Town of Moultonborough, New Hampshire
Hazard Mitigation Plan Update, 2025

Prepared by the: **Moultonborough Hazard Mitigation Update Committee**

Downed tree due to high winds in Moultonborough July 21, 2022

Summer 2025

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Town of Moultonborough, New Hampshire
Hazard Mitigation Plan Update

Summer 2025

With Assistance from:
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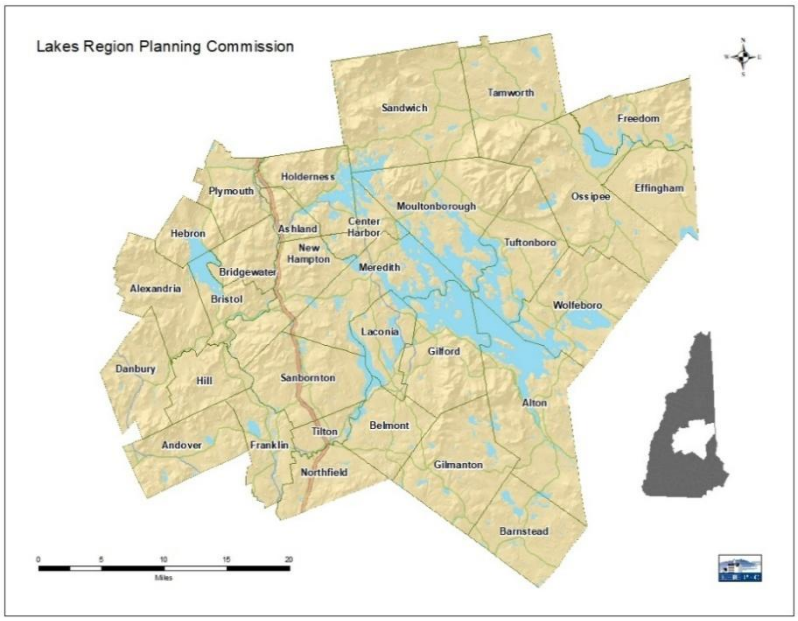
Funding for this plan was provided by the NH Department of Safety, Homeland Security and Emergency Management, and with matching funds provided by the Lakes Region Planning Commission.



Lakes Region Planning Commission

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EXECUTIVE SUMMARY

The *Moultonborough Hazard Mitigation Plan Update* (the Plan) serves to reduce future losses from natural hazard events before they occur. The Plan was developed by the Moultonborough Hazard Mitigation Planning Update Committee (the Committee) with assistance from the Lakes Region Planning Commission and contains statements of policy adopted by the Board of Selectmen in Section VI.

The Committee agreed that some of the natural hazards identified in the 2019 Plan continue today; but the Committee's evaluation of past hazards and potential future events, along with their extent and impact resulted in a different assessment than in the past. The matrix below shows the natural hazards considered to be high risks.

Hazard Event	Overall Risk
Conflagration	High
Severe Winter Weather	High
Wildfire	High
Drought	High

There have been only minor changes to the list of the town's Critical Facilities, such as changes in the name of a facility. Additionally, the Committee decided to include infrastructure not previously mentioned in the prior plan, such as boat launches and state and town roads. Existing programs related to hazard mitigation include the following:

Existing Plans, Regulations and Practices Supporting Hazard Mitigation	
Hazard Mitigation Plan 2019	Subdivision Regulations (2020)
Code Enforcement	Site Plan Review Regulations (2020)
Zoning Ordinance (2024)	Master Plan (2021)
Floodplain Ordinance (2024)	School Emergency Operation Plan (2024)
Emergency Power Generation	Emergency Response Training and Drills

Some of the 21 Mitigation Actions from the 2019 Plan have either been completed (4) or are considered no longer pertinent (3). The fourteen remaining Mitigation Actions are being carried over and considered in this plan along with several new actions. In its effort to further reduce the vulnerability of the town to future hazards, new general and hazard-specific mitigation actions were developed and prioritized based on local criteria. A schedule for implementing proposed mitigation actions was developed.

The update to the NH State Hazard Mitigation Plan (HMP) in 2023 led to several changes to this plan, including adjustments to a few of the hazards considered, the impacts of hazards on socially vulnerable populations, and consequently some of the stated hazard mitigation goals.

SECTION I: PLANNING PROCESS

A. BACKGROUND

To be eligible to receive disaster related Federal Emergency Management Agency (FEMA) grant funding to be used for hazard mitigation projects and actions that will ultimately reduce and mitigate future losses from natural hazard events, FEMA has required that municipalities within the State of New Hampshire establish local hazard mitigation plans. In response to this requirement, the NH Department of Safety's Division of Homeland Security and Emergency Management (HSEM) and the nine regional planning commissions in the state entered into agreements to aid municipalities with plan development and updates. This plan development and update process generally followed the steps outlined in FEMA's *Local Mitigation Planning Policy Guide (2025)*.

B. AUTHORITY

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

C. FUNDING SOURCE

NH HSEM funded this update through FEMA's Pre-Disaster Mitigation Grant Program with local soft match (participants' time) and additional funds from the Lakes Region Planning Commission.

D. PURPOSE

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

Developing a hazard mitigation plan allows for the following:

- Increased education and awareness around threats, hazards, and vulnerabilities.
- Building partnerships for risk reduction which include government, organizations, businesses, and the public.
- Identifying long-term, broadly supported strategies for risk reduction.
- Developing local mitigation efforts that support local mitigation efforts.
- Identifying strategies and activities that focus resources on the greatest risks and vulnerabilities; and,
- Communicating priorities to potential sources of funding.

A FEMA-approved hazard mitigation plan is a requirement for receiving certain types of non-emergency disaster assistance including funding for mitigation projects including:

- Public Assistance
- Fire Management Assistance Grants (FMAG)
- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- High Hazard Potential Dam (HHPD)
- Building Resilient Infrastructure & Communities (BRIC).

Why Develop a Mitigation Plan?

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. Our State is subject to many types of natural hazards: floods, severe winter weather, earthquakes, tornadoes, downbursts, tropical depressions/hurricanes, and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and strike in predictable locations. Others, such as floods, can occur anytime of the year and almost anywhere in the State.

