TOWN OF NORTHFIELD

NEW HAMPSHIRE

Hazard Mitigation Plan Update 2019

Approved Date: September 10, 2019

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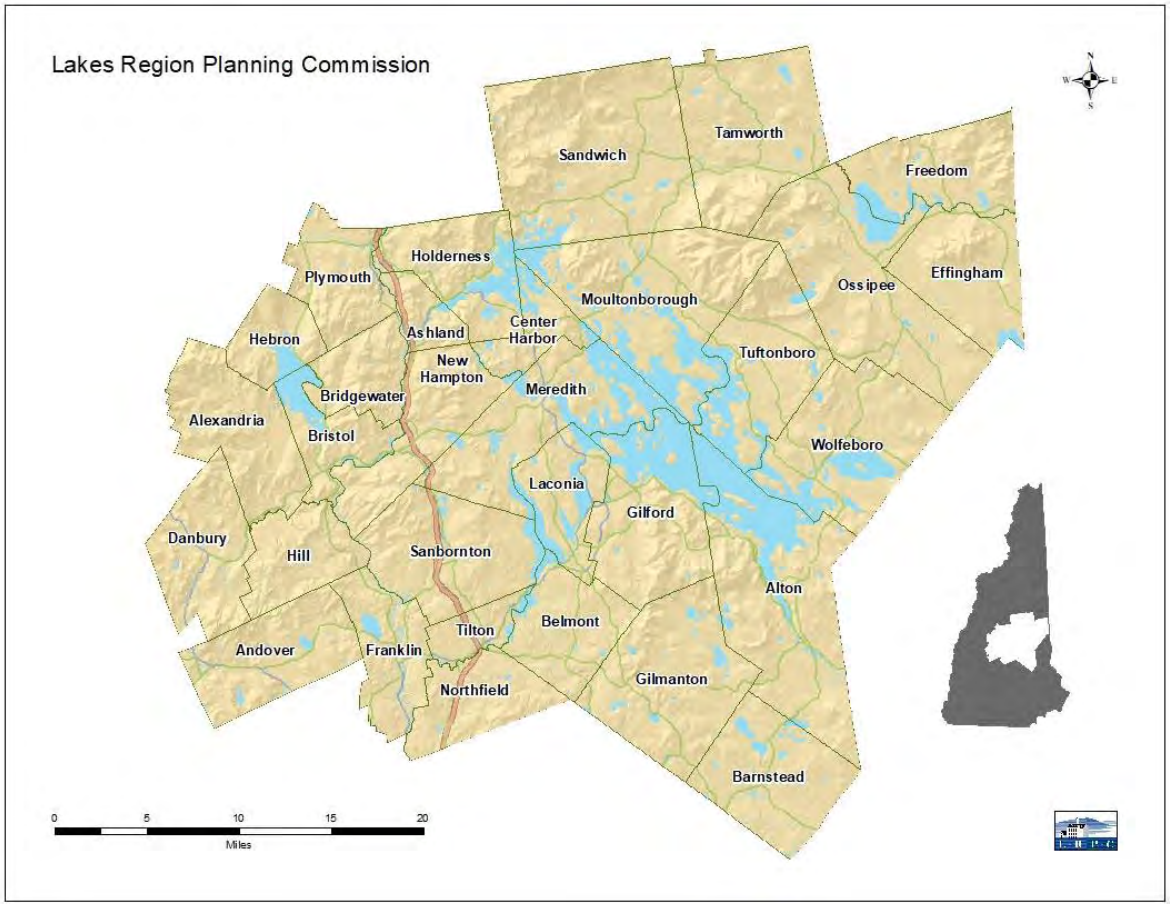

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Chapter 1 INTRODUCTION

Authority

The town of Northfield 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.

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.

Purpose

This Hazard Mitigation Plan is a planning tool to be used by the Town of Northfield, as well as other local, state and federal governments, in their effort to reduce the effects from natural and man-made hazards.

Background

Communities 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-caused events. The NH Department of Safety's Division of Homeland Security and Emergency Management (HSEM) makes funding available to assist communities with plan development and update. Communities 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).

<u>Why Develop a Mitigation Plan?</u>
The full cost of the damage resulting from natural hazards – personal suffering, loss of lives, disruption of the economy, loss of tax base – is difficult to measure. New Hampshire is subject to many types of natural hazards: flooding, severe winter weather, high wind events, earthquakes, and wildfires, all of which can have significant economic and social impacts. Some, such as tropical storms and hurricanes, are seasonal and strike in predictable locations. Others, such as floods, can occur anytime of the year and almost anywhere in the State.

Scope of the Plan

The scope of this Plan includes the identification of natural hazards affecting the Town, as identified by the Hazard Mitigation Planning Committee. The Committee also reviewed nine technological and human-caused hazards. The natural hazards reviewed under the scope of this plan were those that are outlined in the *2018 State of New Hampshire All-Hazard Mitigation Plan*.

Natural Hazards Considered	
Avalanche	Infectious Diseases
Coastal Flooding	Landslide
Inland Flooding	Lightning
Drought	Severe Winer Weather
Earthquakes	Solar Storms & Space Weather
Extreme Temperatures	Tropical and Post-Tropical Cyclone
High Wind Events	Wildfire

Methodology

The Northfield Hazard Mitigation Plan was first developed in 2005, and an updated Plan was adopted in 2012.

This revision of the 2019 Plan consisted of two committee meetings. Prior to the first meeting town department heads were notified and public notices were posted inviting residents and business owners to participate. (A Sample Public Notice, Agenda, and Notes can be found in Appendix B.) Committee members analyzed and revised various sections in each Chapter of the Plan and provided input to update them. The following meetings were convened:

April 15, 2019: Introductory/Organizational meeting with Police Chief/EMD and Police Lieutenant
May 23, 2019: First committee meeting
June 6, 2019: Second Committee Meeting

The Committee developed this Plan as a result of the above meetings and the following planning process.

Step 1: Form a Hazard Mitigation Planning Committee

Prior to the first Committee meeting, the Emergency Management Director invited town department heads, residents and business owners, requesting that they consider serving on the Committee. A press release was published in the local newspaper inviting residents, businesses, neighboring communities, school officials and other private non-profit interests to participate in the planning process.

Step 2: Set Hazard Mitigation Goals

At the first Committee meeting, members discussed Hazard Mitigation Goals from the 2012 Plan as well as Mitigation Goals in the *2018 State of New Hampshire All-Hazard Mitigation Plan*. The Committee adapted some of the State goals, and seven Hazard Mitigation Goals were adopted. This first step is extremely important in helping the committee understand the purpose of the Plan and the direction it should go. (See Hazard Mitigation Goals of the Town of Northfield, NH below.)

Step 3: Hazard Identification

The committee members identified 13 natural, technological, or human-caused hazards that pose High or Medium risk to the Town of Northfield. The results of this step can be found in Chapter 3.

Step 4: Critical Facilities Analysis

The Committee members updated a Critical Facilities List. Critical Facilities are listed in three categories: Facilities Needed for Emergency Response; Facilities Not Necessary for Emergency Response; and Places and Populations to Protect. The Critical Facilities map was reviewed and evaluated for vulnerability to the hazards identified in Step 3, and updated. The Critical Facilities and Potential Hazards map is in Chapter 4.

Step 5: Capability Assessment

The Committee members identified Existing Plans and Policies in place to reduce the effects of hazards. The results of this step can be found in Chapter 5.
5. Many of these plans and technical reports were reviewed and incorporated during the planning process. They include: The Northfield Emergency Operations Plan, Northfield Master Plan and Northfield's Natural Resource Inventory (2004).

Step 6: Develop Objectives

The committee reviewed and addressed the goals established at the first working committee meeting. For each hazard the committee identified the following objectives to address each goal:

- Prevention
- Property Protection
- Public Education and Awareness
- Natural Resource Protection
- Emergency Services
- Structural and Engineering Equipment

Step 7: Develop Specific Mitigation Measures

As a result of the objectives identified in step 6, the committee brainstormed specific

projects or mitigation actions to address identified hazard risks under the direction of the objectives and goals. Mitigation Actions were prioritized. The result is a list of Prioritized Hazard Mitigation Projects found in Chapter 6.

Step 8: Adopt and Implement the Plan

The Plan was submitted to NH Homeland Security and Emergency Management for Formal Approval. The Board of Selectmen formally adopted the Plan on Sept. 10. 2019

With respect to any ongoing mitigation projects, the lead and support agencies/people for such activity will be tasked with implementing the Plan's mitigation projects. The "Prioritized Mitigation Projects" list identifies responsibility, funding/support and a timeframe for each of the prioritized projects. The Emergency Management Director should be tasked with requesting annual reports as to the progress of each project.

Step 9: Monitor and Update the Plan

It is important that this plan be monitored and updated annually or after a presidentially declared disaster. Chapter 7 specifically addresses this issue.

Hazard Mitigation Goals Town of Northfield, NH

During the 2019 update, the Committee reviewed the goals that were established in 2005 and affirmed in 2011. Minor changes were made to improve conformity with the *2018 State of New Hampshire All Hazards Mitigation Plan Update*, particularly in the naming and categorization of hazards, and two additional goals were added related to climate change and continuity of operations and government.

The overall Goals of the Town of Northfield with respect to Hazard Mitigation are as follows:

1. To improve upon the protection of the general population, the citizens of the Town of Northfield and guests, from natural, technological, and human-made hazards.

2. To reduce the potential impact of natural, technological, and human-caused disasters on the Town of Northfield's:

- Emergency Response Capability
- Critical Facilities Infrastructure
- Private property
- Economy
- Natural environment
- Historic treasures

3. To improve the Town of Northfield's:
   a. Emergency preparedness and communication network.
   b. Disaster response and recovery capability.

4. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's Goals and Objectives.

5. To work in cooperation with Federal and State Hazard Mitigation Goals.

6. To address the challenges posed by climate change as they pertain to increasing the risk and impacts of the hazards identified within this plan.

7. To strengthen the continuity of town operations and government to ensure continuation of essential services.

ACKNOWLEDGEMENTS

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

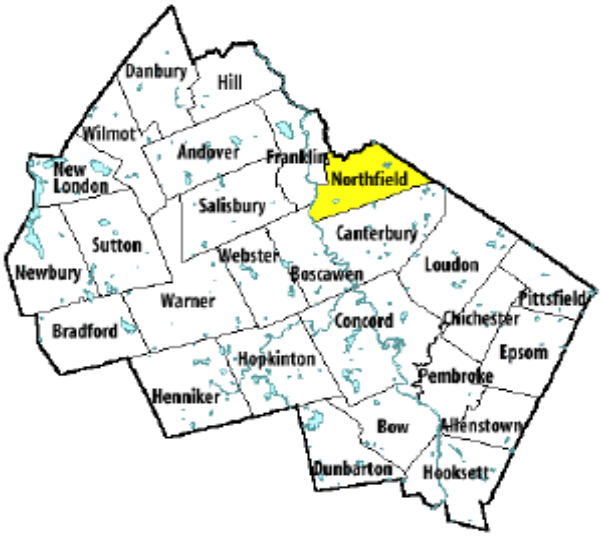
2019 Hazard Mitigation Planning Committee

Name	**Affiliation**
Chief John Raffaelly	Northfield Police Department/Emergency Management Director
Lt. Adam Seligman	Northfield Police Department
Stephanie Giovannucci	Northfield Assistant Town Administrator
Chief Michael Sitar	Tilton-Northfield Fire & EMS
Malcolm Pickering	Freudenberg-Nok
Deputy Chief Jim Joubert	Tilton-Northfield Fire & EMS
Joe Kidder	Highland Mountain Bike Park
Eric Keck	Winnisquam School District – Southwick School
Kristin (KK) Helling	PCC Structurals
Road Agent Andy Buteau	Northfield Public Works and Highway Department
Tracey Hutton	Northfield Town Administrator

Chapter 2 COMMUNITY PROFILE

Community Description[1]

The Town of Northfield, a rural community of 29.4 square miles, is located in central New Hampshire approximately 19 miles north of Concord, New Hampshire. Northfield is bordered by Tilton to the north, Belmont to the northeast, Gilmanton to the east, Canterbury to the south, Boscawen to the southwest, and Franklin to the west.



Merrimack County

Northfield has a temperate continental climate characterized by warm summers and cold winters. Temperatures during the month of July range from an average high of 83 degrees Fahrenheit (F.) to an average low of 57 degrees F.

Temperatures in January range from an average high of 31 degrees F. to an average low of 11 degrees F. Prolonged periods of extreme cold or heat are rare. Average annual precipitation is 41 inches, of which approximately 20 percent is snowfall.

Elevations range from approximately 250 feet at the Merrimack River to 1,506 feet at Bean Hill, the highest point in town. Scattered throughout the town are wet, swampy areas that serve as the headwaters for many of the streams. The high-lying bogs provide storage and tend to reduce he peak flood discharges on these small streams.

The principal stream in the Town of Northfield is the Winnipesaukee River, which originates at the outlet of Lake Winnipesaukee in Laconia. It flows in a southerly direction through Paugus and Opechee Bays and Winnisquam and Silver Lakes for a distance of approximately 12 miles, then in a westerly direction for 11 miles to its confluence with the Pemigewasset River in Franklin. The centerline of the stream serves as the boundary between Northfield and Tilton.

The Winnipesaukee River borders Northfield on the northern side of town and flows for 31,467 feet or 6 miles through the Town. The Merrimack River borders Northfield on the westerly side of town and flows for 16,926 feet or 3.2 miles through Town. The Merrimack is under Congressional study for designation to the Wild and Scenic River System. It is currently under the protection of the Wild and Scenic Act pursuant to Section 7 (b) of the Act. The Merrimack River is also designated into the NH Rivers Program.[2]

[1] 1979 Flood Insurance Study

[2] Northfield Natural Resource Inventory 2004

National Flood Insurance Program (NFIP)

The Town of Northfield has been participating in the National Flood Insurance Program since 1979. There are 8 flood insurance policies in force in Northfield with no repetitive loss properties. There have been no paid losses since 1979.

Northfield – National Flood Insurance Program

	Policies in Force	Insurance in Force	B, C, X Zone	A Zone	AE Zone	Number of Paid Losses	Number of Repetitive Losses
Single Family	6					0	0
2-4 Family	1					0	0
All Other Residential	1					0	0
Non-Residential	0					0	0
Total	8	$1,677,800	4	2	2	0	0

Northfield actively participates in floodplain management compliance through the administration of its floodplain ordinance. The Digital Flood Insurance Rate Maps (DFIRM) for Merrimack County were updated in 2010, and the town's Floodplain Ordinance was revised in coordination with NH Office of Strategic Initiatives (NH OSI) and adopted by town voters. The Building Inspector is responsible for enforcing the ordinance. Compliance is managed through the town's floodplain permit process, and is incorporated into the town's subdivision and site plan review regulations. The town's floodplain ordinance is available on the town website, which also includes links to FEMA floodplain maps and NFIP information.

DEVELOPMENT TRENDS

The 2014 Master Plan was utilized to review and incorporate development changes. Population and housing unit information (below) is from the NH Office of Strategic Initiatives.

