Sanbornton Adm FDin. Assist.		X	X	X	X	X
Stephen Hankard	Sanbornton PD, Chief		X	X	X	X	X
Johnny Van Tassel	Sanbornton RA		X	X			X
Andy Sanborn	Sanbornton PB, CIP, Solid Waste Committee		X	X	X		X
Mike Capsalis	Health		X				X
Stephen Laurin	Sanbornton Planning Ass't & Zoning Enforcement Officer		X	X	X	X	X
Trish Stafford	Town Administrator		X	X	X		X
	Visitor						
Donna Hepp	Belknap County Conservation District			X			
Lisa Martin	Den Brae – Golf Club					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)

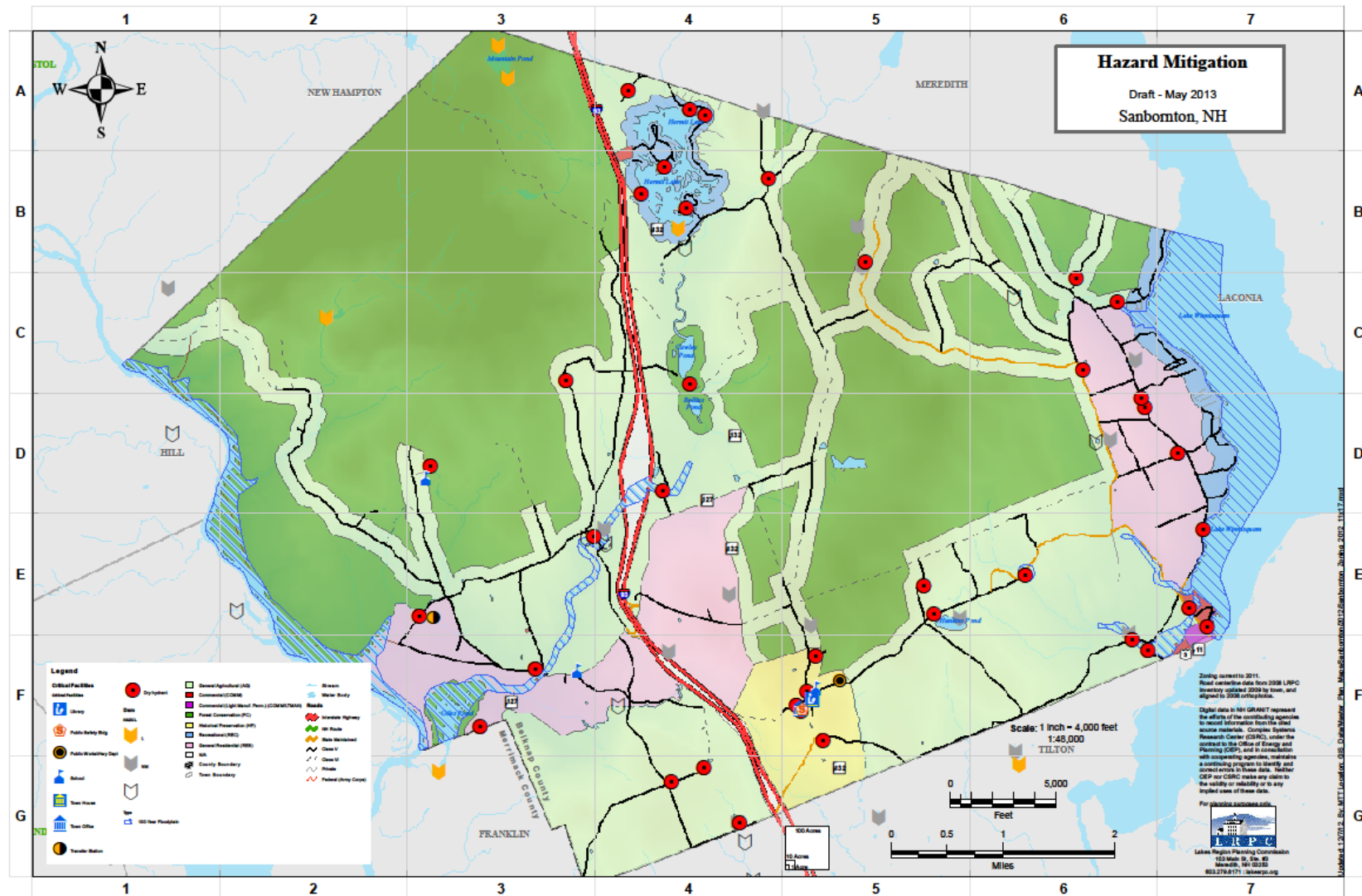
4 = National transportation Safety Board (NTSB)

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.⁴⁶

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

⁴⁶ <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 Classifications⁴⁷

Classification	Description
Non-Menace	<p>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:</p> <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	<p>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:</p> <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	<p>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:</p> <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: • 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	<p>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:</p> <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.