E. SCOPE OF PLAN

The scope of this Plan includes the identification of natural hazards affecting the town of Moultonborough, assessment of the threats these pose to the town, and the development & prioritization of mitigation actions to be implemented. Supplemental information regarding some human-caused hazards that could impact Moultonborough are included in Appendix G.

In the 2023 State Hazard Mitigation Plan (SHMP), new areas of focus were introduced: inclusive planning for equitable outcomes and community lifelines. While these topics are not new, this is the first time that the New Hampshire SHMP addressed them in depth, not only relative to each hazard, but also by incorporating them throughout the Plan into over-arching goals and mitigation actions. While the connections were not always explicit or direct, an effort was made to incorporate these focus areas into the Moultonborough HMP where locally appropriate.

The scope of this Plan includes a review of natural hazards affecting the town, as identified by the Hazard Mitigation Planning Committee. The hazards considered under the scope of this plan include the relevant natural hazards that are outlined in the State of New Hampshire's Hazard Mitigation Plan Update 2023. Some hazards identified in the State Plan were deemed not applicable to the Town of Moultonborough (i.e. Avalanche)

F. METHODOLOGY

The Lakes Region Planning Commission (LRPC) corresponded with the Moultonborough Emergency Management Director (EMD) to initiate the hazard mitigation update process. The EMD established the Moultonborough Hazard Mitigation Planning Update Committee for the

purpose of updating a plan for hazard mitigation. The Committee consisted of representatives from the Police, Fire, Planning, and Public Works departments, as well as Emergency Management Director (EMD), the Board of Selectmen, and the School District.

The Committee developed the content of the Plan by following the process set forth in FEMA's *Local Hazard Mitigation Planning Guide (2025).* Technical and historical information used during the development of this Plan Update was compiled from a variety of sources including local input as well as published information; a list of these resources can be found in Appendix I. Updated information on hazards in New Hampshire informed discussion of recommended mitigation actions.

Communication with committee members occurred at meetings and through correspondence. Meetings with the committee were open to the public. The committee reviewed and rated the risk of natural hazards to the town. They reviewed implementation progress and applicability of actions identified in the last plan. Existing challenges were identified. Additional mitigation actions were developed to address challenges/problems. All mitigation actions were evaluated, and an implementation schedule developed.

Neighboring municipalities were notified of Moultonborough's plan update. Some comments were received from the public during the development of the plan update through surveys, and these were incorporated into the risk analysis and development of mitigation actions phases of the process.

It is important to note that this is Moultonborough's Hazard Mitigation Plan (HMP). While all HMPs in the state (and country) must incorporate the elements set forth by FEMA, the plan update, "needs to reflect the unique situation and most effective path…to meet their specific needs"[1]. Moultonborough, a small rural community has done that by reviewing the existing plan and mitigation actions, considering what has and has not changed in the community since the last plan was adopted, identified problems associated with natural hazards, and developed a prioritized list of mitigation actions to address these problems and a plan to implement them.

G. PUBLIC INVOLVEMENT

A variety of Hazard Mitigation Planning stakeholders were invited to join the Hazard Mitigation Planning Committee. Other specific opportunities for public input occurred at each meeting. EMDs in adjacent communities and organizations working with vulnerable and underserved communities were notified of the update process and encouraged to provide input (see emails and press release Appendix C).

A survey was made available to members of the public at the Town Hall and by posting a link https://arcg.is/0ffqLC0 and QR Code on the town's website and

[1] FEMA, *Local Hazard Mitigation Guide (2023)*, Section 3.1 Right-Sizing Plan Development and Update.

social media pages. Over forty people (43) submitted their concerns and comments which were shared with committee members (see Appendix D) and, where applicable, incorporated into the update. This resulted in refinement of the Risk Rating.

The Moultonborough Hazard Mitigation Committee was comprised of the following individuals.

Committee Representation	**Person**	**Title**
EMD (Emergency Management Director), Fire	David Bengtson	EMD, Fire Chief
Police	Peter Beede	Police Chief
Public Works/Highway/Road Agent	Chris Theriault	DPW Director
Selectboard	Carter Terenzini	Interim Town Administrator
Land Use Department	Dari Sassan	Town Planner
Selectboard	Jonathan Tolman	Vice Chair
School representative	Amanda Bergquist	Business Administrator
Assessing Department	Tom Hughes	Town Assessor
Additional participants:		
Lakes Region Planning Commission	Danielle Scadova-Vose	Regional Planner
NH HSEM field representative	Dean Jore	Community Liaison

The committee members listed above participated in several committee meetings, provided departmental information, contributed their field of expertise, reviewed and commented on committee meeting notes, reviewed drafts of the Plan, and worked together to identify and prioritize mitigation projects. The draft plan was made available for committee and public review from July 18-25, 2025.

Many thanks for all the hard work and effort from each one of you. This plan would not exist without your knowledge and experience.

SECTION II: COMMUNITY PROFILE

A. GEOGRAPHY

The Town of Moultonborough is in Carroll County in central New Hampshire. The town is bordered to the north by Sandwich and Tamworth, to the east by Ossipee and Tuftonboro, to the south by Meredith, Gilford and Alton by way of Lake Winnipesaukee, and to the west by Holderness and Center Harbor. Moultonborough is 67 miles to Manchester; 68 miles to Portland, ME; 118 miles to Boston, MA; 314 miles to New York, NY; and 230 to Montreal, Canada.

The town of Moultonborough contains 75 square miles of land (60 square miles) and water area (15 square miles). The northeastern half of Moultonborough is characterized as rugged with wooded slopes which includes the presence of the Ossipee Mountain Range that hosts Mount Shaw at 2,990 feet; Faraway Mountain at 2,787 feet; Mount Roberts at 2,582 feet; and Turtleback Mountain at 2,203 feet. The northwest shares similar characteristics with the presence of the Red Hill Conservation Area which is home to Red Hill which boasts an elevation of 2,024 feet.

The remainder of land in town is characterized by hilly to rolling terrain, divided by wetlands, ponds and lakes. Just west of Red Hill in the northeast part of town numerous ponds and wetland extend from Squam Lake, through Wakondah Pond and Lake Kanasatka. Sandwiched between Red Hill to the west and Ossipee Mountains to the east there is Berry Pond, Garland Pond and Lees Pond, which is also home to the largest Aquifers in Moultonborough with Moultonborough Bay to the south. Riveres running through Moultonborough include the Squam River, Shannon Brook, Weed Brook, Halfway Brook and Red Hill River.