Northfield Population Data

Date	Population	Change from Prior Decade
1990	4263	39.72%
2000	4548	6.71%
2010	4829	6.17%
2020	4854*	0.51%
2030	5111*	5.31%
2040	5331*	4.30%
	*Projected	

Northfield Housing Units Data

Year	Housing Units Permitted	Total Housing Units
2010	0	1969
2011	2	1971
2012	2	1973
2013	2	1975
2014	6	1981
2015	4	1985
2016	5	1990
2017	13	2003

Existing Land Use

The general existing land use patterns in Northfield can be characterized by the following:

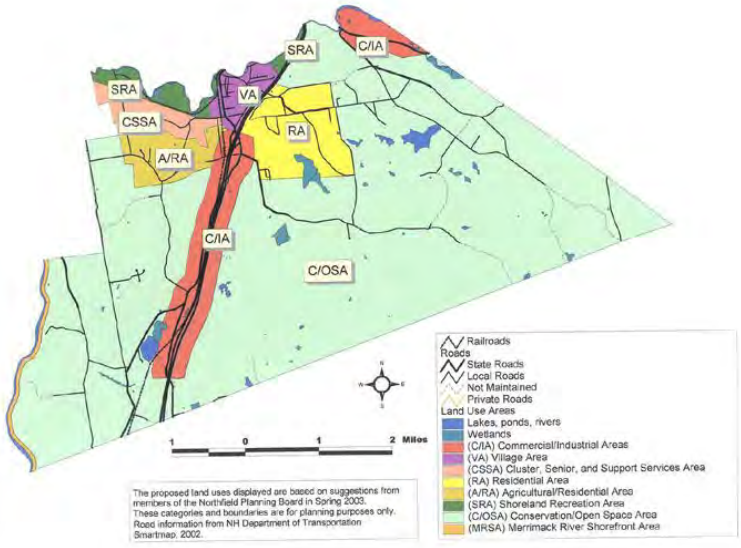
- A concentration of higher density mixed residential, commercial, industrial, and municipal uses in the village area
- Limited industrial and commercial development along NH Route 140 between Tilton and Belmont;
- Industrial development along the west side of Forrest Road southwest of the village;
- Low-density rural residential development along town roads throughout the community;
- Large areas of undeveloped forest lands throughout the southern portions of the community, especially in areas south of Bean Hill Road;
- Agricultural land and activities scattered throughout town.

Future Land Use

Based on the information provided above, as well as the 2014 Northfield Master Plan, the following goal for land use was adopted:

Encourage managed growth and development that supports economic opportunities, enhances the social and community fabric, and preserves the natural environment that current and future residents cherish.

Within the above Goal there are two specific objectives: Promote development practices that protect and preserve the open space and natural resources in Northfield; and continue to improve the land use development review processes.



Future Land Use Map – Prepared by Lakes Region Planning Commission

Overall, the community's vulnerability to hazards has remained about the same since the 2013 Plan update based on the fact that population increase between the 2010 and 2020 Census is projected to be only 0.51%, and the number of housing units has increased since the 2013 Plan by only 28.

Chapter 3 HAZARD IDENTIFICATION AND PROFILING

Disaster Risk

Northfield is prone to a variety of natural hazards. These include: flooding, dam breach, severe wind events (downbursts, hurricane residuals, and tornadic activity), wildfire, drought, earthquake, landslides, lightning strikes, extreme heat, severe winter weather and urban fire, in addition to man-made hazards. The following two tables which identify risk, probability and vulnerability of 13 natural hazards, 6 technological hazards, and 3 human-caused hazards, were completed by the Committee in 2019.

NORTHFIELD HAZARD RANKING 2019

HAZARD	TOTAL	RANK	RISK	TYPE
Severe Winter Weather	27.0	1	HIGH	Natural
Cyber Event	18.0	2	HIGH	Technological
Extreme Temperatures	16.0	3	HIGH	Natural
Infectious Diseases	14.0	4	MEDIUM	Natural
High Wind Event	13.33	5	MEDIUM	Natural
Inland Flooding	10.0	6	MEDIUM	Natural
Terrorism/Violence	10.0	7	MEDIUM	Human-Caused
Drought	8.0	8	MEDIUM	Natural
Conflagration	8.0	9	MEDIUM	Technological
Long-Term Utility Outage	8.0	10	MEDIUM	Technological
Lightning	6.67	11	MEDIUM	Natural
Transport Accident	6.67	12	MEDIUM	Human-Caused
Mass Casualty Incident	6.67	13	MEDIUM	Human-Caused
Tropical and Post-Tropical Cyclones	5.33	14	LOW	Natural
Hazardous Materials	5.33	15	LOW	Technological
Dam Failure	2.67	16	LOW	Technological
Wildfire	2.0	17	LOW	Natural
Earthquake	2	18	LOW	Natural
Avalanche	1	19	LOW	Natural
Landslide	1	20	LOW	Natural
Solar Storms & Space Weather	1	21	LOW	Natural
Radiological	1	22	LOW	Technological

The committee supplemented its hazard profiling by considering the natural 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 additional hazards that might affect the town.[1] The following is a state-wide summary of the frequency and severity of natural, technological, and human-caused hazards.[2]

[1] https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf visited July 15, 2019.

[2] https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-

Statewide Risk Assessment – Rating Table

Threat/Hazard	Classification	Human Impact	Property Impact	Economic/ Business Impact	Average Impact Score	Probability of Occurrence	Overall Risk	Counties Most Vulnerable
Avalanches	Natural	1	1	1	1	2	2	Coos, Grafton, and Carroll
Coastal Flooding	Natural	3	6	6	5	3	15	Rockingham and Strafford
Inland Flooding	Natural	6	6	6	6	3	18	Statewide
Drought	Natural	1	3	3	2	2	4	Statewide
Earthquakes (>4.0)	Natural	1	3	1	2	1	2	Statewide
Extreme Temperatures	Natural	3	1	1	2	3	6	Statewide
High Wind Events	Natural	3	6	3	5	3	15	Statewide
Infectious Diseases	Natural	3	1	3	2	2	4	Statewide
Landslide	Natural	1	3	3	2	3	5	Statewide
Lightning	Natural	1	3	1	2	3	6	Statewide
Severe Winter Weather	Natural	6	6	6	6	3	18	Statewide
Solar Storms & Space Weather	Natural	3	1	3	2	1	2	Statewide
Tropical & Post-Tropical Cyclone	Natural	6	6	6	6	2	12	Statewide
Wildfire	Natural	1	1	1	1	2	2	Statewide
Aging Infrastructure	Technological	3	6	3	4	3	12	Statewide
Conflagration	Technological	6	6	6	6	2	12	Statewide
Dam Failure	Technological	3	3	3	3	2	6	Statewide
Known and Emerging Contaminants	Technological	6	6	3	5	3	15	Statewide
Hazardous Materials	Technological	1	3	3	2	3	6	Statewide
Long-Term Utility Outage	Technological	6	6	6	6	1	6	Statewide
Radiological	Technological	1	1	3	2	1	2	Statewide
Cyber Event	Human-caused	3	1	6	3	3	9	Statewide
Mass Casualty Incident	Human-caused	6	1	3	3	1	3	Statewide
Terrorism/Violence	Human-caused	6	3	3	3	3	9	Statewide
Transport Accident	Human-caused	3	3	3	3	3	9	Statewide

Impact Scoring

- 1 – Inconvenience, reduced service/productivity, minor damages, non-life-threatening injuries
- 3 – Moderate to major damages, temporary closure and reduced service/productivity, numerous injuries and deaths
- 6 – Devastation and significant injuries and deaths, permanent closure and/or relocation of services, long-term effects

Probability Scoring

- 1- 0-33% Probability of occurring within 10 years (Low)
- 2- 34-66% Probability of occurring within 10 years (Medium)
- 3- 67%-100% Probability of occurring within 10 years (High)

The 2019 Northfield Hazard Mitigation Plan focuses on hazard events that pose a High or Medium risk to the town. (Risk = Probability x Extent x Average Impact. See Hazard Risk Assessment table on page 12.) Probability of Occurrence is defined in the table below:

	Probability of Occurrence
Highly Likely	90 to 100% probability of occurrence in the next year or a recurrence interval of less than 1 year
Likely	10 to 90% probability of occurrence in the next year or a recurrence interval of 1 to 10 years
Occasional	1 to 10% probability of occurrence in the next year or a recurrence interval of 11 to 100 years
Unlikely	< 1% probability of occurrence in the next year or a recurrence interval of more than every 100 years

Update-2018_FINAL.pdf visited July 15, 2019.

Hazard Risk Assessment

Northfield Hazards – 2019	Probability	Extent	Human Impact	Property Impact	Business Impact	Average Impact	Risk
Definition	Likelihood this will occur w/in 100 yrs	(Magnitude / Strength)	Probability of Death or Injury	Physical Loss or damage	Interruption of Service	Average of Human, Property, Business	Probability x Exent x Avg. Impact
Scale	1: Unlikely 2: Occasional 3: Likely 4: Highly Likely	1: Weak, 2: Moderate, 3: Severe, 4: Extreme	1: Low 2: Moderate 3: High 4: Catastrophic	1: Low 2: Moderate 3: High 4: Catastrophic	1: Low 2: Moderate 3: High 4: Catastrophic	1: Low 2: Moderate 3: High 4:Catastrophic	Low Medium High
Avalanches	1	1	1	1	1	1.00	1.00
Drought	2	2	2	2	2	2.00	8.00
Earthquakes	2	1	1	1	1	1.00	2.00
Temperatures	3	2	3	2	3	2.67	16.00
High Wind Events (Torn./Downb.)	2	2	3	4	3	3.33	13.33
Infectious Diseases	2	3	3	1	3	2.33	14.00
Inland Flooding	3	2	1	2	2	1.67	10.00
Dam Failure	1	2	1	2	1	1.33	2.67
Landslides	1	1	1	1	1	1.00	1.00
Lightning	2	2	1	2	2	1.67	6.67
Severe Winter Weather	3	3	3	3	3	3.00	27.00
Solar Storms & Space Weather	1	1	1	1	1	1.00	1.00
Tropical & Post-Tropical Cyclones	2	2	1	2	1	1.33	5.33
Wildfires	2	1	1	1	1	1.00	2.00
Mass Casualty Incident	2	2	2	1	2	1.67	6.67
Terrorism/ Violence	2	3	3	1	1	1.67	10.00
Haz Materials	2	2	1	1	2	1.33	5.33
L-T Utility Outage	2	2	1	2	3	2.00	8.00
Conflagration	1	3	3	3	2	2.67	8.00
Transport Accident	2	2	2	2	1	1.67	6.67
Cyber Event	3	3	1	2	3	2.00	18.00
Radiological	1	1	1	1	1	1.00	1.00

NATURAL HAZARDS

SEVERE WINTER WEATHER

Location: Severe winter weather occurs frequently in the northeast and the possibility exists throughout the town of Northfield for residents to have to withstand several days without power. It is felt that no one area of the region is at greater risk than another, but there are segments of the population that are more at risk. These include the elderly, people 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. Snow and ice storms can affect the entire town. The higher elevations are more likely to experience snow or ice before the lower terrain.

Extent:
A heavy snowstorm can be defined as one which deposits four or more inches of snow in a 12-hour period.[3] 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. Private roads are difficult for emergency response vehicles due to the restricted access to roads during winter. Severe winter affects the Spaulding Youth Center where the roads leading to the facility (Shed Road & Spaulding Road) can get narrow due to snow accumulation

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.

Snowstorms are a common occurrence throughout the Lakes Region. Blizzards may dump 12 to 36 inches or more of snow in a one- to three-day period. Though less frequent, blizzards can have a serious impact on structures, utilities, and services. The region typically receives greater than 66 inches of snow annually.[4]

An ice storm coats trees, power lines, streets, vehicles, and roofs with a very slick and heavy coating of ice. The major threats to a community due to ice storms 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, including the Lakes Region, coating everything with as much as three inches of ice. This storm was the most costly 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

[3] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html, visited February, 8, 2011.
[4] *Northeast States Emergency Consortium,* http://www.nesec.org/, visited January 25, 2011.

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.[5]

Average and Record Snowfalls for the Laconia, NH Airport[6]

In the winter months, the region may experience blizzard conditions. A blizzard is characterized by sustained winds or frequent gusts to 35 miles per hour or greater and considerable amounts of falling or blowing snow that last for a duration of three hours or longer. The combination of winds and snow reduce visibility to less than a quarter mile.[7] Note: The scale below is for the Regional Snowfall Index, which incorporates not only snowfall values but also the spatial extent of the storm and the population impacted[8].

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

New Hampshire generally experiences at least one or two nor'easters each year with varying degrees of severity. A nor'easter is 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 12hours to 3 days, while the duration of hurricanes ranges from 6 to 12 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. 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

[5] http://www.fema.gov/news/newsrelease.fema?id=48384, visited January 25, 2011

[6] Laconia is the nearest official station in New Hampshire with historical records. Weather Underground, Season Weather Averages https://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KLCI&SafeCityName=Effingham&StateCode=NH&Units=none&IATA=LCI.

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

[8] NOAA https://www.ncdc.noaa.gov/snow-and-ice/rsi/

combination of winds and snow reduce visibility to less than a quarter mile.[9] 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. 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.

History:

Hazard	Date	Location	Remarks/Description	Source
Snowstorm	2/8-/ 10/2013	Statewide	Total Public Assistance Grants Dollars obligated was $6,153,471.49. Snowfall amounts were generally 18". Declared Disaster, DR-4105.	FEMA
Snowstorm	1/26-1/28/2015	Statewide	Snowfall across the state ranged from 10 to 30 inches. Blizzard conditions led to coastal flooding and splash over. Total Public Assistance Grants Dollars obligated was $4,939,214.76. Declared Disaster, DR 4209.	FEMA
Snowstorm	3/14-3/15/2017	Statewide	Primary impact was damage to utilities. Two counties received public assistance totaling $1,687,439.45. Declared Disaster, DR-4316.	FEMA
Blizzard	3/13-3/14/2018	Statewide	Declared Disaster, DR-4371	HSEM
Nor'easter	4/27/2007	Statewide	Nor'easter caused flooding, damage in excess of $25 million	FEMA
Ice Storm	12/11/2008	Statewide	State emergency declaration after major power and transportation disruption. Exceeding $15 million in damages. Over 400,000 without power, 2 fatalities due to carbon monoxide poisoning.	NH HSEM

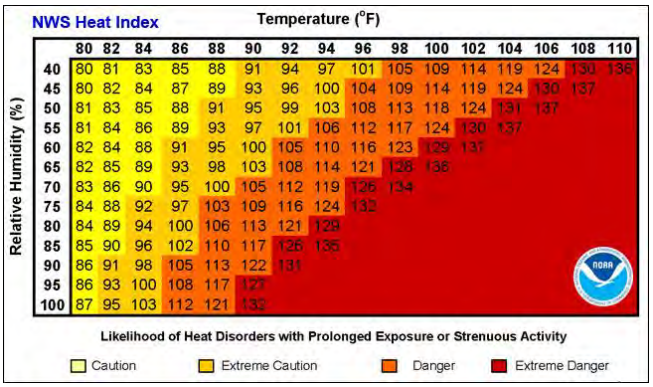
No impacts from Severe Winter Weather specific to Northfield have occurred since the last Plan update.

Probability of Occurrence: Highly Likely

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

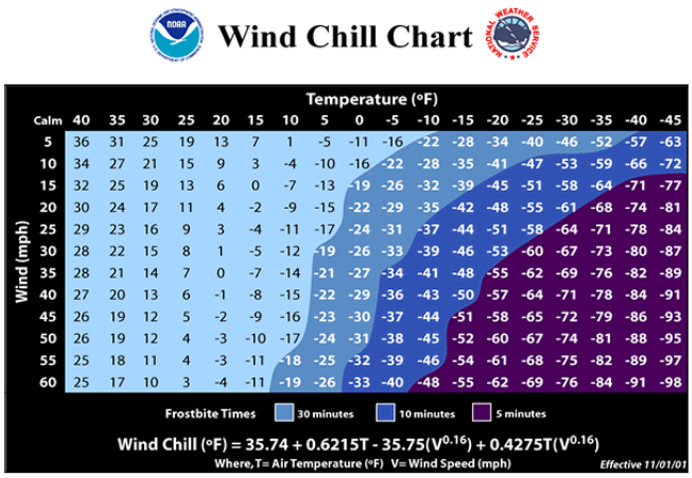
EXTREME TEMPERATURES

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. 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.