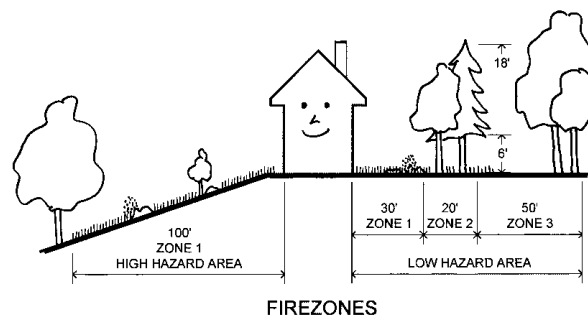
⁴⁷ NH DES Fact Sheet WD-DB-15 "Classification of Dams in New Hampshire", <http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf>. Accessed October 1, 2012.

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.⁴⁸

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

⁴⁸ <http://www.firewise.org> accessed September 21, 2012.

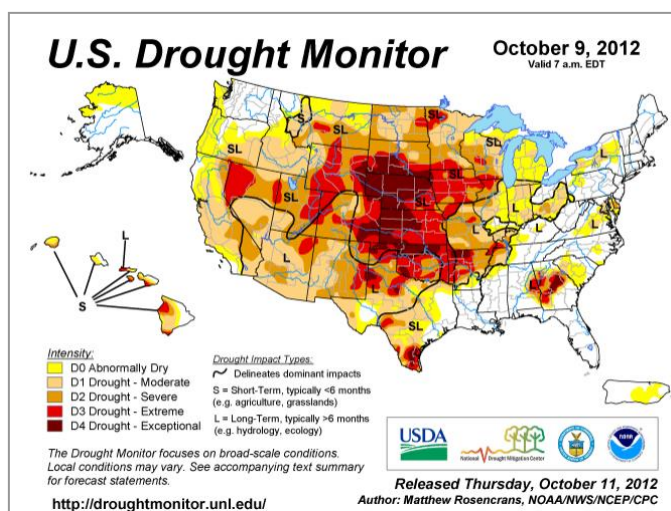
pre-heat the structures that are situated above them.

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 – 2002.⁴⁹ While much of the country experienced drought conditions in 2012, New Hampshire received adequate precipitation.⁵⁰



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.⁵¹

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	-

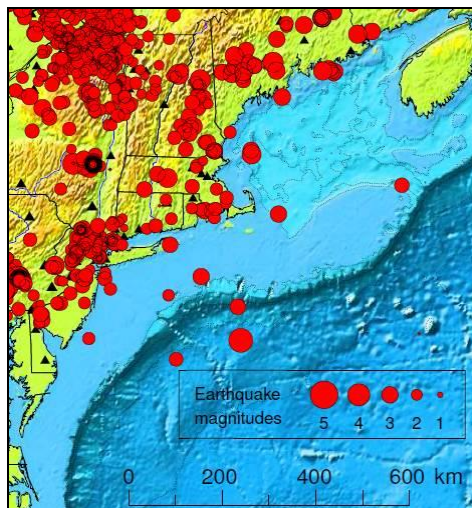
⁴⁹ <http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf> visited February 8, 2011.

⁵⁰ US Drought Monitor <http://droughtmonitor.unl.edu/>. Accessed October 9, 2012.