There are also many Islands that make up land area in Moultonborough. The following islands within Moultonborough Bay are inhabited in some capacity without vehicle access, meaning they can only be access by boat, Goodwin Island, Badger Island, Evergreen Island, Round Island, Whaleback Island, Black Island, Guay Island, Gansy Island, Birch Hill Island, Nineacre Island, Perch Island, Dow Island, Glines Island, Hermit Island, Hull Island with a handful of other smaller islands with no identifiers. There is also Kent Island on Squam Lake that is inhabited without vehicle access. Black Cat Island, and Long Island are accessibly by vehicle.

B. WEATHER CONDITIONS

Like many New England towns, the temperature and precipitation in Moultonborough varies greatly. The average temperatures for the month of January range from a high of 39 degrees to a low of -14 degrees Fahrenheit. The average temperatures for the month of July range from a high of 92 degrees to a low of 53 degrees Fahrenheit. Annual precipitation totals average

between 46-47 inches, where annual rainfall is slightly lower in the winter months when compared to summer months. Moultonborough averages about 68 inches of snow per year.

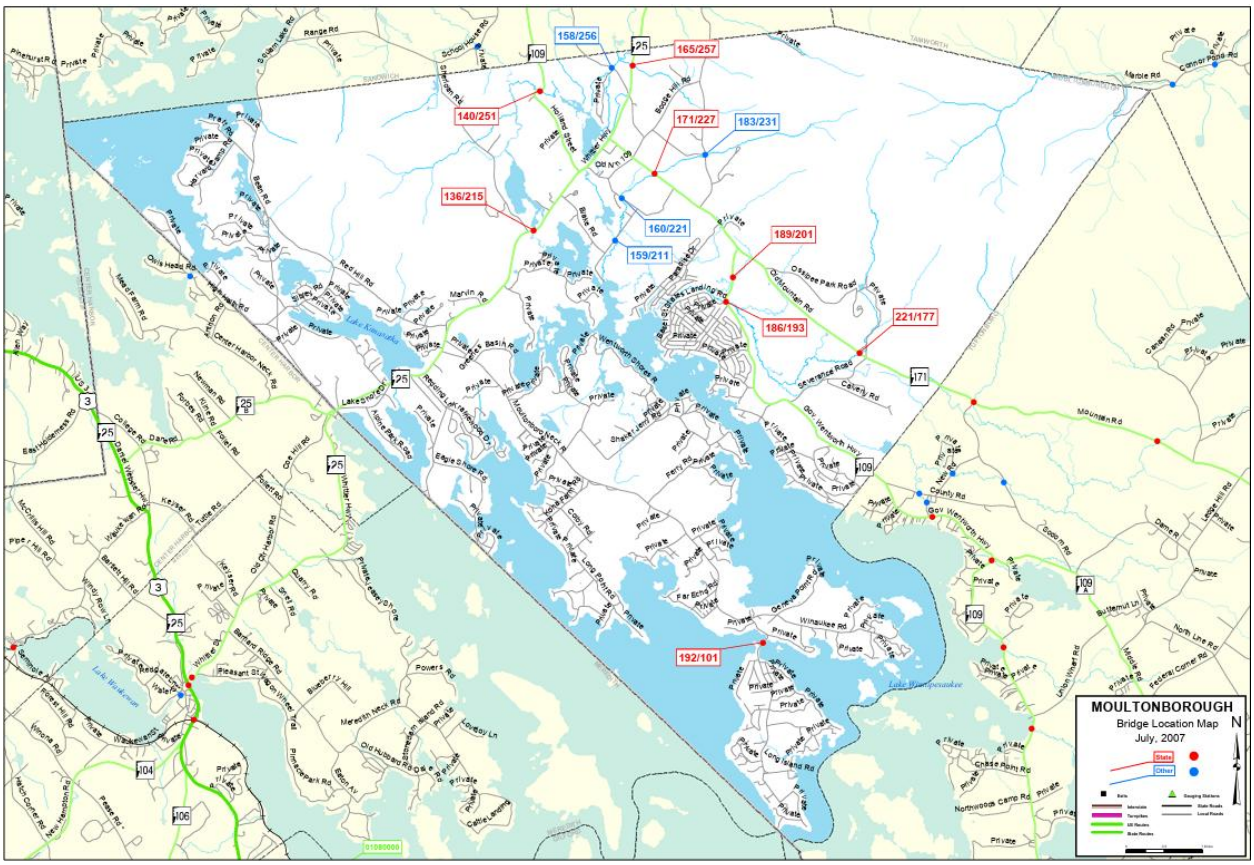
C. PUBLIC SERVICES AND INFRASTRUCTURE

A five-member Board of Selectmen governs the town of Moultonborough with the assistance of a Town Administrator. The Town holds its annual town meetings in March.

The Fire Department has ten full-time staff members and 12-18 call members and has two fire rescue stations. The full-time Fire Chief also serves as the Emergency Management Director. The Police Department is budgeted for a full-time Police Chief, 10 full-time officers, four part-time officers, three part-time community service officers, and four support staff providing 24/7 coverage. Prosecution services are provided by two contract prosecutors and victim/witness advocate. The Public Works Director has 15 full-time, three part-time, and four seasonal support staff who maintain 62 miles of town roads, run the Transfer Station, and maintain the town's facilities. The Concord Hospital – Laconia in Laconia is 12 miles southwest of Moultonborough, Speare Memorial Hospital in Plymouth is 18 miles to the northwest, and Huggins Hospital in Wolfeboro is 16 miles to the southeast. Huggins Hospital operates a family medical clinic in Moultonborough village. Additional hospitals are also located in Dover, Concord, and Lebanon.

NH Route 25 is the main corridor that runs east-west through the northern part of Moultonborough, From Center Harbor to Sandwich. There are several smaller routes which include NH Route 109 that travels north to south from its start in Sandwich, through the center of Moultonborough Village where it continues southeast along Lake Winnipesauke through Tuftonboro and Wolfeboro and eventually terminating at the Maine border. NH Route 171 is an east to west highway that starts in Moultonborough and runs west along the Ossipee Mountain Range through northern Tuftonboro and terminates at NH Route 16 in Ossipee.