Extreme Cold events are caused by the southern transport of arctic air masses 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 presented is when the body loses heat faster than it can produce it. Wind acts to carry heat away from the body, therefore amplifying the body's perceived temperature and reducing core temperature. Cold disorders can include frostbite and hypothermia.



Frostbite occurs when uncovered skin and extremities are exposed to extreme cold and the body tissue is either injured or killed. Hypothermia is when the body is unable to heat itself at the rate it is being cooled and the body's core temperature drops 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; 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.

Location:
Extreme temperatures can occur anywhere throughout the town of Northfield. Exposure to the combination of cold and wind could be enhanced at higher, more exposed elevations.

Extent: Moderate

- Heat Advisory – Two or more consecutive hours of Heat Index values of 95-99 °F for two or more days *OR* any duration of Heat Index values of 100-104 °F. 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 °F 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.
- 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 is 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 is wind chill values are expected to be -30°F and winds are greater than 5 mph.[10]

History:

Event Date	Event Description	Impacts	Location	Additional Information
July 1911	Heat Wave	Record high temperatures set in Concord, New Hampshire	Statewide	Extreme heat was recorded from July 3rd through July 5th, with high temperatures ranging from 101-102°F in Concord on these days.[116] These three days account for three of the top 10 hottest days on record for Concord, New Hampshire.
March 2012	Heat Wave	Record high temperatures set in Concord, New Hampshire	Statewide	High temperature records in Concord, New Hampshire were broken for 5 consecutive days, with the hottest day being 84°F.
September 2017	Heat Wave	High temperature records set across New Hampshire	Statewide	Mount Washington set record a daily high temperatures for four consecutive days. Manchester, Concord, and other areas across the State and New England also saw daily temperature records broken.[117]
December 2017	Cold Wave	Record low temperatures set across New Hampshire	Statewide	Record low temperatures were set across the State as a result of a cold wave. Portsmouth saw a low of -1°F and Mount Washington saw a low of -33°F (with a wind chill of -51°). Wind Chill Advisories were posted in central and southern New Hampshire, and Wind Chill Warnings were posted for northern New Hampshire.
February 2018	One Day Winter Heat Wave	High temperature records set across New Hampshire	Statewide	Exceptionally strong high pressure ridge in place across the Eastern Seaboard. Record high temperatures were broken across the State.[118]

Northfield has experienced periods of extreme heat and extreme cold annually since the last plan update.

Probability of Occurrence: Likely

Infectious Disease
(Pandemic, epidemic)

Infectious diseases are illnesses caused by organisms, such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They're normally harmless or even helpful, but under certain conditions, some organisms may cause disease. 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 causing the infection, but often include fever and fatigue. Mild

[10] Adapted from *State of NH 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.

infections get better on their own without treatment, while some life-threatening infections may require hospitalization.

Location: Epidemics do occur in Northfield and other Lakes Region communities from time to time. 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. Franklin Regional Hospital has an emergency operations plan that addresses response to local and regional epidemics. The concerns associated with a pandemic include local capacity to respond to not only the residents of Northfield and surrounding communities but also any visitors.

Epidemics may be caused by infectious diseases, which can be transmitted through food, water, the

environment or person-to-person or animal-to-person, and noninfectious diseases, such as a chemical exposure, that causes increased rates of illness. Infectious diseases that may cause an epidemic can be broadly categorized into the following groups:

- Foodborne (Salmonellosis, E. Coli)
- Water (Cholera, Giardiasis)
- Vaccine Preventable (Measles, Mumps)
- Sexually Transmitted (HIV, Syphilis)
- Person-to-Person (TB, meningitis)
- Arthropod borne (Lyme, West Nile Virus)
- Zoonotic (Rabies, Psittacosis)
- Opportunistic fungal and fungal infections (Candidiasis)

Seasonal Flu V. Pandemic Flu Infographic[11]

Extent: Infectious disease is not a "natural hazard" and does not have a true "extent" as far as hazard mitigation planning goes, rather the focus is on preparedness and planning to minimize its impact on people. 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:

- *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

History: While there certainly have been minor outbreaks of flu in town, no major outbreaks of this or any other infectious disease was identified during this process. An epidemic could be categorized by 5 things: Foodborne illnesses (E. Coli), Water (Cholera), Vaccine Preventable (Measles), Sexually Transmitted (HIV), and Person-to-Person (meningitis).

Probability of Occurrence: Likely

[11] https://www.cdc.gov/flu/resourceenter/freeresources/graphics/seasonal-vs-pandemic-flu-infographic.htm

HIGH WINDS (TORNADO/DOWNBURST)

Location: On average, six tornadoes touch down somewhere in New England each year. There is no way of knowing where or when the next damaging tornado will strike as they are among the most unpredictable weather phenomena and could touch down in Northfield. Downbursts and other high wind events, on the other hand, are 10 times more likely to occur than tornadoes. All areas of town are susceptible to damage from high winds.

Severe wind events (tornado, downburst or high winds associated with thunderstorms) can occur anywhere in Northfield. Generally, the higher elevations (Bean Hill, Oak Hill, Bay Hill & Mount Tug) are more susceptible as well as more vulnerable due to the fact that they are home to many communication towers, including emergency response/mutual aid towers.

Extent: 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. 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.[12]

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.

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (18-25 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (29-41 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced	

Beaufort Wind Scale[13]

Downed limbs and trees can make roads impassable and bring down power and telephone wires. In Northfield, the major damage from downbursts or other high wind events comes from falling trees, which may take down power lines, block roads, or damage structures and vehicles. A tornado occurring in Northfield would cause considerable damage. Roofs could be

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

[13] https://www.spc.noaa.gov/faq/tornado/beaufort.html

torn off frame houses; mobile homes demolished; large trees snapped or uprooted; and light object missiles would be generated as a result of an F-2 Tornado.

History:

The Lakes Region is at risk of several types of natural events associated with high winds, including downbursts and tornadoes. The northeast is located in a zone that should be built to withstand 160 mile an hour wind gusts. There is no history of damage due to high winds in Northfield since the 2013 Plan.

Hazard	Date	Location	Remarks/Description	Source
Tornado	7/4/2014	Gilford and Center Harbor	A waterspout touched down on Lake Winnipesaukee briefly. No damage was reported. EF0	NOAA
Tornado	7/30/2015	Warner	An EF0 touched down briefly in Warner. It snapped about 25 trees and tore a portion of roof off a large storage building.	NOAA
Tornado	7/18/2016	Pittsburg	A tornado touched down with winds of about 75 mph and a maximum path width of about 200 yards. 100s of trees were snapped and wires went down in multiple locations.	NOAA

Tornado/Downburst
Although tornadoes are locally produced, damage paths can be in excess of onemile wide and 50 miles long.[14] The Fujita Scale is used to measure the intensity of a tornado (or downburst) by examining the damage caused in the aftermath, shown below.[15]

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)

Operational Enhanced Fujita (EF) Scale

Probability of Occurrence: Highly Likely

[14] FEMA Hazards: Tornadoes http://www.fema.gov/business/guide/section3e.shtm, visited February 8, 2011.
[15] http://www.tornadoproject.com/fscale/fscale.htm visited March 8, 2011.

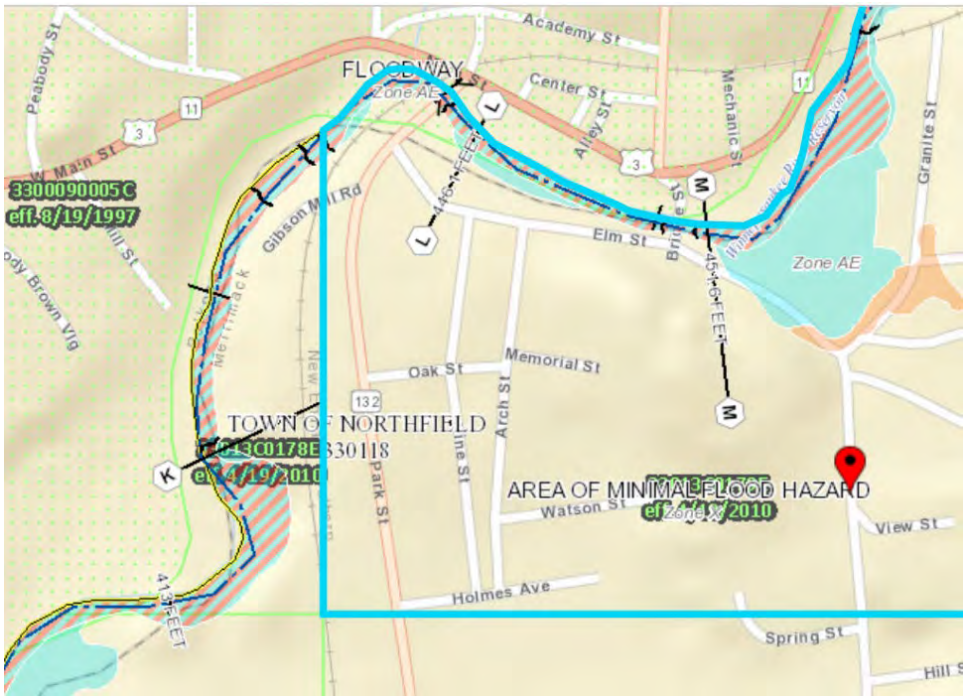
INLAND FLOODING

Flooding is defined as a temporary overflow of water onto lands that are not normally covered by water. It results from the overflow of rivers and tributaries or inadequate drainage.

Location: Flooding in Northfield is most likely to occur in the 100-year floodplain, as designated on the FEMA Flood Insurance Rate Maps. According to the Natural Resource Inventory for the Town of Northfield (2003), the Winnipesaukee River borders Northfield on the northern side of town and flows for 31,467 feet or 6 miles through the Town. The Merrimack River borders Northfield on the westerly side of town and flows for 16,926 feet or 3.2 miles through Town.

Extent: Moderate

Flooding is most commonly associated with structures and properties located within the 1% annual (or 100-year) floodplain. The Northfield Flood Insurance Rate Maps (2010, right) show the flood boundaries in the event of a 100-year flood, defined as a having a 1 percent chance of flooding each year. The Winnipesaukee River area is the most susceptible to flooding.



Special Flood Hazard Areas, Winnipesaukee River, Northfield – FEMA DFIRM

The area around Sandogardy Pond and Cross Brook is also located in the 100-year floodplain (1 percent annual chance of flooding). The area around Knowles Pond has a 2 percent annual chance of flooding, according to FEMA's DFIRM. The potential for flooding in Northfield is moderate overall, but the impact historically is minimal. The extent of damage caused by any flood depends on the depth and duration of flooding, the topography of the area flooded, velocity of flow, rate of rise, and the amount and form of development in the floodplain.

Deep floodwater carrying floating debris would create hazardous conditions for people and vehicles attempting to cross flooded areas. In depths of greater than 3 feet or in areas where the flow attains faster velocity, an adult could be swept off balance creating the danger of injury or drowning. People could be trapped in their homes or prevented from reaching home because of flooded roadways. Water lines may be ruptured, creating the potential for contaminated drinking water supplies or the loss of fire flows at other locations in the Town. Damaged sewer lines or septic systems could pollute floodwaters, creating a health hazard or contaminating Town well fields. Hazardous or toxic materials could be released, causing pollution or injury. The provision of emergency medical, fire or police assistance could be

seriously restricted or delayed due to obstructed access routes.

There could be significant damage to buildings. Many utilities could be damaged, including gas, electric, drainage, telephone, sewer and water lines. Many people could be out of work as the result of damage to local businesses and industries. In general, a major flood could affect the whole Town, either directly or indirectly.

History: Since 2013 one flood event was reported in the NOAA database for the Merrimack County, with no impact reported for Northfield. Four flood events around the state were designated as Declared Disaster events since the 2013 Plan.

Hazard	Date	Location	Remarks/Description	Source
Flood	6/26-7/3/2013	Grafton, Sullivan, Cheshire	The total Public Assistance was $5,903,017.87. **Declared Disaster, DR-4139**	FEMA
Flood	7/1-7/2/2017	Coos, Grafton	The total Public Assistance $699,661.26. Flood stages ranged from 9.00ft to 13.00ft. **Declared Disaster, DR-4329**.	FEMA
Flood	10/29 - 11/1/2017	Coos, Grafton, Carroll, Belknap, Merrimack, Sullivan	The total Public Assistance was $365,851.11. Flood stages ranged from 8.00ft to 13.00ft. **Declared Disaster, DR-4355**.	FEMA, NOAA
Flood	3/2-3/8/2018	Rockingham	**Declared Disaster, DR-4370.**	HSEM

Probability of Occurrence: Unlikely to Occasional

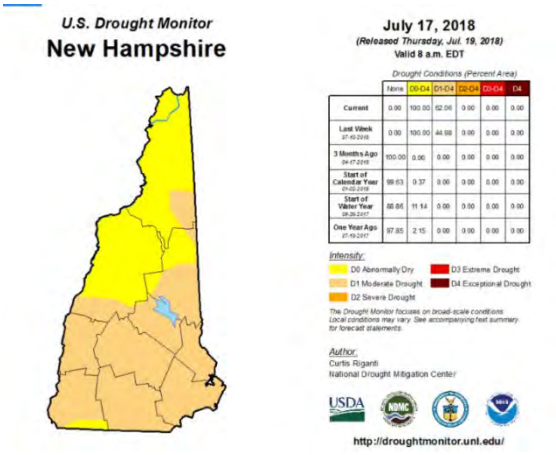
NOTE: Due to geographical reasons, the Committee did not consider the risk of Coastal Flooding. Northfield is not a coastal community.

DROUGHT

Location: Drought is a regional hazard, affecting broad sections of the state at any given time. The effects of a drought are felt locally based on local water resources and individual water uses.

Extent: Moderate
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 levels of rain or snow, 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. The US Drought Monitor[16] uses a five-level drought intensity scale ranging from Abnormally Dry to Exceptional Drought.

History: There have been six extended droughts in New Hampshire in the past century: 1929 – 1936, 1939 – 1944, 1947 – 1950, 1960 – 1969, and 2001 – 2002.[17] Southern New Hampshire received about half of its normal precipitation during 2016. Moderate drought conditions existed in Northfield and throughout New Hampshire during parts of 2015 and 2016. This continued

for nearly a year, ending in April 2017. [18] Although Northfield experienced drought conditions in 2015 and 2016, but no specific impacts on the town were noted. The cost of drought in Northfield is difficult to calculate as it would primarily result from diminished water supply and associated fire risk. Therefore, potential cost was not calculated.

Probability of Occurrence: Likely

LIGHTNING

Location: Lightning can strike anywhere in town. The higher elevation areas have an increased probability (such as the Spaulding Youth Center); however lightning strikes can occur anywhere in the Town.

Extent: Moderate
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.[19] 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.

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

[16] US Drought Monitor http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?NH.
[17] http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf.
[18] https://www.drought.gov/drought/states/new-hampshire
[19] http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-3.pdf accessed September 16, 2013.

and ground conditions.[20]

Lightning Activity Level (LAL)	
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.

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. Lightning damages cost the insurance industry more than $5 billion annually in the United States.[21]

In the Lakes Region, however, fewer than two lightning strikes occur per square kilometer annually.[22] While this value is not particularly high compared with other parts of the country, the frequency of storms with lightning is a significant local concern.

History: One lightning events occurred in the Lakes Region since the 2013 Plan that merited documentation, although not in Northfield. In June 2013 there was a strike at a scout camp in nearby Gilmanton (Belknap County), sending two dozen people to local hospitals; no deaths or serious injuries occurred. Numerous lightning events take place in Northfield each year; however, many go unrecorded. While there is no report of damage due to lightning strikes in Northfield since the 2013 Plan, it is useful to recall that the Spaulding Youth Center off Shedd Road in Northfield has been struck several times in past years, and in the Fall of 2009 the Police Department building was struck by lightning, causing $125,000 in damages to communication equipment (computer, phone, alarm, etc).