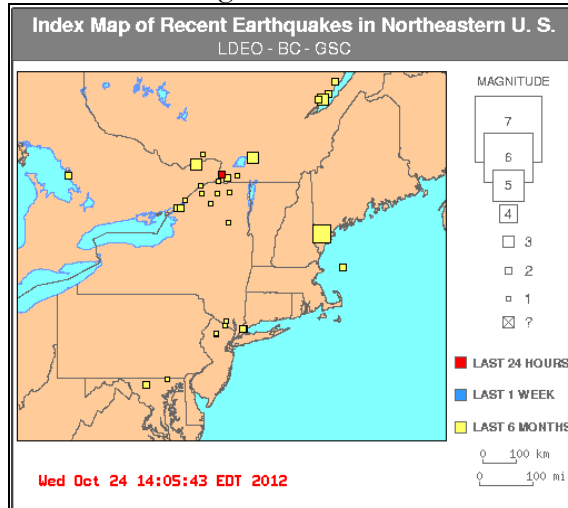
⁵¹ http://earthquake.usgs.gov/learn/topics/mag_vs_int.php, visited June 8, 2012.

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 Northeast⁵² 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.

⁵² 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.⁵³ 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

⁵³ <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.⁵⁴ 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-3.⁵⁵ 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.⁵⁶

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

⁵⁴ FEMA Hazards: Tornadoes <http://www.fema.gov/business/guide/section3e.shtm>, visited February 8, 2011.

⁵⁵ <http://www.tornadoproject.com/fscale/fscale.htm> visited March 8, 2011.

⁵⁶ <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.⁵⁷ 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/aboutsshhs.shtml>

According to NOAA, while 2010 was one of the busiest hurricane seasons on record, 2013 was one of the least active hurricane seasons.⁵⁸ 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

⁵⁷ http://www.fema.gov/hazard/hurricane/hu_about.shtm, visited January 25, 2011.

⁵⁸ 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.⁵⁹ 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.⁶⁰

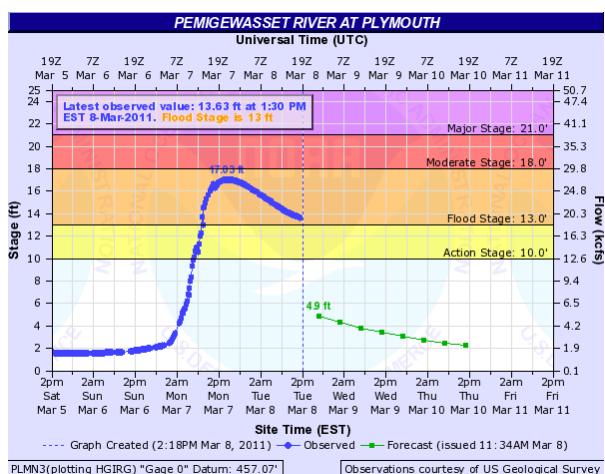
In the past five years no hurricanes have hit the region. By the time that a hurricane reaches central New Hampshire, it is rare that it retains the characteristics of a hurricane. Wind speeds usually dissipate but they can still bring a great deal of rainfall to the region.

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.⁶¹

⁵⁹ <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html>, visited January 25, 2011.

⁶⁰ <http://www.fema.gov/news/event.fema?id=2118> visited January 25, 2011

⁶¹ "Ice Jams in New Hampshire," CRREL, <http://icejams.crrel.usace.army.mil/tectran/IERD26.pdf> Visited July 25, 2013

APPENDIX H: PRIORITIZATION DETAILS

As the Committee began the process of prioritizing these actions, the group was introduced to the standard STAPLEE Prioritization Tool. This utilizes the standard STAPLEE categories (Social, Technical, Administrative, Political, Economic, and Environmental).

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 seven categories) was considered and scored -1, 0, or 1 with a 'minus one' indicating that the costs outweighed the benefits in a particular category, a 'plus 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 seven category scores were summed for an overall project total. A maximum total score is 7, the minimum is -7. Actual results ranged from -1 to 7. These ratings were arrived at through committee discussion and group consensus.

ID	Hazard	Recommended Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
		Under \$10,000 or under 200 hours								
1	Fire	Create and implement dry hydrant/cistern installation and maintenance plan.	0	1	1	0	-1	1	0	2
2	All	Identify companies that can assist with debris removal and snow plowing in emergencies	0	1	1	0	1	1	1	5
3	Wind/ Severe Winter	Work with the tree warden to develop a tree maintenance plan for town roads.	1	1	1	0	1	1	1	6
4	Health	Research insect-borne disease outbreaks and the various measures that the town might take.	1	1	0	0	1	0	1	4
5	Lightning & Solar/Space Weather	Investigate protection of all public buildings and equipment against power surges, communications interruptions, and structural damage due to lightning and solar/space weather.	1	1	0	0	1	1	0	4
6	All	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	0	1	1	0	1	1	1	5
7	All	Prepare a local Building Code for local adoption.	-1	1	-1	-1	1	0	0	-1
8	Earthquake	Education and outreach through town website	1	1	0	0	1	0	0	3