Moultonborough has 12 bridges, with 8 owned and maintained by the State (red labels below), the rest are owned and maintained either by the town or private entities (blue labels below). It should be noted that Moultonborough does not currently have any red-listed bridges.



Businesses and residences near the Center Harbor town line have access to the Bay Sewer District system. Approximately 980 residences are served by several community water systems; the rest of the town has individual wells. The town's electric needs are served by NH Electric Cooperative (NHEC) which has also started to expand its fiber network in 2025. The town's telephone needs are provided by Consolidated Communications. The Moultonborough Fire Department maintains 107 dry hydrants and 14 pressurized fire hydrants (Bald Peak Colony Club) around town.

Moultonborough has up to 11 access points to public waters. Access points are classified by having boat/ramp access, fishing access, beach/trails. Seven of those access points are owned by Moultonborough and are located at Berry Pond (2), Lees Pond (1), Lake Winnipesaukee (4). The remaining access points are owned by state entities or private entities.

D. DEMOGRAPHICS AND POPULATION CHARACTERISTICS

Like many Lakes Region communities, the population of Moultonborough grew rapidly from 1990-2010, growing by 1,088 from 2,956 to 4,044 residents. Despite a growth of 874 residents from 2010-2020, population growth is expected to slow a bit with projected Population growth is even expected to flatten in the foreseeable future.

Year Round Population, 1990-2020 Census and Population Projections* 2030, 2040, 2050

Year	1990	2000	2010	2020	2030*	2040*	2050*
Moultonborough Population	2,956	4,480	4,044	4,918	5,302	5,392	5,231
Moultonborough Change	-	52%	-10%	22%	8%	2%	-3%

*New Hampshire Office of Planning and Development Estimates

Some characteristics of a community's population can put them at greater risk of being impacted by hazards. Utilizing Census data the NH Department of Health and Human Services (Environmental Public Health Tracking) developed a tool called the Social Vulnerability Index. This tool references sixteen determinants of health associated with health and emergency response outcomes. The most recent data available through this index (2015-2019) indicate little Social Vulnerability for Moultonborough, the only listed social vulnerability index for the town being the elderly population, aged 65 and older.

E. LAND USE AND DEVELOPMENT TRENDS

According to the 2025 Moultonborough Housing Needs Assessment, there are 5,821 housing units in Moultonborough.

The 2025 Housing Needs Assessment also found that Moultonborough has a high concentration of seasonal "vacancies", with 51% of all units being seasonally vacant, as well as, a robust short-term rental submarket with 477 active listings, many of which are waterfront properties.

Housing Units - Moultonborough

	2020*	2025 **
Total	4,910	5,821
Occupied	2,244	2,158
Seasonal	2,533	3,663

*Census

**Moultonborough Housing Needs Assessment

Development Trends

Existing land use has a strong influence on future development patterns. It is important to understand how land and other resources are currently used before recommendations can be developed regarding future land uses. Several factors have influenced Moultonborough's

current land use patterns, including natural resource constraints, the transportation network, economic development, and housing. Another significant factor is the influence of the Moultonborough Zoning Ordinance, which has been in place without significant change since the adoption of zoning in 1985.

Examination of the existing land use maps reveals several characteristics of land use patterns in Moultonborough. The characteristics were identified by the committee, as listed below:

- Waterfront development is strong
- Village Overlay Districts along Rte 25 were put in place to encourage higher density and more commercial development
- Moultonborough has 2,957 housing units according to US Census 5-year estimates in 2023.
- Work on the Housing Master Plan was started in 2024.

Development Activity: 2020 – 2024

(from Moultonborough Town Reports)

2020

- Site Plan Regulations updated
- Subdivision Regulations updated
- 323 building permits were issued
- Drafted a solar facilities ordinance amendment

2021

- Historical and Cultural Resources Chapter updated in the Master Plan
- 348 building permits were issued

2022

- 320 building permits issued, down from 2021, but the total cost of construction increased heavily and the Town received more permits for larger projects

2023

- 350 building permits were issued, 49 of which were new construction

2024

- 274 building permits were issued, 77 of which were new construction
- Work started on the Housing Chapter of the Master Plan