Hazard	Date	Location	Remarks/Description	Source
Lightning	6/24/2013	West Alton/Gilmanton	Large hail and wet microbursts were main concerns. 30 people were injured by lightning at a Boy Scout camp in Gilmanton.	NOAA
Lightning	7/18/2013	Melvin Village (Tuftonboro)	Wind damage and heavy rain were the main concerns as the storm moved through the region. Lightning struck two sailboats causing them to catch fire and sink in Lake Winnipesaukee.	NOAA

Probability of Occurrence: Unlikely to Occasional

[20] NWS Definitions webpage, http://graphical.weather.gov/definitions/defineLAL.html. Accessed June 3, 2014.
[21] *National Lightning Safety Institute webpage,* http://www.lightningsafety.com/nlsi_lls/nlsi_annual_usa_losses.htm visited February 8, 2011.
[22] *Northeast States Emergency Consortium,* http://www.nesec.org/ visited January 25, 2011.

TROPICAL AND POST-TROPICAL CYCLONES

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

- Potential Tropical Cyclone: Describes a disturbance that is not yet a tropical cyclone, however, it poses the threat of becoming one
- Tropical Disturbance: A cluster of showers and thunderstorms that flares up over the tropics. Usually 100 to 300 miles in diameter and generally moves westward.
- Tropical Storm: Sustained wind levels are between 34 knots and 64 knots (39 to 74 MPH)
- Hurricane: A tropical cyclone that sustains wind levels between 64 and 96 knots (74 to 111 MPH)
- Major Hurricane: A tropical cyclone with maximum sustained winds of 96 knots (111 MPH) and higher. Major hurricanes are classified as category 3 or higher.
- Post-tropical Cyclone: A former tropical cyclone, this term is used to describe a cyclone that no longer possess the sufficient tropical characteristics to be considered a tropical cyclone. Post-tropical cyclones often undergo an extratropical transition and form frontal boundaries. Post-tropical cyclones can continue carrying heavy rains and high winds and cause storm surge.

Location: A cyclone could affect all areas of Northfield. Stream crossings, floodplains, and steep slopes are most likely to be impacted.

Extent: Medium

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.[23] 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.

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.

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

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/aboutsshs.shtml

According to NOAA, while 2010 was one of the busiest hurricane seasons on record, 2013 was one of the least active hurricane seasons.[24] New Hampshire has not experienced a severe hurricane directly 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 areas were without

power. Damages were estimated at $22 million.[25] 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.[26]

History: 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 is retains the characteristics of a hurricane. Wind speeds usually dissipate but they can still bring a great deal of rainfall to the region. That was the case with the remnants of Hurricanes Irene and Sandy, which hit the area in 2011 and 2012 as tropical depressions. There was little impact to Northfield from these events.

Probability of Occurrence: Unlikely to Occasional

WILDFIRE

Location: The outer edge of the Town and the communities surrounding Northfield are heavily forested and are therefore vulnerable to this hazard, particularly during periods of drought.

Extent: A wildfire is defined as a fire in wooded, potentially remote areas that may endanger lives. New Hampshire has about 500 wild land fires each year; most of these burn less than half an acre. Much of the Lakes Region is forested and susceptible to fire. Resources in Northfield are limited and the town relies on mutual aid for any large scale wildfires.

[24] http://www.noaanews.noaa.gov/stories2010/20101129_hurricaneseason.html visited January 25, 2011 and http://www.noaanews.noaa.gov/stories2013/20131125_endofhurricaneseason.html,.
[25] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html, visited January 25, 2011.
[26] http://www.fema.gov/news/event.fema?id=2118 visited January 25, 2011

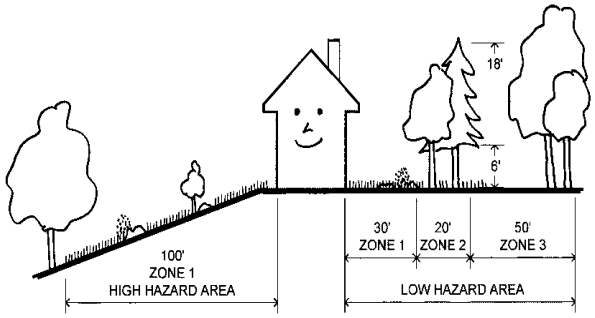
History: No local occurrences (more than 50 acres) within the town of Northfield. Between 2014 and 2018 there were 724 wildfires in New Hampshire, burning 2,007 acres, averaging just under 3 acres per fire. The number of fires per year ranged from 53 (2018) to 351 (2016).

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.

As once forested 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.

The greatest risk of wildfire in New Hampshire exists in the spring when the snow has melted and before the tree canopy has developed, and in the late summer into early fall. Appropriate planning can significantly reduce a community's vulnerability for woodland fires. There are four-zone suggestions from the Firewise community program that could be potentially helpful for Northfield's homeowners.[27]



FIREZONES

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.

Probability of Occurrence: Unlikely

[27] http://www.firewise.org accessed September 21, 2012.

EARTHQUAKE

Location: An earthquake would affect all areas of Northfield.

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. It is assumed that all of the buildings in the Town have not been designed to withstand seismic activity. More specifically, the older historic buildings that are constructed of non-reinforced masonry are especially vulnerable to any moderate sized earthquake. Those include:

- Historic district
- Union Sanborn School (an 1800's building and also a designated shelter)
- Spaulding Youth Center
- Library
- Town hall
- Tilton Memorial Arch

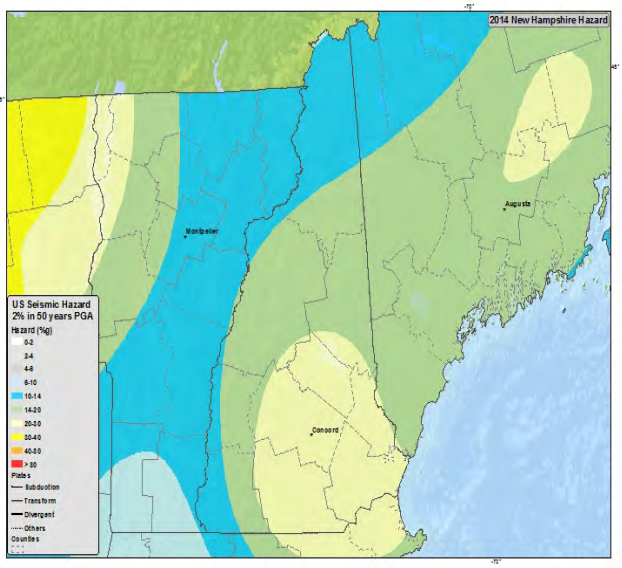
In addition, utilities (sewer, water, gas, etc) are susceptible to earthquake damage. Northfield has experienced the effect of small to moderate earthquakes that had minor to no effect on the town's infrastructure. However, if a large (6+ on the Richter Scale) occurred in or around the town, it is assumed that structural damage would be moderate to severe. 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.[28]

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.

[28] http://pubs.usgs.gov/gip/earthq4/severitygip.html, visited February 8, 2011.

New Hampshire is considered to be in an area of moderate seismic activity with respect to other regions of the country. This means the state could experience large (6.5 to 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 farther than they do in the western United States, possibly enlarging the area of damage.[29] The strongest earthquakes to strike New Hampshire occurred December 20 and 24, 1940 in the nearby Ossipee. Both earthquakes had a magnitude of 5.5 and were felt over an area of 400,000 square miles.



History: On average, the Lakes Region experiences an earthquake every other year, though these earthquakes are mild and go mostly undetected by people. No earthquakes have occurred in Northfield since the 2013 Plan.

Notable New Hampshire earthquakes are listed below with the extent of the hazard expressed in the Modified Mercalli Intensity scale and the Richter Magnitude.[30]

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	-
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

[29] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html visited February 8, 2011.
[30] https://earthquake.usgs.gov/learn/topics/mag_vs_int.php, visited August 2019.

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.

Probability of Occurrence: Unlikely

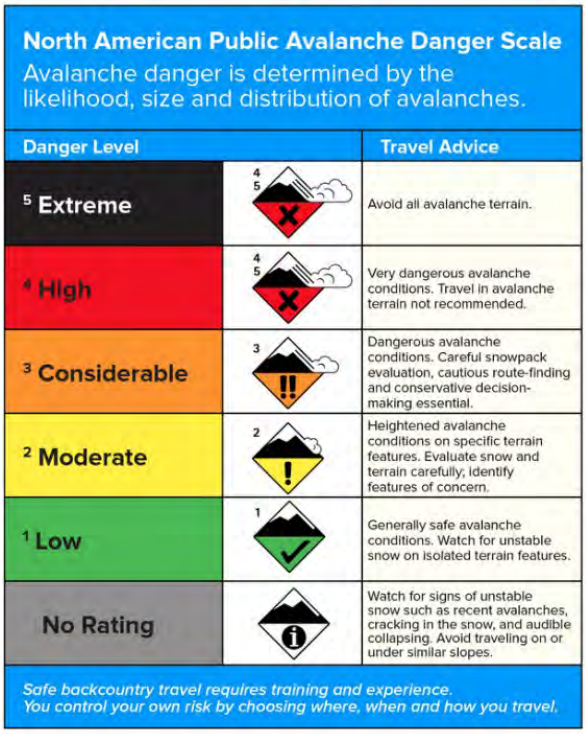
Avalanche

An avalanche is a slope failure, like a landslide, consisting of a mass of rapidly moving, fluidized snow that slides down a mountainside. Although unlikely, an avalanche could cause damage to facilities such as Bean Hill Road and the nearby Highland Mountain Bike Park, and have life safety impacts.

Location: Northfield's terrain is characterized by gently rolling hills. The town's highest point is Bean Hill, elevation 1,499 ft.[31]

History: There is no history of avalanche in the town of Northfield, and no known impacts.

Probability of Occurrence: Unlikely



Landslide

Location: 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. Slopes in excess of 25% are susceptible to

landslides, especially where soils are thin or highly erodible. These areas are generally located near mountain peaks and along the sides of ridges. In addition, the increase of single residential homes on steep slopes will create higher risk (Shaw Road and Payson Road). Approximately 6.5 miles or 22.6% of land throughout Northfield contains areas of steep slopes, or areas where development would be restrictive.

Extent: While no universally accepted standard or scientific scale has been developed for measuring the severity of all landslides, severity can be measured several other ways:

- Steepness/grade of the Slope (measured as a percent)
- Geographical Area

[31] http://elevation.maplogs.com/poi/northfield_nh_usa.179729.html

  - Measured in square feet, square yards, etc.
  - More accurately measured using LiDAR/GIS systems
- Earthquake, either causing the event or caused by the event (measured using the Moment Magnitude Intensity or Mercalli Scale)

There are also multiple types of landslides:

- Falls: A mass detaches from a steep slope or cliff and descends by free-fall, bounding, or rolling

- Topples: A mass tilts or rotates forward as a unit
- Slides: A mass displaces on one or more recognizable surfaces, which may be curved or planar
- Flows: A mass moves downslope with a fluid motion. A significant amount of water may or may not be part of the mass

Like flooding, landslides are unique in how they affect different geographic, topographic, and geologic areas. Therefore, consideration of a multitude of measurements is required to determine the severity of the landslide event.

The extent of landslides in Northfield impacts a very limited area. Roads are likely to experience erosion during heavy rain events but a large scale landslide most likely would damage only a limited number of structures. Landslide activities are also often attributed to other hazard events. For example, during a flood event, a death occurred in Alton when a mass of saturated soil collapsed. This death was attributed to the declared flood event. Also, during the 2007 Nor'easter a landslide occurred in Wilton, resulting in the temporary closure of Route 101. The extent of landslide and avalanche in Northfield is low.

History: There have been no reports of landslides or injuries or damage due to landslides in Northfield.

Probability of Occurrence: Unlikely

Solar Storms & Space Weather

The term space weather is relatively new and describes the dynamic conditions in the Earth's outer space environment, similar to how the terms "climate" and "weather" refer to the

conditions in the Earth's lower atmosphere. Space weather includes any and all conditions and events on the sun, in the solar wind, in near-Earth space, and in our upper atmosphere that can affect space-borne and ground-based technological systems. As society becomes increasingly reliant on electronics and technology, the hazards presented by space weather are not to be underestimated.

Location: All of Northfield and the entire State of New Hampshire are at risk of solar storms and space weather. Solar storms and space weather always impact the Earth and its atmosphere and are therefore an ongoing threat throughout New Hampshire, as well as in Northfield. 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.

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 following Radio Blackout Scale (right)[32] offers a measure of the extent of solar storms on radio communications.

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^{-3})	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^{-3})	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^{-4})	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^{-5})	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^{-5})	2000 per cycle (950 days per cycle)

History:
No significant events reported in New Hampshire. 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.[33]

Probability of Occurrence: Unlikely

[32] 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

[33] 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.

Technological and Human-Caused Hazards

Cyber Event

The following information is adapted from the 2018 State of New Hampshire All-Hazards Mitigation Plan.

Definition: 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.

Location: The entire State of New Hampshire is vulnerable to a Cyber Event, including the Town of Northfield, which over the years has increased its reliance on computers and the Internet, escalating the risk of a cyber-attack. Potential cyber event targets include critical

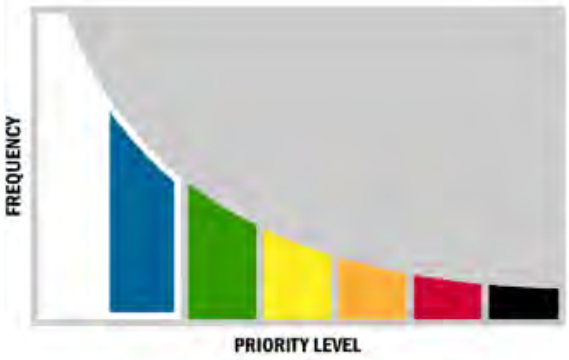
infrastructure; the public and private sector; and private citizens via cyberattacks such as security breaches, spear phishing, and social media fraud.
Authorized under Executive Order 2016-06, the New Hampshire Cyber Integration Center (NH CIC) serves as the unified State center for coordinating cybersecurity monitoring, sharing information, performing cybersecurity threat analysis, and promoting shared and real-time situational awareness between and among executive branch agencies and departments.

The NH CIC is located within the Incident Planning and Operations Center (IPOC) and managed by the New Hampshire Division of Homeland Security and Emergency Management.

Previous occurrences of cyber events in New Hampshire have impacted the public and private sector. In 2016 the Manchester, NH based Domain Name Server (DNS) product suite company, Dyn, was affected by an “unprecedented” cyber attack that affected popular sites such as Twitter, Reddit and Spotify**.**

The State of New Hampshire is developing a State Cyber Incident Response Plan to identify the threats of malicious cyber activity to networks and systems, and determine the frequency and magnitude of those threats.

Extent: The National Cybersecurity and Communications Integration Center (NCCIC) uses the Cyber Incident Scoring System (below) to measure the magnitude of a cyber incident.



EMERGENCY (BLACK)
An Emergency priority incident poses an imminent threat to the provision of wide-scale critical infrastructure services, national government stability, or the lives of U.S. persons.

SEVERE (RED)
A Severe priority incident is likely to result in a significant impact to public health or safety, national security, economic security, foreign relations, or civil liberties.

HIGH (ORANGE)
A High priority incident is likely to result in a demonstrable impact to public health or safety, national security, economic security, foreign relations, civil liberties, or public confidence.