9	Extreme Temps	Education and outreach through town website	1	1	0	0	1	0	0	3
ID	Hazard	Recommended Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
10	Infectious Diseases	Education and outreach through town website	1	1	0	0	1	0	0	3
		\$10,000 - \$99,999 or 200 - 2,000 hours								
11	Health	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	0	1	-1	0	1	0	0	1
12	Flood	Culverts should be replaced and enlarged and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	1	1	0	1	1	0	1	5
13	Fire	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.	0	1	-1	0	1	1	1	3
14	Wind/ Severe Winter	Adopt and fund roadside tree maintenance as a normal town expenditure.	1	1	0	1	1	1	1	6
15	Fire	Increase the Fire Department's resources to access wildfires.	1	1	1	1	1	1	1	7
16	Lightning	Install lightning protection systems on high risk structures.	0	1	-1	0	1	1	0	2
		\$100,000 or more or more than 2,000 hours								
17	Flood	Rebuild Chapman Pond Road to reduce flooding and washouts.	0	1	0	0	1	0	1	3
18	Fire/ Conflagration	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	0	1	0	0	1	0	-1	1
19	Fire/ Conflagration	Construct a fire sub-station in the eastern portion of town to improve response time	0	1	-1	0	1	0	-1	0

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

Sanbornton Hazard Mitigation Plan, 2014

Sanbornton Master Plan, 2016

Sanbornton Zoning Ordinance 2020

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, 2019

State of New Hampshire Multi-Hazard Mitigation Plan, Update 2018

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

NH Division of Forests and Lands <http://www.nhdfi.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 J: 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/MSD/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 Earth Shake 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/maine-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.tornadopproject.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=stelprdb1042901
USACE Hydrologic Engineering Center (HEC)	http://www.hec.usace.army.mil/software/
Stormwater Manager's Resource Center SMRC	http://www.stormwatercenter.net
USGS Current Water Data for the Nation	http://waterdata.usgs.gov/nwis/rt
USGS Water Data for the Nation	http://waterdata.usgs.gov/nwis/
Topography Maps and Aerial photos	http://www.terraserver.com/view.asp?tid=142
National Register of Historic Places	http://www.nps.gov/nr/about.htm
National Wetlands Inventory	http://www.fws.gov/wetlands/
ICLUS Data for Northeast Region	http://www.epa.gov/ncea/global/iclus/inclus_nca_northeast.htm

SUSTAINABILITY/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.climateinortheast.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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APPENDIX K: 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)

Table B: Project Implementation Checklist

ID	Hazard	Recommended Action	Time Frame	Potential Funding (Responsible Party)	Status 2021	Status 2022	Status 2023	Status 2024
		Under \$10,000 or under 200 hours						
3	Wind/ Severe Winter	Work with the tree warden to develop a tree maintenance plan for town roads.	2021	Town Budget (Highway Dept.)				
2	All	Identify companies that can assist with debris removal and snow plowing in emergencies	2021	FEMA, Town Budget (EMD)				
6	All	Recommend that the Planning Board establish driveway standards that address access by emergency vehicles and a means of enforcement.	2021	Town Budget (Highway Dept. & Planning)				
4	Health	Research insect-borne disease outbreaks and the various measures that the town might take.	2021	Town Budget (EMD/Health Officer)				
8	Earthquake	Education and outreach through town website	2021	Town Budget (EMD/Health Officer)				
9	Extreme Temps	Education and outreach through town website	2021	Town Budget (EMD/Health Officer)				
10	Infectious Diseases	Education and outreach through town website	2021	Town Budget (EMD/Health Officer)				
1	Fire	Create and implement dry hydrant/cistern installation and maintenance plan.	2021	Town Budget (Fire Dept.)				
5	Lightning & Solar/Space Weather	Investigate protection of all public buildings and equipment against power surges, communications interruptions, and structural damage due to lightning and solar/space weather.	2023	Town Budget (Building Maint.)				
7	All	Prepare a local Building Code for local adoption.	2024	Town Budget (Planning)				