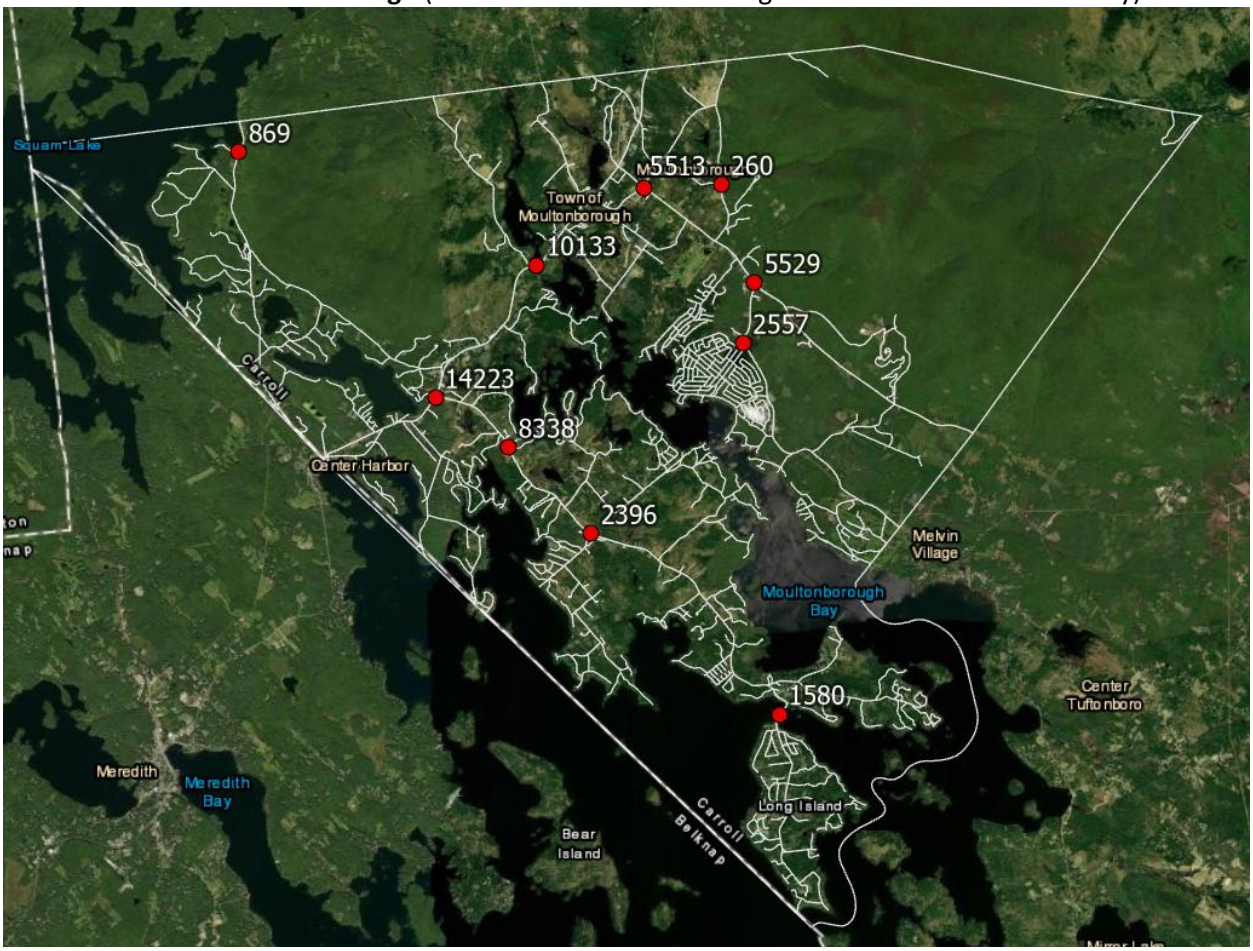
Traffic Volume

A standard measure of traffic volume is Average Annual Daily Traffic (AADT) counts, measured in vehicles per day.[2] As this is a projected average over the entire year, there are certainly many summer days when the volume of traffic on any one of these roads exceeds these figures.

[2] The complete set of current and historic Moultonborough Traffic Count volumes can be found at https://nhdot.public.ms2soft.com/tcds/tsearch.asp?loc=Nhdot&mod=TCDS using the NH DOT TDMS data mapping tool.

There are ten locations throughout Moultonborough where traffic volume is measured on a regular basis. Traffic volumes in Moultonborough have stayed consistent over the years aside from data collected in 2020 and 2021. There has been a trend in the latest counts when compared to pre-Covid-19 counts that show most recorded traffic counts have rebounded from the pandemic data.

Traffic Counts in Moultonborough ('Latest' is the AADT – average number of vehicles each day)



Loc ID	County	Community	Functional Class	On	Directions	Latitude	Longitude	Latest	Latest Date
62313055	CARROLL	MOULTONBOROUGH	Minor Arterial	Whittier Hwy		43.743997	-71.4079608	10133	2024
82313011	CARROLL	MOULTONBOROUGH	Major Collector	Governor Wentworth Hwy		43.757689	-71.3816145	5513	2024
82313012	CARROLL	MOULTONBOROUGH	Major Collector	Governor Wentworth Hwy	NB/SB	43.7302536	-71.3574468	2557	2024
82313051	CARROLL	MOULTONBOROUGH	Minor Collector	Moultonboro Neck Rd	NB/SB	43.711791	-71.414854	8338	2025
82313056	CARROLL	MOULTONBOROUGH	Major Collector	Governor Wentworth Hwy		43.7409305	-71.3546382	5529	2024
82313057	CARROLL	MOULTONBOROUGH	Minor Arterial	Whittier Hwy		43.7205982	-71.4328477	14223	2024
82313059	CARROLL	MOULTONBOROUGH	Minor Collector	Moultonboro Neck Rd		43.6965614	-71.3946315	2396	2024
82313060	CARROLL	MOULTONBOROUGH	Minor Collector	Long Island Rd	NB/SB	43.6645408	-71.3486182	1580	2024
82313061	CARROLL	MOULTONBOROUGH	Local	Ossipee Mountain Rd		43.7582779	-71.3627657	260	2024
82313066	CARROLL	MOULTONBOROUGH	Minor Collector	BEAN RD	NB/SB	43.763966	-71.48086	869	2017

Future Development

In 2016 Land Use Chapter update of the Master Plan identified three goals: resource protection, beneficial land use, and beneficial development. The Chapter identifies NH Route 25 as an area for further commercial expansion and states the importance of encouraging a range of housing types that are affordable for all residents.