MEDIUM (YELLOW)
A Medium priority incident may affect public health or safety, national security, economic security, foreign relations, civil liberties, or public confidence.

LOW (GREEN)
A Low priority incident is unlikely to affect public health or safety, national security, economic security, foreign relations, civil liberties, or public confidence.

BASELINE
A baseline priority incident is highly unlikely to affect public health or safety, national security, economic security, foreign relations, civil liberties, or public confidence. The bulk of incidents will likely fall into the baseline priority level with many of them being routine data losses or incidents that may be immediately resolved. However, some incidents may require closer scrutiny as they may have the potential to escalate after additional research is completed. In order to differentiate between these two types of baseline incidents, and seamlessly integrate with the CISS, the NCISS separates baseline incidents into Baseline–Minor (Blue) and Baseline–Negligible (White).

BASELINE – MINOR (BLUE)
A Baseline–Minor priority incident is an incident that is highly unlikely to affect public health or safety, national security, economic security, foreign relations, civil liberties, or public confidence. The potential for impact, however, exists and warrants additional scrutiny.

BASELINE – NEGLIGIBLE (WHITE)
A Baseline–Negligible priority incident is an incident that is highly unlikely to affect public health or safety, national security, economic security, foreign relations, civil liberties, or public confidence. The potential for impact, however, exists and warrants additional scrutiny.

Probability of Occurrence: Likely

Terrorism/Violence

Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom.[34] Armed attack is violence with a weapon against another person with the intent to do harm. Civil disorder is a disturbance caused by a group of people. All of these are rare events in the Lakes Region; however, any individual or group could attempt to carry out one of these acts.

Location: Localized
Specific Areas of Concern:
Critical Facilities: Southwick School, Union Sanborn School, Town Hall
Impact: Moderate
Probability of Occurrence: Occasional
Overall Risk: Moderate

No one wants to think that it could happen in their town, but the potential exists that there could be individuals who wish to do harm to others in the community. Northfield's elementary schools are visible and home to the town's most vulnerable population. The Town Hall is also visible and access has few limitations.

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 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.

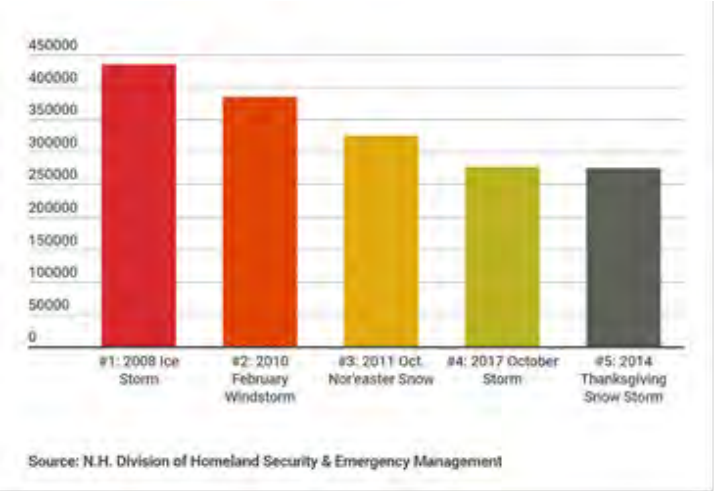
Alton Bay Christian Conference Center, 2009

Probability of Occurrence: Occasional

[34] State of New Hampshire Hazard Mitigation Plan (2010) http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-3.pdf.

LONG-TERM UTILITY OUTAGE

While this update focused on natural hazards, such events do usually have the potential to impact the power grid and other utilities.



A Long-term utility outage is defined as a prolonged absence of a public utility caused by natural, human or technological causes. These prolonged absences are generally caused by infrastructure failure, cyber-attack, supply depletion, distribution disruption, or water source contamination. Types of public utilities can be categorized into four categories: Power/Electricity, Heat/Fuel, Water Supply, and Communications. Although many of these sectors overlap, a prolonged absence of any of the generalized categories can be disastrous in terms of public safety and economic security. The figure above shows the number of customers impacted by the Top 5 power outages in New Hampshire.

Extended power outages have occurred in Northfield, both as a result of local line damage from high winds and storms and problems with the power grid. A disruption of any of the public utility sectors of any duration can cause life safety and critical resource problems. Power outages most common in New Hampshire are fueled by winter storms and are typically short lived. Historically, the top 5 power outages in NH have occurred in the last decade. If a major and/or extended power outage occurs and lasts for more than a week, a significant hardship on individual residents could result, particularly those citizens who are elderly, handicapped or poor.
Probability of Occurrence: Likely

TRANSPORTATION INCIDENT/ MASS CASUALTY

A mass casualty is any large number of casualties produced in a relatively short period of time, usually as the result of the same incident, that exceeds the local emergency service's capabilities.

Location: Northfield's proximity to Interstate 93 and US Route 3 increase increases the risk of a major transportation incident, not only in terms of casualties but also in terms of the potential for incidents that may involve chemical or hazard materials spills. These major transportation routes experience high volumes of traffic during peak seasons.

Extent: A major transportation incident would burden Northfield's response capability, Northfield participates in and relies on mutual aid.

Probability of Occurrence: Occasional

Hazardous Materials
Location: Localized

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.

Photo courtesy of www.epa.gov

History:
On December 6, 1998 the Surrette Battery Facility burned down which caused asbestos & lead in the air causing the immediate are, including the schools, to be evacuated. Today the site is an EPA Brownfields site.

Areas at Risk:
Hazardous Material facilities
Unguarded RR crossings
Utilities

Probability of Occurrence: Unlikely

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. There are no High Hazard dams located in Northfield that would cause flooding beyond the 100-year floodplain. However, it is important to note that there are dams upstream from the Town that could have an impact on the town. Low Hazard and Non-menace dams are shown on the critical facilities map in Chapter IV.

Location: Knowles Pond Dam, Knowles Pond Road, Northfield – Low Hazard Dam; an Emergency Operation Plan is not required; an Operation and Maintenance Plan (2008) is on file with NHDES.

Extent: Dam classifications in New Hampshire are based on the degree of potential damages that a failure or disoperation of the dam is expected to cause. The classifications are designated as non-menace, low hazard, significant hazard, and high hazard and are summarized in greater detail below:

New Hampshire Dam Classifications[35]

Classification	Description
Non-Menace	A dam that is not a menace because it is in a location and of a size that failure or mis operation of the dam would not result in probable loss of life or loss to property, provided the dam is: • Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or • Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.
Low Hazard	A dam that has a low hazard potential because it is in a location and of a size that failure or mis operation of the dam would result in any of the following: • No possible loss of life. • Low economic loss to structures or property. • Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services. • The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course. • Reversible environmental losses to environmentally sensitive sites.
Significant Hazard	A dam that has a significant hazard potential because it is in a location and of a size that failure or mis operation of the dam would result in any of the following: • No probable loss of lives. • Major economic loss to structures or property. • Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services. • Major environmental or public health losses, including one or more of the following: • Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair. • The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more. • Damage to an environmentally sensitive site that does not meet the definition of reversible environmental losses.
High Hazard	A dam that has a high hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in probable loss of human life as a result of: • Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions. • Water levels rising above the first-floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot. • Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services. • The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII. • Any other circumstance that would more likely than not cause one or more deaths.

History: There is no history of dam failure in Northfield

Probability of Occurrence: Unlikely

Radiological

Radiological hazards can range from relatively localized incidents involving small amounts of radioactive materials to large-scale catastrophic events. Smaller sources of radiation hazards may be found in medical facilities, industrial, and laboratory facilities where radioactive

[35] 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.

materials and/or radiation producing devices are used. Some radiation is produced naturally from decomposition of radioactive isotopes in soils and underlying strata.

Location: There are two planning zones specific to the Seabrook Station Nuclear Power Plant. The Plume Exposure Pathway is the 10-mile radius around the plant and the ingestion pathway is a 50-mile radius that includes 96 communities. Northfield is among those 96 communities in the ingestion pathway:

Plume & Ingestion	Ingestion Only			
Brentwood	Allenstown	Derry	Litchfield	Pembroke
East Kingston	Alton	Dover	Londonderry	Pittsfield
Exeter	Amherst	Dunbarton	Loudon	Plaistow
Greenland	Atkinson	Durham	Lyndeborough	Raymond
Hampton	Auburn	Epping	Madbury	Rochester
Hampton Falls	Barrington	Epsom	Manchester	Rollinsford
Kensington	Barnstead	Farmington	Mason	Salem
Kingston	Bedford	Francestown	Merrimack	Sandown
New Castle	Belmont	Fremont	Middleton	Somersworth
Newfields	Boscawen	Gilford	Milford	Strafford
Newton	Bow	Gilmanton	Milton	Wakefield
North Hampton	Brookfield	Goffstown	Mont Vernon	Weare
Portsmouth	Brookline	Greenfield	Nashua	Webster
Rye	Candia	Greenville	New Boston	Wilton
Seabrook	Canterbury	Hampstead	New Durham	Windham
South Hampton	Chester	Henniker	Newington	Wolfeboro
Stratham	Chichester	Hollis	Newmarket	
Host Sites	Concord	Hooksett	Northfield	
Rochester Middle School	Danville	Hopkinton	Northwood	
Dover Middle School	Deerfield	Hudson	Nottingham	
Manchester Memorial High School	Deering	Lee	Pelham	

Probability of Occurrence: Unlikely

Human-Caused Hazards

Photo Courtesy of www.epa.gov

Surrette Fire Damage

History:
On December 6, 1998 the Surrette Battery Facility burned down, which sent asbestos and lead into the air causing the immediate area, including the schools, to be evacuated. Today the site is an EPA Brownfields site.

Areas at Risk:
Hazardous Material Facilities
Unguarded RR crossings
Utilities

The table below was included in the 2013 Northfield Hazard Mitigation Plan:

Critical Facility	**Man Made Hazard Vulnerability Score**							
	Visibility	Target	Access	Mobility	Hazardou s	Collateral Damage	Site Populatio	**TOTAL**
Winnisquam Regional High School, West Main St, Tilton	5	5	2	5	1	5	3	**26**
Middle School, Winter Street, Tilton	5	5	2	5	1	5	3	**26**
Union Sanborn School, Elm Street, Northfield	5	5	3	5	0	5	2	**25**
Spaulding Youth Center	3	5	4	5	1	5	1	**24**
Southwick Elementary School, Zion Hill Road, Northfield	3	5	3	5	0	5	2	**23**
Pines Community Center	5	2	5	5	0	3	1	**21**
Tilton-Northfield Fire Station, Center Street	3	2	5	5	1	3	1	**20**
Tilton-Northfield Fire Station, Park Street	5	2	5	5	1	1	1	**20**
Northfield Police Station, Park Street	5	3	2	5	1	1	1	**18**

Chapter 4 CRITICAL FACILITIES

The Critical Facilities List for the Town of Northfield has been identified by the Northfield Hazard Mitigation Planning Committee. The list is divided into three sections: Facilities needed for Emergency Response (Category 1), Facilities Not Necessary for Emergency response (Category 2), and Populations and facilities to protect in the event of a disaster (Category 3). The "Critical Facilities Map" at the end of Chapter 4 identifies the Category 1 Facilities. In addition, the Inventory of Critical Facilities table assesses the value of these structures.

CATEGORY 1 (Facilities needed for Emergency Response)

- Fire
- Emergency Medical Services (EMS)
- Police
- Hospital
- Shelter
- Communications
- Transportation
- Evacuation Routes
- Emergency Operations Center (EOC)
- Public Works
- Water Supply/Treatment
- Sewer Treatment
- Emergency Fuel

CATEGORY 2 (Facilities Not necessary during an emergency event)

- Public Utilities
- Town Hall

CATEGORY 3 (Populations & Places to Protect)

- Schools
- Daycares
- High Concentration Populations
- Elderly Facilities
- Healthcare Facilities
- Recreation areas
- Historic Resources

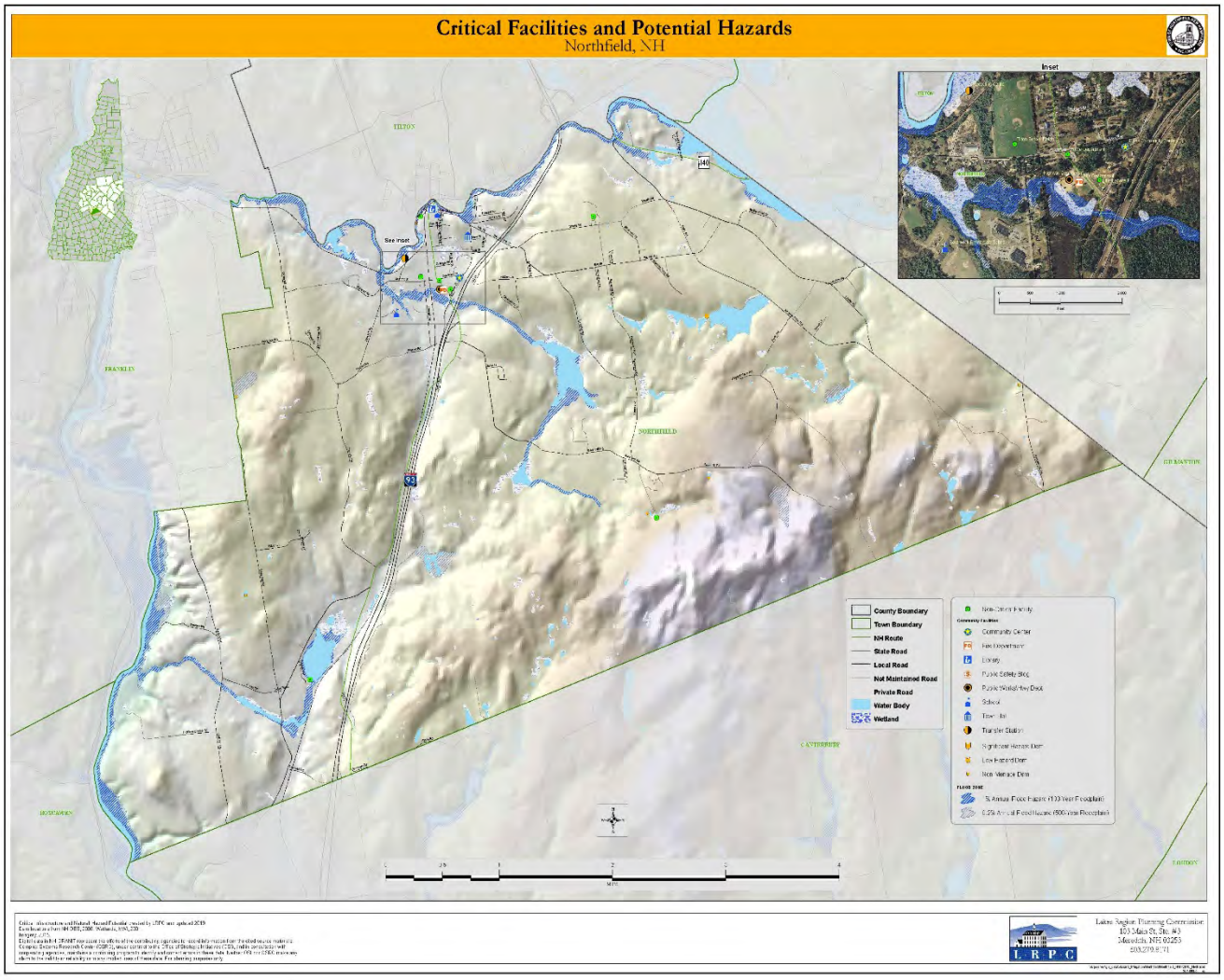
Inventory of Critical Facilities and Assets							
Facility	**Name/Location**	**Owner**	**Category 1** ✓	**Category 2** ✓	**Category 3** ✓	**Assessed Value**	**Hazard Vulnerability**
Town Hall	Town Office, 21 Summer Street	Municipal		✓		$660,700	Earthquake Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
EOC Primary Secondary	Northfield Police Station, 138 Park Street	Municipal	✓			$356,000	Earthquake Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
	Tilton-Northfield Fire Station, 12 Center Street	Municipal	✓			Located in Tilton	n/a
Police Station	Northfield Police Station, 138 Park Street	Municipal	✓			$356,600	Earthquake Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
Fire Station	Tilton-Northfield Fire Station, 12 Center Street (Tilton)	Municipal	✓			Located in Tilton	n/a
	Tilton-Northfield Fire Station, 149 Park Street	Municipal	✓			$382,200	Earthquake Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
Hospital	None in Northfield		✓			n/a	
Shelter	Winnisquam Regional High School, 435 West Main St, Tilton (PRIMARY)	SAU 59	✓			Located in Tilton	n/a
	Middle School, Winter Street, Tilton	SAU	✓			Located in Tilton	n/a
	Southwick Elementary School, 50 Zion Hill Road, Northfield	SAU	✓			$5,470,400	Earthquake, Extreme Heat, Hurricane, lightning, Severe Wind, Winter Weather, Human Caused
	Union Sanborn School, 5 Elm Street, Northfield	SAU	✓			$4,688,500	Earthquake, Extreme Heat, Hurricane, lightning, Severe Wind, Winter Weather, Human Caused