ID	Hazard	Recommended Action	Time Frame	Potential Funding (Responsible Party)	Status 2021	Status 2022	Status 2023	Status 2024
		\$10,000 - \$99,999 or 200 - 2,000 hours						
14	Wind/ Severe Winter	Adopt and fund roadside tree maintenance as a normal town expenditure.	2021	Town Budget (Highway Dept.)				
12	Flood	Culverts should be replaced and enlarged and ditch work should be completed along Hermit Woods Road and Knox Mountain Road to improve drainage and reduce flooding and washouts.	2021	FEMA, Town Budget (Highway Dept.)				
13	Fire	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.	2021	Town Budget (Fire)				
11	Health	Ensure that there is appropriate representation by the EMD at regional planning sessions for health emergencies.	2021	Town Budget (EMD/Health Officer)				
15	Fire	Increase the Fire Department's resources to access wildfires.	2023	Town Budget (Fire Dept. & DRED)				
16	Lightning	Install lightning protection systems on high risk structures.	2024	Town Budget (Building Maint.)				
		\$100,000 or more or more than 2,000 hours						
17	Flood	Rebuild Chapman Pond Road to reduce flooding and washouts.	2024	Town Budget (Highway Dept., FEMA, DOT)				
18	Fire/ Conflagration	Increase EMS and fire staffing/hours in coordination with communities near the eastern side of town.	2025	Town Budget (Fire), Warrant Article				
19	Fire/ Conflagration	Construct a fire sub-station in the eastern portion of town to improve response time	2025	Town Budget (Fire Dept.)				

APPENDIX L: COMPLETED ACTIONS FROM PRIOR PLANS

Per request of the committee, a list of completed actions from prior plans is included here.

2008 – 2014

Mitigation Action - 2008	2013 Status	Comment
Complete NIMS/ICS training for all municipal staff	Completed	Policy - See Table 13.
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.
Obtain shelter supplies (i.e. MREs, cots, blankets, toiletries)	Completed	Winnisquam Regional High School now serves as the Regional Shelter.
Construct secondary containment (accessway and pad) for dumpster and construction debris areas at the transfer station	Completed	
Construct a retaining wall behind the dumpster at the transfer station	Completed	
Enhance the phone system for communications during events.	Completed	
Install a shared server for all municipal departments	Completed	
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.
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.
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.

2014 – 2020

Problem	Mitigation Actions	Action been completed?	Problem still exist?	Comment
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.	Yes	Yes, ongoing	<ul style="list-style-type: none"> • LEOP Completed, HMP referenced • Works well. Continue to cross-reference Plans and consider referencing in next Master Plan update.
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.	Yes	Yes	Liability questions have been addressed.
There is an inadequate water supply system for fire suppression, leaving people & property at risk to fire hazards.	Repair or replace dry hydrants along Stage, Colby, Upper Bay, March, Hale, Johnson, and Hueber Roads	Yes	Yes	About \$2,000 annually for hydrant maintenance
There is an inadequate water supply system for fire suppression, leaving 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.	Addressed through alternate action	Not due to this Action.	Plans go to FD for comments
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.	Yes	Partially	Inspection requirement found in Section VI of the Site Plan Regulations. The PB may require inspection of subdivision construction by condition of approval.
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.	In process	No	Being Completed in 2020. EMPG grant. Construction cost to renovation as match (\$70K for match)
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)	Yes	Yes	We had a roadway evaluation study done by Underwood Engineers
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.	Yes	No	Works well
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.	Yes	No	Works well

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.	Yes	Exists for new hydrants	Completed Plan, working on implementing plan, three per year
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.	Yes	No	Rebuilt ditches, reclaimed, and repaved the road
Some feel that the response time to eastern portion of town is too long.	Increase EMS and fire staffing/hours within town.	Yes	Yes	<ul style="list-style-type: none"> • Hired FT. Call volume has increased. Staff no longer have to come to main station during daytime hours. • Note - on-call staff are getting stressed. • Works well, support.
Chapman Pond Road and Black Brook Road washout.	Rebuild Chapman Pond Road to reduce flooding and washouts.	No	Yes	<ul style="list-style-type: none"> • The bridge repair is complete • New Mitigation Action addressing Black Brook Road