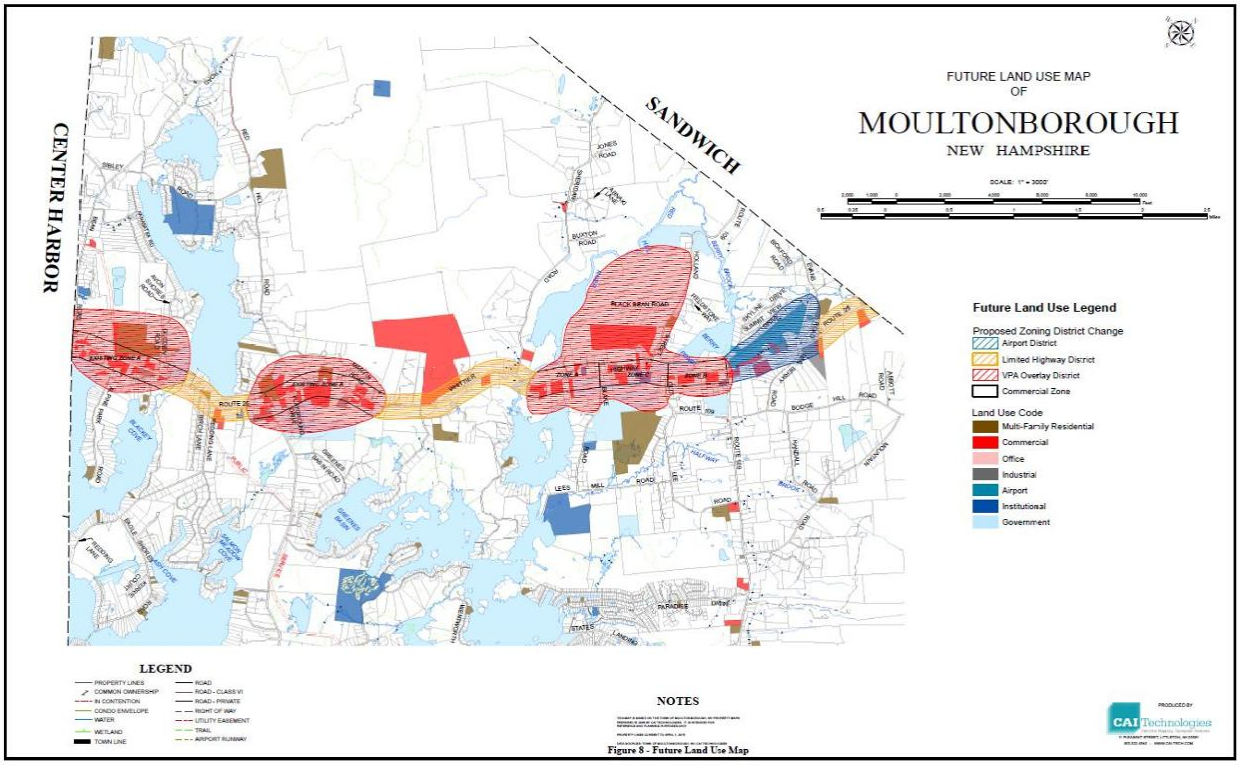


Figure 8 - Future Land Use Map

Overall, the Committee feels that the town is better protected from natural hazard events than it was at the time of the last update.

SECTION III: RISK ASSESSMENT

A. INVENTORY OF ASSETS

The Critical Facilities List for the Town of Moultonborough has been identified by the Moultonborough Hazard Mitigation Planning Committee and the values updated by the Town Assessor. A critical facility is defined as a building, structure or location which is: vital to the emergency response; maintains an existing level of protection from hazards within the community and would create a secondary disaster if a hazard were to impact it. The Critical Facilities List for the Town of Moultonborough has been identified using the following categories:

CATEGORY 1 (Emergency Services)

- Fire
- Emergency Medical Services (EMS)
- Police
- Shelter
- Town Hall
- Emergency Operations Center (EOC)
- Public Works

CATEGORY 2 (Essential Structures and Services)

- Public Utilities
- Transportation
- Evacuation Routes
- Water Supply/Treatment
- Sewer Treatment
- Emergency Fuel
- Food/Grocery
- Boat Launches

CATEGORY 3 (Special Populations & Places to Protect)

- Schools
- Daycares
- High Concentration Populations
- Elderly Facilities
- Summer Camps
- Hazardous Materials Sites

OTHER (Historical, Cultural Areas)

- Downtown Historic District
- Castle in the Clouds
- Public Library

Moultonborough, NH Inventory of Critical Facilities and Assets						
CATEGORY	TYPE	FACILITY/INFRASTRUCTURE	LOCATION	OWNER	NOTES	2024 VALUE
1/3	Educational/Emergency Assembly	Moultonborough Central School	916 Whittier Highway	MOULTONBOROUGH SCHOOL DISTRICT		$12,237,800
1/3	Educational/Shelter	Moultonborough Academy	25 Blake Road	MOULTONBOROUGH SCHOOL DISTRICT	Primary Shelter; Has generator	$11,448,200
1	Fire/Police Dept.	Moultonborough Safety Building	1035 Whittier Highway	MOULTONBOROUGH TOWN OF	Has generator	Part of Town Hall Complex
1	Fire Department	Moultonborough Neck Fire Station	948 Moultonboro Neck Road	MOULTONBOROUGH TOWN OF	Has generator	$415,900
1	Public Works	Highway Garages	68 Highway Garage Road	MOULTONBOROUGH TOWN OF	Has generator	$644,600
1	Administration	Town Hall Complex	6 Holland Street	MOULTONBOROUGH TOWN OF	Has generator	$11,702,200
1	Community	Moultonborough Function Hall	139 Old Route 109	MOULTONBOROUGH TOWN OF		$578,100
2	Electric Substation	Electrical substation (NH Rte. 25)	66 Whittier Highway	NEW HAMPSHIRE ELECTRIC COOP INC		
2	Electric Substation	NHEC-Power Substation	311 Moultonboro Neck Road	NEW HAMPSHIRE ELECTRIC COOP INC	Has generator	$24,120,900
2	Electric Substation	NHEC substation on Gov Wentworth Highway (Rte. 109)	1265 Governor Wentworth Highway	NEW HAMPSHIRE ELECTRIC COOP INC		
2	Electric Services/Solar Farm	Electrical substation (Moultonborough Neck Road)	311 Moultonboro Neck Road	NEW HAMPSHIRE ELECTRIC COOP INC		$3,665,400
2	Utility	Lakes Region Water Utility	451 GWH, 072-095 Paradise Drive,	Lakes Region Water Co, Inc.		$2,663,900
2	Utility	Bay Sewage System Utility	9A Whittier Highway	Bay District		$644,000
2	Telephone	Fairpoint Communications	320 Governor Wentworth Highway	NEW ENGLAND TELEPHONE		$4,114,000
2	Food Pantry	Lakes Region Food Pantry & Thrift Shop	977 Whittier Highway	LAKES REGION FOOD PANTRY INC		$376,400
2	Cell Tower	Red Hill Cell Tower	503 Sheridan Road	SBA PROPERTIES INC		$212,800
2	Cell Tower	Glidden Road Cell Tower	27 Glidden Road	Verizon Wireless		$155,400
2	Cell Tower	Moultonboro Neck Road Cell Tower	781 Moultonboro Neck Road	SBA PROPERTIES INC		$305,500
2	Cell Tower	NH Route 25 Cell Tower	Parcel ID: 2.BG01, Whittier Highway	SBA PROPERTIES INC		$176,300
2	Cell Tower	Governor Wentworth Highway (Rte. 109) Cell Tower	Parcel ID: 150-005 &150-006	MYVY LLC		Not yet built
2	Boat Launches	Harilla Landing	484 Long Island Road	State of New Hampshire		
2	Boat Launches	Long Island Beach	62 Long Island Road	MOULTONBOROUGH TOWN OF		
2	Boat Launches	Access Road	Access Road	MOULTONBOROUGH TOWN OF		
2	Boat Launches	States Landing	215 States Landing Road	MOULTONBOROUGH TOWN OF		
2	Landfill/Transfer Station	Town Landfill	253 Holland Street	MOULTONBOROUGH TOWN OF	Has Generator	$448,300
2	Marina	Trexler's Marina		Private		$2,278,400
2	Boat Launch	Harilla Landing	484 Long Island Road	Private		
2	Marina	Ambrose Cove Marina	84 Blacks Landing Road	MYVY LLC		$3,580,000