Inventory of Critical Facilities and Assets							
Facility	**Name/Location**	**Owner**	**Category 1**	**Category 2**	**Category 3**	**Assessed Value**	**Hazard Vulnerability**
			✓	✓	✓		
Shelter Cont.	Pines Community Center, 61 Summer Street	Private	✓			$817,600	Earthquake, Extreme Heat, Hurricane, lightning, Severe Wind, Winter Weather, Human Caused
	Spaulding Youth Center (Gym), 130 Shedd Road	Private	✓			$988,300	Earthquake, Extreme Heat, Hurricane, lightning, Severe Wind, Winter Weather, Human Caused
Public Works	Northfield Hwy Dept., 147 Park Street	Municipal	✓			$387,700	Earthquake, Extreme Heat, Flood, Hurricane, lightning, Severe Wind, Winter Weather, Human Caused
Sewer Treatment	No buildings – just sewer lines	Municipal		✓		n/a	n/a
Water Treatment & supply	Reservoir on Reservoir Road Town wells on Rt. 140 Tilton-Northfield Aqueduct Co.	Privately Owned-		✓		$2,924,100	Drought, Flooding, Human Caused
Public Utilities	National Grid natural gas line (Tilton)	Private		✓		Located in Tilton	n/a
	NH Electric Substation, Sargent Street	Private		✓		$5,471,200	Lightning, Human Caused
	Verizon Telephone Company (Tilton)	Private		✓		Located in Tilton	n/a
Transportation	First Student Bus change to cat. 1	Private	✓			n/a	n/a
	Tilton School	Private	✓			n/a	n/a
	Lakes Region Transit	Private	✓			n/a	Flooding, Winter Weather
Emerg. Fuel	Northfield Hwy Dept. (Diesel/Gas)	Municipal		✓		n/a	Human Caused
Schools	Winnisquam Regional High School, 435 West Main St, Tilton	SAU			✓	Located in Tilton	n/a
	Middle School, 76 Winter Street, Tilton	SAU			✓	Located in Tilton	n/a

Inventory of Critical Facilities and Assets							
Facility	**Name/Location**	**Owner**	**Category 1** ✓	**Category 2** ✓	**Category 3** ✓	**Assessed Value**	**Hazard Vulnerability**
Schools	Southwick School, 50 Zion Hill Road, Northfield	SAU			✓	$5,470,400	Earthquake, Extreme Heat, Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
	Union Sanborn School, 5 Elm Street, Northfield	SAU			✓	$4,688,500	Earthquake, Extreme Heat, Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
	Spaulding Youth center, 130 Shedd Road (Special Needs Pop)	Private			✓	$7,793,200	Earthquake, Extreme Heat, Hurricane, Lightning, Severe Wind, Winter Weather, Human Caused
High Population Areas	Village Area	Mixed			✓	Varies	Winter Weather, Flood, Human Caused
	Northfield Commons, Scribner Road	Mixed			✓	$5,516,900	Winter Weather, Human Caused
	Highland Village Condos Bean Hill				✓	$3,953,600	Winter Weather, Human Caused
	Town & Country Estate Condos, Summer Street	Mixed			✓	$4,091,000	Winter Weather, Human Caused
	Country Side Terrace Apartments, Dearborn Road	Mixed			✓	$1,478,000	Winter Weather, Human Caused
	Park Place Townhouses Park Street	Mixed			✓	$881,700	Winter Weather Human-Caused
Elderly Facilities	Northfield Village Apartments, Summer Spring street	Mixed			✓	$1,623,700	Extreme Heat, Winter Weather
	The Carriage House of Northfield Summer Street	Mixed			✓	$1,220,200	Extreme Heat, Winter Weather
Recreation areas	The Pines, Park Street	Municipal			✓	Included with Police	Lightning, Severe Wind, Human Caused
	Tilton School Athletic Field, Sargent Street	Private			✓	$1,079,700	Lightning, Severe Wind, Human Caused

Inventory of Critical Facilities and Assets							
Facility	**Name/Location**	**Owner**	**Category 1** ✓	**Category 2** ✓	**Category 3** ✓	**Assessed Value**	**Hazard Vulnerability**
Recreation Areas	Highland Mtn. Bike Park Bean Hill Rd.	Private			✓	$884,500	Lightning, Severe Wind, Human Caused
	Island Park	Municipal			✓	$36,400	Flooding, Lightning, Severe Wind, Human Caused
	Town Beach, Sandogardy Pond	Municipal			✓	$282,200	Flooding, Lightning, Severe Wind, Human Caused
	Knowles Pond Conservation Area	Municipal			✓	$86,200	Flooding, Lightning, Severe Wind, Human Caused
	Surrette Park	Municipal			✓	Land Only	Flooding, Lightning, Severe Wind, Human Caused
	Dick Smart Conservation Area	Municipal			✓	Land Only	Lightning, Severe Wind, Human Caused
	Blais Property	Municipal			✓	Land Only	Lightning, Severe Wind, Human-Caused
	Granite Street Conservation Area	Municipal			✓	$49,100	Flooding, Lightning, Severe Wind, Human-Caused
Historic	Hall Memorial Library, Park Street	Private			✓	$1,109,800	Earthquake, Hurricane, Severe Wind, Human Caused
	Memorial Arch of Tilton, Elm Street	Municipal			✓	$97,300	Earthquake, Hurricane, Severe Wind, Human Caused

CRITICAL FACILITIES AND POTENTIAL HAZARDS MAP



Chapter 5 CAPABILITY ASSESSMENT

The following is a list of current policies and regulations reviewed by the Mitigation Planning Committee that protect people and property from natural and human-caused hazards. Below is a summary list of these policies and programs.

Integration of Mitigation Priorities into Planning and Regulatory Tools

The Town should conduct periodic review of these regulations and this Hazard Mitigation Plan. Reviewing these plans on a regular basis will ensure the integration of mitigation strategies. This review will continue to be a priority of the Northfield Emergency Management Director and will likely include yearly requests in the annual budget process. Moreover, as suggested in the onset of this document, this *Plan* is a planning tool to be used by the Town of Northfield, as well as other local, state, and federal governments, in the effort to reduce future losses from natural and/or man-made hazardous events before they occur. Under the Prioritized Mitigation Projects Action Plan (found in Chapter 6), all parties listed under the Responsibility/Oversight category shall also review this listing annually, and consider the listed (and updated) mitigation projects within their annual budget requests.

Summary of Review of Policies and Programs

The following is a list of current policies and regulations adopted by the Town of Northfield that protect people and property from natural hazards.

Plan / Policy	Description
Bridge Maintenance	There are currently no bridges on the state Red List. Inspection and clean-up occur annually. The state inspects all bridges every other year.
Building Code	The town complies with the State of New Hampshire Building Code and Fire Code, which incorporates the IBC, IPC and NFPA. Currently there is a part-time building inspector to enforce the standards.
Capital Improvement Program	A decision making tool used to plan and schedule town improvements over at least a six-year period. The CIP provides a suggested timeline for budgeting and implementing needed capital improvements.
CEMPS (Comprehensive Emergency Management Planning for Schools)	The Elementary, Middle and High Schools have Emergency Response Plans. Reviewed and submitted to the NH Department of Education each year.
Community Rating System (CRS)	The town does not participate in the CRS. The CRS provides Flood Insurance Premium reductions based on reduced flood risk resulting from community activities that meet three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; (3) promote awareness of flood insurance

Plan / Policy	Description
Elevation Certificates Maintained	FEMA Elevation Certificates are required and maintained for all new construction and substantial improvements (greater than 50% of the market value), for structures located in the 100-year floodplain.
Emergency Back-up Power	The High School, Police Station and Highway Garage have emergency back-up power generators. Tilton-Northfield Fire District Station (in Tilton) has emergency generator.
Emergency Operation Plan	The Town maintains an EOP that meets the recommendations of the NH Homeland Security Emergency Management. This plan identifies the response procedures and capabilities of the Town of Northfield in the event of a natural or man-made disaster. Last updated in 2007.
Emergency Warning System	The Town has an official public warning/alert protocol outlined in the EOP. Supplementing the EOP are PA systems in all Fire & Police vehicles and a One-Call Now system to call, text or email residents who sign up to receive notifications.
Floodplain Development Ordinance	The minimum National Flood Insurance Program (NFIP) requirements have been adopted as part of the Town's Zoning Ordinance. This regulates all new and substantially improved structures located in the 100-year floodplain, as identified on the Flood Maps.
Hazardous Materials Response Team	The Tilton-Northfield Fire District maintains a database with a detailed listing of all industries in town, however, there is no formal Hazardous Material Plan. Central NH Response Team provides response provides response for the Concord/ Laconia region.
Master Plan	The purpose of the master plan is threefold. First, the Plan serves as the guiding document for future development in Northfield. Second, the Master Plan serves as the guiding document to assist the Planning Board as it updates the Town Zoning Ordinance, Subdivision and Site Plan Review Regulations and other appropriate ordinances and regulations that fall under its jurisdiction. Finally, the Master Plan serves as the basis for other responsibilities of the Board as it strives to preserve and enhance the quality of life of all residents in Northfield. The Plan articulates the values and vision that the people of Northfield hold dear. It identifies many of the key issues facing the community and the concerns that the residents have about the future of the town related to land use change and development. Last updated in 2014.
Public Education	The Tilton-Northfield Fire District conducts numerous safety trainings at schools and businesses. The Police Department conducts an annual safety program as well as emergency preparedness links on the Police Department website.

Plan / Policy	Description
Road Standards	Northfield Subdivision and Site Plan Regulations include road design standards that control the amount and retention of storm water runoff. Subdivision Regulations and Road Design Standards last reviewed and updated July 2013. Site Plan Regulations last reviewed and updated December 2011.
Shoreland Water Quality Protection Act	The Act, passed into law in 1994, establishes minimum standards for the future subdivision, use, and development of the shore lands within 250 feet of the state's public waters classified as “Fourth Order” or higher. The Department of Environmental Services (DES) is responsible for enforcing the standards within the protected shore land.
State Dam Program	The Department of Environmental Services has a superior Dam Maintenance and Safety Inspection program.
Storm Drain/Culvert Maintenance	The Northfield Department of Public Works and the NH Department of Transportation clean the drainage basins once a year and after major flooding events. Culverts are repaired as needed.
Subdivision Regulations	The purpose of Northfield’s subdivision regulations is to provide for the orderly present and future development of the town by promoting the public health, safety, convenience and welfare of the town’s residents. Last reviewed and updated July 2013.
Wetlands Protection Ordinance	Within the Town’s Zoning Ordinance, the Town has adopted a Wetlands Conservation Ordinance. The Ordinance was established to regulate the uses of lands subject to standing water flooding, or high water tables for extended periods of time. The purpose of the ordinance is to protect the public health, safety and general welfare of the community by controlling and guiding the use of land areas defined as Wetlands in Article 6, Subsection 2.
Zoning Ordinance	The purpose of the Zoning Ordinance is to preserve the beauty of the Town of Northfield; to provide adequate area between buildings, structures and other uses of property; to provide adequate area between buildings and rights-of-way; to protect property values; to allow for timely and proper provision of public facilities, utilities and improvements; and to generally provide for the values set forth in RSA 674:16 and 17 and the Northfield Master Plan so as to promote and protect the health, safety and general welfare of the Town and its citizens.

Chapter 6 MITIGATION ACTIONS

The Hazard Mitigation Planning Committee held a brainstorming session to identify mitigation projects. The seven mitigation action objectives from the 2013 Plan were kept in place and are listed below:

1. Prevention: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management and steep slopes regulations.

2. Property Protection: Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.

3. Public Education and Awareness: Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

4. Natural Resource Protection: Actions that, in addition to minimizing hazard loss, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

5. Emergency Services: Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of Critical Facilities.

6. Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, culverts, floodwalls, seawalls, retaining walls, and safe rooms.

7. Equipment: Purchase of equipment that aids in the reduction of damages from natural, technological, and human-caused hazards.

With these Objectives in mind the committee created a list of projects for each objective. The table below lists the status of the Mitigation Actions from the 2013 Hazard Mitigation Plan.