Moultonborough, NH Inventory of Critical Facilities and Assets						
CATEGORY	TYPE	FACILITY/INFRASTRUCTURE	LOCATION	OWNER	NOTES	2024 VALUE
2	Airport	Moultonborough Airport	39 Airport Road	NORTH COUNTRY AIR BASE LLC		$368,400
2	Educational	First Student Bus Terminal	1146 Whittier Highway	1146 Whittier Highway LLC		$507,900
2	Public Water Supply	Castle Springs	Parcel ID: 000405 / 001 / 000 / 000 / 000, & 455 Ossipee Park Road	CG ROXANE LLC	Commercial water withdrawal well	$368,365
2	Public Water Supply	Irrigation & Fire Hydrant Water Supply Pump Station	96 Elkins Point Road	BALD PEAK LAND COMPANY INC		
2	Grocery Store	Dollar General	929 Whittier Highway	GREGG RANCH LLC		
2	Grocery Store	Starley's Market	374 Governor Wentworth Highway	STARLEY LLC		
2	Grocery Store	JoJo's Country Store	932 Moultonboro Neck Road	EM HEATH INC		
2	Major Road providing prmiary access to/from town	State Road (Route 25)	Whittier Highway from Center Harbor to Sandwich town lines	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	State Road (Route 109)	Governor Wentworth Highway (Rte. 109) Whittier Hwy to Tuftonboro line	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	State Road (Route 109)	Holland Street (Rte. 109) Whittier Hwy to Sandwich town line	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	State Road (Route 171)	Governor Wentworth Highway (Rte. 109) Whittier Hwy to Tuftonboro line	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	State Road-Moultonboro Neck Road	Whittier Highway to Long Island Road (Long Island)	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	State Road-Bean Road	Whittier Highway to Sandwich	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	State Road (Route 25)	Bridge over Red Hill River (Near Sheridan Road intersection)	State of New Hampshire		
2	Major Road providing prmiary access to/from town/Evacuation Route	Town Road	Castle Shore Road (By-pass around Suissevale)	MOULTONBOROUGH TOWN OF		
2	Major Road providing prmiary access to/from town/Evacuation Route	Town Road	Lake Shore Drive (By-pass around Village West)	MOULTONBOROUGH TOWN OF		
2	Major Road providing prmiary access to/from town/Evacuation Route	Town Road	Shaker Jerry & Ferry Roads (By-pass for Moultonboro Neck Road between #465-#711)	MOULTONBOROUGH TOWN OF		
2	Major Road providing prmiary access to/from town/Evacuation Route	Town Road	Sheridan Road (By-pass between (#1-#783 Whittier Hwy)	MOULTONBOROUGH TOWN OF		
2	Major Road providing prmiary access to/from town/Evacuation Route	Town Road	Severance Road (Two way by-pass for Old Mountain Rd & GWH)	MOULTONBOROUGH TOWN OF		
2	Major Road providing prmiary access to/from town/Evacuation Route	Town Road	Redding Lane & Eagle Shores Road	MOULTONBOROUGH TOWN OF		

Moultonborough, NH Inventory of Critical Facilities and Assets						
CATEGORY	TYPE	FACILITY/INFRASTRUCTURE	LOCATION	OWNER	NOTES	2024 VALUE
3	Day-Care	Imaginations... A Child's Place	903 Whittier Highway	Kids "R" Us LLC		$312,500
3	Day-Care	Moultonborough Learning Cen	396 Whittier Highway	Teich Commercial Properties		$327,900
3	Elderly Housing	WestWynde	9 Locke Lane	WEST WYNDE AFFORDABLE HOUSING LLC	Taylor Community, Has generator	$1,307,300
3	Seasonal Summer Camp	Deer Hill Camp	237 & 258 Red Hill Road	DEER HILL CAMP LLC		$2,252,205
3	Seasonal Summer Camp	Camp Quinebarge	100 Sibley Road	QUINEBARGE HOLDINGS LLC		$4,852,473
3	Seasonal Summer Camp	Camp Tecumseh	975 Moultonboro Neck Road	CAMP TECUMSEH		$10,743,301
3	Seasonal Summer Camp	Camp Robindel	81 & 82 Geneva Point Road	81-82 GPR LLC		$11,704,800
3	Seasonal Summer Camp	Camp Geneva Point	108 Geneva Point Road	GENEVA POINT CENTER INC		$24,534,600
3	Seasonal Summer Camp	Camp Winaukee	432 Winaukee Road	WINAUKEE REAL ESTATE CO LLC		$10,600,990
3	High Density	Long Island		Private		
3	High Density	Suissevale		Private		
3	High Density	Balmoral		Private		
3	Educational	Charter School	80 Bean Road	Private	New Charter School TBD	$1,757,700
3	High Density	Black Cat Island		Private		
3	Business/Farm	Miracle Farms		Private		$1,103,800
3	Business	Stephens Landscaping		Private		$1,804,205
3	Propane Storage	603 Oil Co.	1236 Whittier Highway	603 OIL AND FUEL LLC		
Other	Historic Resources	Downtown Historic District				
Other	Unique Feature	Castle in the Clouds	483, 577, 586, 664 Ossipee Park Road	CASTLE PRESERVATION SOCIETY		$2,896,879
Other	Library	Moultonborough Public Library	4 Holland Street	MOULTONBOROUGH TOWN OF		Part of Town Hall Complex

B. IDENTIFYING NATURAL HAZARDS

The town of Moultonborough is prone to a variety of natural, human-caused, and technological hazards. The following hazards were identified as posing a risk to Moultonborough in the 2019 Hazard Mitigation Plan.