Status of Mitigation Actions from 2013 Hazard Mitigation Plan

ID	Action	Hazard Type	Status 2019	Comment
1	Recommend steep slope standards in zoning ordinance.	Flooding Earthquake	Defer	
2	Continue to enforce and update the Floodplain Regulations to ensure compliance with the NFIP.	Flooding	Defer	Ordinance was updated in 2013, but enforcement is ongoing
3	Conduct an assessment of primary shelters to determine upgrades needed (i.e. roofs appropriate for snow load).	All Hazards	Completed	Ongoing
4	Implement a video monitoring system at Union Sanborn Elementary School & Southwick School.	Human-caused	Completed	
5	Implement security measures at the Park Street fire station.	Human-caused	Completed	
6	Door identification for entrance/exit at Union Sanborn School, Southwick School and Hall Memorial Library.	All Hazards	Deferred	
7	Provide emergency preparedness links on the police, fire and town websites.	All Hazards	Deferred	
8	Continue and improve emergency preparedness education in the schools	All Hazards	Completed	Ongoing and updating
9	Implement and advertise email notification for alerts during emergencies.	All Hazards	Completed	
10	Continue water supply sampling at Sandogardy Pond.	Human-caused	Completed	Ongoing June through August
11	Coordinate with Tilton-Northfield Water District Wells to ensure quality of water safety.	Human-caused	Completed	Ongoing
12	Obtain American Red Cross agreements for ARC approval of shelters.	All Hazards	Deferred	

ID	Action	Hazard Type	Status 2019	Comment
13	Conduct Incident Command System (ICS)and National Incident Management System (NIMS) training for emergency response personnel (fire, police, public works, town hall, school) and conduct table-top exercise with Emergency Operation Center Staff.	All Hazards	Deferred	
14	Implement Web EOC training	All Hazards	Deferred	
15	Install closed drainage systems at the following locations: Zion Hill Road, Shaw Road and Bean Hill	Flooding	Deferred	
16	Continue on-going maintenance of drainage systems.	Flooding	Deferred	Ongoing
17	Upgrade road signs and event signage.	All Hazards	Completed	
18	Purchase and install generators for the Union Sanborn Elementary School, Southwick School, the Park Street Fire Station and Town Hall.	All Hazards	Partially completed, Deferred	Union Sanborn and Southwick schools – completed; Park Street Fire Station and Town Hall – Deferred
19	Purchase and update laptops for emergency vehicles (mobile data terminals) with internet capability with regional information on local business, hazards and hazardous materials.	All Hazards	Completed	
20	Purchase a 6-wheeler for Public Works	?	Deleted	
21	Trench box for Public Works to support ditches	Flooding	Deleted	Contractors are hired for this work
22	Purchase general equipment for EOC (Emergency communication equipment, etc.)	All Hazards	Deferred	Cost is $50,000 - $100,000
23	*Install a repeater system to ensure radio coverage for emergency services throughout town.*	All Hazards	Deleted	Belknap County serves the area

ID	Action	Hazard Type	Status 2019	Comment
24	*Purchase and install a generator for shelter.*	All Hazards	Deferred	
25	Memorandum of agreement with Tilton School for use of buses.	All Hazards	Deferred	
26	Purchase shelter supplies (cots, blankets, cones, iodine pills, traffic devices) and trailer for storage.	All Hazards	Deferred	

2019 Prioritized List of Mitigation Actions

MITIGATION ACTION	Priority
PREVENTION	
1. Recommend steep slope standards in zoning ordinance.	Low
2. Enforce and update the Floodplain Regulations to ensure compliance with the NFIP.	Low
4. Establish water conservation and public education plan in the event of drought	Medium
5. Implement fire prevention, education and inspection measures to prevent conflagration (urban fires)	Medium
PROPERTY PROTECTION	
3. Conduct an assessment of primary shelters to determine upgrades needed (i.e. roofs appropriate for snow load).	High
6. Door identification for entrance/exit at Union Sanborn School, Southwick School and Hall Memorial Library.	Low
PUBLIC EDUCATION & AWARENESS	
7. Provide emergency preparedness and mitigation techniques and education links on the police, fire and town websites, such as FireWise and FEMA.	High
8. Improve emergency preparedness and mitigation techniques and education in the schools.	Medium
9. Advertise email notifications for alerts during emergencies.	High
17. Outreach and education with Town employees and the public about prevention measures for infectious diseases	Medium
19. Implement awareness efforts to education public to prepare for long-term power outages, including neighbor check efforts	Medium
20. Promote Household Hazardous Waste Collection program	Medium
21. Ongoing public awareness with local businesses on best practices for hazardous materials	Medium
NATURAL RESOURCE PROTECTION	
10. Sample water supply at Sandogardy Pond.	Low
11. Coordinate with Tilton-Northfield Water District wells to ensure quality of water safety.	Low
EMERGENCY SERVICES	
12. Obtain American Red Cross agreements for ARC approval of shelters and explore Northfield location.	Low
13. Conduct Incident Command System (ICS) and National Incident Management System (NIMS) training for emergency response personnel (fire, police, public works, town hall, school) and conduct a table-top exercise with Emergency Operation Center Staff.	High

14. Implement WebEOC Training.	Medium
STRUCTURAL	
15. Install closed drainage systems at: Zion Hill Road, Shaw Road and Bean Hill	High
16. Implement regular maintenance of drainage systems.	Low
EQUIPMENT	
18. Purchase and install generators for the Park Street Fire Station and Town Hall.	High
23. Establish back-up server for Town computer systems for Town Hall, Police Department, and Department of Public Works	High
22. Purchase general equipment for EOC (emergency communication equipment, etc.)	Medium
24. Purchase and install a generator for shelter.	Low
25. Memorandum of agreement with Tilton School for use of buses.	Low
26. Purchase shelter supplies (cots, blankets, cones, iodine pills, traffic devices) and trailer for storage.	Medium

Prioritized Mitigation Projects:

The STAPLEE Criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) were utilized to guide the prioritization of mitigation actions in the 2013 Plan. Many of the mitigation actions in that Plan were either deferred or continued to this 2019 Plan, or are in progress and, rather than utilize STAPLEE again, the Committee decided to retain the same priorities given these actions in 2013. In determining the benefits to the town and its citizens by the mitigation actions included in the Plan, the committee was mindful of their cost in light of the town's tight operating budgets and property tax burden. There are seven High Priority actions included in the Plan, seven Medium Priority actions, and 12 Low Priority actions. The priority assigned to the mitigation actions also takes into account the ranking of hazards in the Hazard Risk Assessment on page 16 (the higher the hazard risk, the higher priority the mitigation action was given). Another factor influencing the High, Medium, and Low rankings was the benefit of mitigation actions that apply to All Hazards, such as training, and public awareness and outreach actions.

Mitigation Action Plan:

The Mitigation Actions which identifies Responsibility, Funding, Time frame and Hazards Addressed for each high priority project. The highest risk hazards addressed (severe winter weather, cyber event, and extreme temperatures) are those that the town and its residents are most vulnerable to and those that the town would benefit the most from. Lower risk hazards (tropical and post-tropical cyclones, hazardous materials, dam failure, wildfire, earthquake, avalanche, landslide, solar storms and space weather, and radiological) are a lower priority and therefore are not specifically addressed through mitigation projects, or are addressed through mitigation of other hazards – for example, tropical and post-tropical cyclones are not specifically addressed, but flooding and many All Hazard mitigation measures apply.

The Town will incorporate HMP activities into the following documents:

- Master Plan – The Master Plan is updated every 5 to 10 years in accordance with RSA 674. This plan also includes a discussion of capital improvements within the Town. The next Master Plan update will integrate

mitigation strategies and actions from the HMP (which will have been updated in accordance with the provisions of Section VI in this plan).

- Northfield Emergency Operations Plan (EOP) – The EOP is designed to allow the Town to respond more effectively to disasters as well as mitigate the risk to people and property. The EOP will be reviewed to ensure that where appropriate, specific mitigation actions outlined in the HMP are also addressed in the EOP.

MITIGATION ACTION PLAN

The following action plan identifies Responsibility, Funding and a Time frame for each Project.

Project	Responsibility/ Oversight	Funding/ Support	Timeframe	Cost Estimate	Hazards Addressed	Project Status	Priority
1. Recommend steep slope standards in zoning ordinance.	Planning Board	Staff Time	2020	No Cost	Flooding, Earthquake	Not Started	Low
2. Enforce and update the Floodplain Regulations to ensure compliance with the NFIP.	Planning Board	Staff Time	2019	No Cost	Flood	In process/ Ongoing	Low
3. Conduct an assessment of primary shelters to determine upgrades needed (i.e. roofs appropriate for snow load).	Building Inspector / Fire	Staff Time	2019	Minimal	All hazards	Not Started	High
4. Establish water conservation and public education plan in the event of drought	Public Works Director	Staff Time	2020	No cost	Drought	New project	Medium
5. Implement fire prevention, education and inspection measures to prevent conflagration (urban fires)	Tilton/ Northfield Fire	Fire Budget	2019	No cost	Technological	New project	Low
6. Door identification for entrance/exit at Union Sanborn School, Southwick School and Hall Memorial Library.	SAU #59 Police/Library	SAU #59/Library Budget	2020	$500	All Hazards	Not started	Low
7. Provide emergency preparedness and mitigation techniques and education links on the police, fire and town websites, such as FireWise and FEMA.	EMD	Staff Time	2019	Minimal	All Hazards	In process	High
8 Improve emergency preparedness and mitigation techniques and education in the schools.	EMD/SAU #59	Staff Time	Annual	Minimal	All Hazards	In process	Medium

Project	Responsibility/ Oversight	Funding/ Support	Timeframe	Cost Estimate	Hazards Addressed	Project Status	Priority
9. Advertise email notification for alerts during emergencies.	EMD	Staff Time	Annual	Minimal	All Hazards	In process	High
10. Sample water supply at Sandogardy Pond (June-August).	DPW	Staff Time	Annual	Minimal	Human Caused	Conducted annually	Low
11.Coordinate with Tilton-Northfield Water District Wells to ensure quality of water safety.	Water District/ Health Officer	Staff Time	2020	Minimal	Human Caused	In process	Low
12. Obtain American Red Cross agreements for ARC approval of shelters and explore Northfield location.	EMD	Staff Time and ARC	2020	Minimal	All Hazards	Not Started	Low
13. Conduct Incident Command System (ICS)and National Incident Management System (NIMS) training for emergency response personnel (fire, police, public works, town hall, school) and conduct a table top exercise with Emergency Operation Center Staff.	EMD/Police/Fire	FEMA	2020	$5,000	All Hazards	Some training completed, TTX is still needed	High
14 Implement WebEOC Training.	EMD	Fire Academy	2020	No Cost	All Hazards	Not started	Medium
15 Install closed drainage systems at the following locations: Zion Hill Road, Shaw Road and Bean Hill	DPW	DPW Budget	2020	$20,000 - $40,000/ each	Flood	Some completed, more needed	High

Project	Responsibility/ Oversight	Funding/ Support	Timeframe	Cost Estimate	Hazards Addressed	Project Status	Priority
16. Implement regular maintenance of drainage systems.	DPW	DPW Budget	Annual	Minimal	Flood	In process	Low
17. Outreach and education with Town employees and the public about prevention measures for infectious diseases	EMD/SAU	Town budget/ SAU budget	2020	Minimal	Infectious Diseases	New project	Medium
18 Purchase and install generators for the Park Street Fire Station and Town Hall.	Town/Fire	Town Budget & Grants	2021	$40,000 - $75,000 / each	All Hazards	Not Started, due to insufficient funding	High
19. Implement awareness efforts to education public to prepare for long-term power outages, including neighbor check efforts	EMD	Town Budget & Grants	2022	Minimal	Long-term power outage	New Project	Low
20. Promote Household Hazardous Waste Collection program	DPW	Town Budget	Annual	Minimal	Hazardous Materials	New Project	Medium
21. Ongoing public awareness with local businesses on best practices for hazardous materials	EMD	Town Budget	Annual	Minimal	Hazardous Materials	New Project	Low
22 Purchase general equipment for EOC (Emergency communication equipment, etc.)	EMD	Grants & Town Budget	2021	$50,000 - 100,000	All Hazards	Some completed, more needed	Medium
23. Establish back-up server for Town computer systems for Town Hall, Police Department, and Department of Public Works	Town Administrator	Grants & Town Budget	2020	$5,000 - 10,000	All Hazards	New project	High

Project	Responsibility/ Oversight	Funding/ Support	Timeframe	Cost Estimate	Hazards Addressed	Project Status	Priority
24 Purchase and install a generator for shelter.	EMD	Grants & Rec Center Budget	2023	$40,000-75,000	All Hazards	Not started	Low
25 Memorandum of agreement with Tilton School for use of buses.	EMD	Staff Time	2019	No Cost	All Hazards	Not started	Low
26 Purchase shelter supplies (cots, blankets, cones, iodine pills, traffic devices) and trailer for storage.	EMD/Police	Grants & 1033	2020	$5,000	All Hazards	Not started	Medium

Chapter 7
ADOPTION, IMPLEMENTATION, MONITORING

Adoption

The Northfield Board of Selectmen by majority vote officially adopted the *Northfield Hazard Mitigation Plan Update 2019 on* _____. This plan identified Mitigation Actions to be implemented as outlined in the "Prioritized Mitigation Projects" in Chapter 6.

Implementation

Twenty-six mitigation projects were prioritized. Please refer to the "Action Plan" in Chapter 6 for a description of the timeframe and persons or departments responsible for implementation of the Prioritized Projects. Implementation will depend on timeframe and costs. It will be the future responsibility of the Emergency Management Director, working with the Town Administrator and Board of Selectmen to ensure implementation of these Mitigation Actions and provide a mechanism for ensuring that an attempt is made to incorporate the actions identified in the plan into ongoing town planning activities. Many of the actions in this plan rely on the town's operating budget along with grant funds available through FEMA and other sources. The Emergency Management Director will coordinate with the Town Administrator, department heads, Budget Committee, and Selectmen to ensure that funds and staff time for these projects are available. The EMD will work with the Selectmen and Capital Improvements Plan (CIP) Committee to incorporate the various projects into subsequent budgets.

Mitigation actions that involve either revisions to the land use and planning regulations or standards will be the responsibility of the Planning Board to develop appropriate language.

When appropriate, an effort will be made to incorporate this plan into future revisions of the Emergency Operations Plan. Within a year after the town officially adopts the 2019 update to the Hazard Mitigation Plan, an attempt will be made to have hazard mitigation strategies integrated into these existing mechanisms and into other ongoing town planning activities. The 2013 Hazard Mitigation Plan was not incorporated into other town planning mechanisms.

Monitoring and Updates

The *Northfield Hazard Mitigation Plan Update 2019* must be reviewed, evaluated and updated at least once every five years. The Emergency Management Director is responsible for initiating this review and needs to consult with members of the Northfield Emergency Management Committee, in order to track progress and update the Prioritized List in Chapter 6. The EMD will ensure the following:

- The Hazard Analysis will be evaluated for accuracy
- Projects completed will be evaluated to determine if they met their objective
- The EMD will meet annually with the Board of Selectmen to review progress made on mitigation actions, and HMP Committee members and the public will be invited to offer

comments on priorities and progress

- The Hazard Mitigation Plan will be made available on the town's website
- Projects not completed since the last update will be reviewed to determine feasibility of future implementation
- New projects will be identified and included in future updates as needed
- The public, members of the Committee, and State and non-profit agencies will continue to be invited to serve as members of future update committees
- The 2019 Northfield Hazard Mitigation Plan will be adopted by the Board of Selectmen at a regular public meeting, at which the public will be invited to comment. Notice will follow the regular process for Board of Selectmen's meetings, including posting on the town's website.
- Once every five years, an updated plan will be submitted to HESM for approval

SIGNED CERTIFICATE OF ADOPTION

Certificate of Adoption – Town of Northfield
A resolution adopting the Northfield Hazard Mitigation Plan Update 2019

Plan dated: 2019
Conditionally approved: August 19, 2019

WHEREAS, the town of Northfield received funding from the NH Office of Homeland Security and Emergency Management under a FEMA Pre-Disaster Mitigation Grant and assistance from the Lakes Region Planning Commission for the preparation of the Northfield Hazard Mitigation Plan Update 2019; and

WHEREAS, several public planning meetings were held in May and June 2019 regarding the development and review of the Northfield Hazard Mitigation Plan Update 2019; and

WHEREAS, the Northfield Hazard Mitigation Plan Update 2019 contains several potential future projects to mitigate hazard damage in the town of Northfield and,

WHEREAS, a duly noticed public meeting was held by the Selectmen on August 20th, 2019 to formally approve and adopt the Northfield Hazard Mitigation Plan Update 2019.

NOW, THEREFORE BE IT RESOLVED that the Northfield Board of Selectmen adopts the Northfield Hazard Mitigation Plan Update, 2019.

ADOPTED AND SIGNED this day of August 28th 2019.

NORTHFIELD BOARD OF SELECTMEN

Signature: Wayne Crowley
Selectmen, Chairman

Signature: Jon Brown
Selectman

Signature: Scott Nesbitt
Selectman

Town Seal or Notary

Cindy L. Caveney

DATE: 9/10/2019

CINDY L. CAVENEY
NOTARY PUBLIC - NH
My Comm. Expires Oct. 25, 2022

ACRONYMNS

BMP – Best Management Practices
CDBG - Community Development Block Grant
CRS – Community Rating System
DES – Department of Environmental Services
DHS – Department of Homeland Security
DMA – Disaster Mitigation Act
DOT – Department of Transportation
EAP – Emergency Action Plan
EMD – Emergency Management Director
EMPG – Emergency Management Planning Grant
EMS – Emergency Medical Services
EOC – Emergency Operations Center
EOP – Emergency Operations Plan
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Related Maps
FMA – Flood Mitigation Assistance Program
GIS – Geographic Information System
HAZMAT – Hazardous Material
HMGP – Hazard Mitigation Grant Program
HSEM – Homeland Security and Emergency Management
ICC – International Code Council
NFIP – National Flood Insurance Program
NH HSEM – NH Homeland Security and Emergency Management PDM – Pre-Disaster Mitigation
OSI – Office of Strategic Initiatives
RC&D – Resource Conservation and Development
USGS – United State Geological Survey

APPENDICES

Appendix A Hazard Mitigation Resources
Appendix B Sample Agenda, Meeting Notes and Public Notice

Hazard Mitigation Resources

♦ HAZARD MITIGATION GRANT PROGRAM - "Section 404 Mitigation"

The Hazard Mitigation Grant Program (HMGP) in New Hampshire is administered in accordance with the 404 HMGP Administration Plan which was derived under the authority of Section 404 of the Stafford Act in accordance with Subpart N. of 44 CFR.

The program receives its funding pursuant to a Notice of Interest submitted by the Governor's Authorized Representative (or GAR, i.e. the Director of NHOEM) to the FEMA Regional Director within 60 days of the date of a Presidentially Declared Disaster. The amount of funding that may be awarded to the State/Grantee under the HMGP may not exceed 15% of (over and above) the overall funds as are awarded to the State pursuant to the Disaster Recovery programs as are listed in 44 CFR Subpart N. Section 206.431 (d) (inclusive of all Public Assistance, Individual Assistance, etc.). Within 15 days of the Disaster Declaration, an Inter-Agency Hazard Mitigation Team is convened consisting of members of various Federal, State, County, Local and Private Agencies with an interest in Disaster Recovery and Mitigation. From this meeting, a Report is produced which evaluates the event and stipulates the State's desired Mitigation initiatives.

Upon the GAR's receipt of the notice of an award of funding by the Regional Director, the State Hazard Mitigation Officer (SHMO) publishes a Notice of Interest (NOI) to all NH communities and State Agencies announcing the availability of funding and solicits applications for grants. The 404 Administrative Plan calls for a State Hazard Mitigation Team to review all applications. The Team is comprised of individuals from various State Agencies.

Eligible Subgrantees include:

- State and Local governments,
- Certain Not for Profit Corporations
- Indian Tribes or authorized tribal organizations

Minimum Project Criteria

- Must conform with the State's "409" Plan
- Have a beneficial impact on the Declared area
- Must conform with:
  - NFIP Floodplain Regulations
  - Wetlands Protection Regulations
  - Environmental Regulations
  - Historical Protection Regulations
- Be cost effective and substantially reduce the risk of future damage
- Not cost more than the anticipated value of the reduction of both direct damages and subsequent negative impacts to the area if future disasters were to occur i.e., min 1:1 benefit/cost ratio
- Both costs and benefits are to be computed on a "net present value" basis has been determined to be the most practical, effective and environmentally sound alternative after a consideration of a range of options
- Contributes to a long-term solution to the problem it is intended to address
- Considers long-term changes and has manageable future maintenance

Eligible Projects may be of any nature that will result in the protection to public or private property and include:

- Structural hazard control or protection projects
- Construction activities that will result in protection from hazards
- Retrofitting of facilities
- Certain property acquisitions or relocations
- Development of State and local mitigation standards
- Development of comprehensive hazard mitigation programs with implementation as an essential component

FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM

New Hampshire has been a participant in the Flood Mitigation Assistance Program (FMA or FMAP) since 1996/97. In order to be eligible, a community must be a participant in the National Flood Insurance Program.

In 1997, the State was awarded funds to assist communities with Flood Mitigation Planning and Projects. A Planning Grant from the 1996/97 fund was awarded to the City of Keene in 1998. In preparation for the development of the Flood Mitigation Plan, the Planning Department of the City of Keene created a digital data base of its floodplain including the digitizing of its tax assessing maps as well as its Special Flood Hazard Areas in GIS layers. The Plan Draft was submitted to FEMA for review and approval in March of 2000. The Plan includes a detailed inventory of projects and a "model" project prioritization approach.

Flood Mitigation Assistance Program

- NFIP Funded by a % of Policy Premiums
- Planning Grants
- Technical Assistance Grants to States (10% of Project Grant)
- Project Grants to communities
- Communities must have FEMA approved Flood Mitigation Plan to receive Project Funds

In 1998, the FMAP Planning Grant was awarded to the Town of Salem. Given the complexity of the issues in the Spicket River watershed, the Town of Salem subcontracted a substantial portion of the development of its Flood Mitigation Planning to SFC Engineering Partnership of Manchester, NH, a private engineering firm. Salem submitted a Plan and proposed projects to the State and FEMA in May of 1999 which were approved by FEMA. This made Salem the first community in NH to have a FEMA/NFIP approved Flood Mitigation Plan.

♦ PRE-DISASTER MITIGATION PROGRAM (PDM)

Eligible Projects

(44 CFR Part 78)

- Elevation of NFIP insured residential structures
- Elevation and dry-proofing of NFIP insured non-residential structures
- Acquisition of NFIP insured structures and underlying real property
- Relocation of NFIP insured structures from acquired or restricted real property to sites not prone to flood hazards
- Demolition of NFIP insured structures on acquired or restricted real property
- Other activities that bring NFIP insured structures into compliance with statutorily authorized floodplain management requirements
- Beach nourishment activities that include planting native dune vegetation and/or the installation of sand-fencing.
- Minor physical mitigation projects that do not duplicate the flood prevention activities of other Federal agencies and lessen the frequency of flooding or severity of flooding and decrease the predicted flood damages in localized flood problem areas. These include: modification of existing culverts and bridges, installation or modification of flood gates, stabilization of stream banks, and creation of small debris or flood/storm

FEMA has long been promoting disaster resistant construction and retrofit of facilities that are vulnerable to hazards in order to reduce potential damages due to a hazard event. The goal is to reduce loss of life, human suffering, economic disruption, and disaster costs to the Federal taxpayer. This has been, and continues to be accomplished, through a variety of programs and grant funds.

Although the overall intent is to reduce vulnerability before the next disaster threatens, the bulk of the funding for such projects actually has been delivered through a "post- disaster" funding mechanism, the Hazard Mitigation Grant Program (HMGP). This program has successfully addressed the many hazard mitigation opportunities uniquely available following a disaster. However, funding of projects "pre-disaster" has been more difficult, particularly in states that have not experienced major disasters in the past decade. In an effort to address "pre-disaster mitigation", FEMA piloted a program from 1997-2001 entitled "Project Impact" that was community based and multi-hazard oriented.

Through the Disaster Mitigation Act of 2000, Congress approved creation of a national Predisaster Hazard Mitigation program to provide a funding mechanism that is not dependent on a Presidential disaster declaration. For FY2002, $25 million has been appropriated for the new grant program entitled the ***Pre-Disaster Mitigation Program (PDM)***. This new program builds on the experience gained from Project Impact, the HMGP, and other mitigation initiatives.

Eligible projects include:

- State and local hazard mitigation planning
- Technical assistance [e.g. risk assessments, project development]
- Mitigation Projects
  - Acquisition or relocation of vulnerable properties
  - Hazard retrofits
  - Minor structural hazard control or protection projects
- Community outreach and education [up to 10% of state allocation]

The funding is 75% Federal share, 25% non-Federal, except as noted below. The grant performance periods will be 18 months for planning grants, and 24 months for mitigation project grants. The PDM program is available to regional agencies and Indian tribes. Special accommodation will be made for "small and impoverished communities", who will be eligible for 90% Federal share, 10% non-Federal.

♦ COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM

These Federal funds are provided through the U.S. Department of Housing and Urban Development (HUD) and are administered by the CDBG Program of the New Hampshire Office of State Planning.

Some CDBG disaster related funding has been transferred to FEMA recently and the SHMO is scheduled to receive guidance as to which specific funds and, new program management criteria.

The specific CDBG funds designated for hazard mitigation purposes are made available to address "unmet needs" pursuant to a given Disaster Declaration to States which request them. For these funds, project selection guidance is provided by NHOEM and NHOSP administers the grant.

Community Development Block Grant

- ***U.S. Dept. of Housing and Urban Development***
- ***Funds for a Declared Disaster's "Unmet Needs"***
- ***Projects must meet one of three National Objectives***
- ***Provide a direct benefit to low and moderate income persons or households***
- ***Prevent or eliminate slums and blight***
- ***Eliminate conditions which seriously and immediately threaten the public health and welfare***

Additional conditions with respect to the expenditure of these funds includes the provision that at least 50% of the grant award must be expended in a manner

Pursuant to Declaration DR-1144- NH, $557,000.00 was made available to the State and pursuant to DR-1199-NH, the grant award is targeted at $1,500,000.00.

In October of 1998, HUD announced the program guidelines for the expenditure of the DR-1144-NH related funding and the community of Salem applied for, and has received preliminary approval for funding to acquire a 19-unit trailer park in the Floodplain.

WEBSITES FOR MITIGATION RESOURCES	
American Planning Association	http://www.planning.org
Catalog of Federal Domestic Assistance Programs	http://aspe.os.dhhs.gov/cfda
Community Rating System	http://www.fema.gov/nfip/crs.htm
FEMA Individual Assistance Program	http://www.fema.gov/rrr/inassist.shtm
FEMA Mitigation Planning	http://www.fema.gov/fima/planning
FEMA Public Assistance Program	http://www.fema.gov/rrr/pa
Flood Hazard Mitigation	http://www.fema.gov/hazards/floods
Flood Mitigation Assistance Program	http://www.fema.gov/fima/mtap.shtm
Habitat for Humanity	http://www.habitat.org/
Hazard Mitigation Grant Program	http://www.fema.gov/fima/hmgp/
HAZUS and HAZUS–MH	http://www.fema.gov/hazus/index.shtm
Home Rule and Dillon Rule	http://www.naco.org/pubs/research/briefs/dillon.cfm
Institute for Business and Home Safety	http://www.ibhs.org/
Institute for Local Self Government	http://www.ilsg.org/
Landslide Hazard Mitigation	http://www.fema.gov/hazards/landslides
Maxwell Campbell Public Affairs Institute:	http://www.governing.com/gpp/2000/gp0intro.htm
City and County Report Cards	http://www.governing.com/gpp/2002/gp2intro.htm
Mitigation Success Stories	http://www.fema.gov/fima/success.shtm
Multi-hazard Mapping Initiative	http://www.hazardmaps.gov
National Association of Regional Councils	http://www.narc.org
National Dam Safety Program	http://www.fema.gov/fima/damsafe/
National Earthquake Hazard Reduction Program	http://www.fema.gov/hazards/earthquakes/eqmit.shtm
National Flood Insurance Program	http://www.fema.gov/nfip
National Hurricane Program	http://www.fema.gov/hazards/hurricanes/nhp.shtm
National League of Cities	http://www.nlc.org
Native eDGE	http://nativeedge.hud.gov
NH Bureau of Emergency Management	http://www.nhoem.state.nh.us
Pre-Disaster Mitigation Program	http://www.fema.gov/fima/pdm
Protecting Your Home	http://www.fema.gov/hazards/tornadoes/presskit3.shtm
Protecting Your Property from Fire: Dealing with Vegetation and Combustible Materials	http://www.fema.gov/fima/how2001
Protecting Your Property from Fire: Roofing	http://www.fema.gov/fima/how2002.shtm
Protecting Your Property from Wind	http://www.fema.gov/fima/how2018.shtm
Protecting Yourself from Tornadoes: Safe Rooms	http://www.fema.gov/mit/saferoom
Small Business Administration	http://www.sba.gov/disaster
The Grantsmanship Center: Community Foundations	http://www.tgci.com/resources/foundations/searchGeoLoc.asp
Tribal Governments: Laws, Legislation, and Related Topics	http://www.findlaw.com/01topics/21indian/index.html
U.S. Army Corps of Engineers	http://www.usace.army.mil
U.S. Department of Agriculture	http://www.usda.gov/da/disaster/nda.htm
U.S. Department of Agriculture, Natural Resources Conservation Service	http://www.nrcs.usda.gov
U.S. Department of Housing and Urban Development	http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/driquickfacts.cfm
U.S. Department of Transportation	http://www.fhwa.dot.gov/programadmin/erelief.html
U.S. Environmental Protection Agency	http://www.epa.gov/
U.S. State and Local Government Gateway	http://www.firstgov.gov/Government/State_Local.shtml
Wildfire Hazard Mitigation	http://www.fema.gov/hazards/fires

APPENDIX B

Sample Committee Meeting Agenda
Sample Notes of Committee Meeting
Sample Public Notice of Committee Meeting

Northfield Hazard Mitigation Plan Update Committee

May 23, 2019 10 AM – 11:30 AM
Northfield Town Hall
21 Summer Street, Northfield, NH

FEMA

L R P C

AGENDA

The focus of this process is **mitigation**, which is action taken to reduce or eliminate long-term risk to hazards. **Mitigation is different from preparedness**, which is action taken to improve emergency response or operational preparedness.

1. Introductions
2. Tracking time
3. Hazard Risk Assessment -- p. 2-3 and 2-4 of 2012 Plan
   a. Compare to 2018 State Hazard Mitigation Plan list of hazards
   b. List hazards with risk ranking
4. Mitigation Goals
   a. Review 2012 goals – p. 1-4 and 1-5 of 2012 Plan
   b. Compare with 2018 State Hazard Mitigation Plan
5. Updates Needed
   a. Community Profile – p. 2-1 and 2-2 of 2012 Plan
   b. Current Plans, Policies and Regulations – p. 5-1 to 5-5 of 2012 Plan
6. Next Meeting – Date?
   a. Review 2012 Critical Facilities map for needed changes, updates
   b. Review and update assessed values of Critical Facilities
   c. Review Mitigation Actions p. 34-50 of 2013 Plan
7. Public Input

Page **1** of **1**

Northfield Hazard Mitigation Plan Update

May 23, 2019

Present: John Raffaelly, Stephanie Giovannucci, Malcolm Pickering, Tim Joubert, Joe Kidder, Adam Seligman, Eric Keck, Michael Sitar, Kristin Helling, Susan Slack (LRPC)

After introductions, S. Slack discussed the task of the committee – to update the 2013 Northfield Hazard Mitigation Plan. The difference between hazard mitigation and emergency preparedness was briefly discussed.

S. Slack reminded committee members of the need to keep track of time they spend between committee meetings working on various aspects of updating the plan. S. Slack will keep track of time at committee meetings. Members will forward their time spent between meetings to S Giovannucci. This time is used to meet Moultonborough's in-kind match requirement required by FEMA, which is funding LRPC's work with the town on updating the Hazard Mitigation Plan.

S. Slack distributed two pages from the 2018 State of New Hampshire Multi-Hazard Mitigation Plan Update, which identifies natural, technological and human-caused hazards, and identifies hazard changes between the 2013 and the 2018 state plans.

The committee discussed the list of hazards. S. Slack distributed a spreadsheet for ranking the probability, extent and vulnerability for the listed hazards. Committee members discussed each hazard and came to a consensus on ranking each one. S. Slack will apply the rankings to the spreadsheet and share the results with committee members. S. Slack explained that Mitigation Actions need to be applied to High and Medium ranked Hazards.

S. Slack distributed the Plan Goals from the state's 2018 Hazard Mitigation Plan. The committee discussed the town's mitigation goals (p. 1-4 and 1-5 of the 2013 plan). A. Seligman suggested adding two goals from the state plan related to climate change and continuity of town services and government. S. Slack will make those changes for the committee to review.

The committee discussed the changes to the Community Profile and Current Plans, Policies and Regulations sections of the plan. S. Slack will compare the existing Community Profile with that of the current online Census Bureau version, make appropriate changes, and provide an updated version for the committee's review. S. Giovannucci will review the Plans and Policies section and make appropriate changes. Committee members will forward suggested changes to her.

The meeting adjourned at 11:50 am. The next meeting will be June 6 at 10 am.

S. Slack, Note Taker