Risk Rating (2019) - Natural Hazards

High	Medium	Low
Conflagration	Extreme Temperatures	Landslides
Severe Wind (Tornado, Downburst)	Lightning	Wildfire
Severe Winter Weather	Tropical & Post Tropical Cyclones	Avalanche
	Drought	Earthquake
	Inland Flooding	Dam Failure
		Infectious Disease
		Solar Storms & Space Weather

Risk Rating (2019) – Human-Caused Hazards

High	Low
Mass Casualty	Hazardous Materials

While updating the Plan, the committee considered the hazards identified in the latest S*tate of New Hampshire Multi-Hazard Mitigation Plan (2023)*, developed by the New Hampshire Department of Safety's Division of Homeland Security and Emergency Management, for identification and definition of hazards that might affect the town. Since the last local plan, the State Plan now utilizes a somewhat different hazard nomenclature, grouping some hazard types together, adding several hazards, and deleting some. All Winter Weather events have been grouped under Severe Winter Weather. Extreme Temperature now encompasses both heat and cold. Hurricane is now Tropical & Post-Tropical Cyclone. Solar Storms & Space Weather is a newly specified natural hazard.

Moultonborough HMP 2025	Risk
Severe Winter Weather	16.00
Conflagration	14.00
Wildfire	12.00
Drought	12.00
High Wind Events (Tornado/Downburst)	10.00
Extreme Temperatures	10.00
Infectious Diseases	8.00
Lightning	6.00
Tropical & Post-Tropical Cyclones	6.00
Inland Flooding	5.33
Landslides	2.00
Solar Storms & Space Weather	1.00
Earthquake (>4.0)	1.00
Dam Failure	1.00
Avalanche	1.00

Following a review of the natural hazards identified in the 2023 State Plan and in Moultonborough's 2019 Plan, as well as historical information from internet sources about past hazard events in and near Moultonborough since 2019, the following natural hazards were identified as posing the greatest risk to the town. Higher risk score indicates higher risk (See end of Section III for more information on risk ratings).

Due to topography and geography, coastal flooding, avalanche, and landslides were not considered pertinent by the committee. While there are some steep areas in town, the committee indicated that they are not severe enough to lead to avalanche or landslide nor is there development in that area. Dams are addressed under inland flooding. It was acknowledged by the Committee that earthquakes are a possibility, but when thinking of earthquakes with a magnitude of 4.0 and higher on the Richter scale, the Committee feels the Town is not at risk. Since the year 1900, and per the USGS Database, the Lakes Region has experienced four earthquakes of that magnitude: Ossipee in 1925, twice in Tamworth in 1940, and Sanbornton in 1982. While solar storms and space weather were acknowledged as potentially impacting communications equipment, it was seen as a hazard which would impact the entire state and that remaining abreast of notices from NH HSEM regarding this hazard would be the wisest course of action.

There has been some shifting in the risk ratings of natural hazards since the last plan (2019). Changes since the last update include dropping high winds from a high risk to a medium risk, lightning from a medium risk to a low risk, inland flooding from a medium risk to a low risk, and tropical and post tropical cyclones from a medium risk to a low risk. Both drought and wildfires are now viewed locally as high risk, not medium risk nor low risk, respectively. The risk associated with infectious diseases was acknowledged to be higher than in the last plan, seen as a medium risk rather than a low risk.

Human-caused and Technological hazards are acknowledged in the State Hazard Mitigation Plan. They are not, however, required by FEMA to be addressed in local Hazard Mitigation Plans. The potential for long-term utility outage, hazardous materials, transportation accident, aging infrastructure, terrorism/violence, and conflagration events all have the potential to occur in Moultonborough. Any of these hazards that the committee felt applicable are addressed in Appendix G.

C. PROFILING NATURAL HAZARD EVENTS

This section of the plan **defines** each of the natural hazards that might impact Moultonborough. It also describes the **extent** of the hazard, the recent **history** of these events, the likely **location** of each hazard, as well as the **probability** of an occurrence in Moultonborough. These are listed alphabetically.

The **extent** is a description of "how bad the hazard could get" considering three factors: magnitude, onset, and duration.

- *Magnitude* is the size of the hazard, such as depth of floodwaters or wind speed.
- *Onset* is how quickly the hazard approaches. Depending on geography as well as the nature of the rainstorm, floodwaters might rise over a period of days, or it might take just a few hours to build up a concentrated flow.
- *Duration* is a matter of how long the hazard is present. A downburst or tornado exists for minutes or hours, while a hurricane or tropical depression can be around for days.

Within the Risk Assessment completed for this plan, **extent** was measured on a scale ranging from Weak through Moderate, Severe, and Extreme based on magnitude, onset, and duration.

Probability is a description of how likely it is that an event will occur in town within the next 10 years. Potential hazards were rated on a five-point descriptive scale including improbable, remote, occasional, probable, and frequent. These were based mainly on past occurrences in the town, region, and state.

If a hazard event has occurred in the past it is listed under **history**, with a focus on those occurring since the last plan. If some parts of the town are more likely to be impacted by a particular hazard, either based on past events or local knowledge of geography, that is described under **location**.

Impact

The **impact** of a hazard is the potential degree of damage that could occur. To rate the impact of a hazard, the damages and consequences that might result from an event were considered in three separate areas Human, Property, and Business & Services. This incorporates the likelihood of injury or death, the assessed value of each critical facility, and the vulnerability of these facilities. It also anticipated disruption of services to residents and visitors. Four levels of impact were used, as defined here:

- Low: Limited structural damage, the town's ability to respond is not compromised, and residents can handle the hazard event without help from outside sources
- Moderate: Some structural damage, the town's ability to respond is compromised, regional or assistance is needed to survive and/or recover
- High: Substantial structural damage, the town's ability to respond is greatly compromised, state or federal assistance is necessary to survive and/or recover
- Catastrophic: Multiple injuries or deaths will likely result from this hazard. Damage to properties will be widespread and extensive. Essential services and other services that residents and visitors depend upon would likely be interrupted for days or weeks.

The assessed value of the critical facilities identified in Section A totals more than $155M. This does not, however, include the contents of the building. Also not reflected in this assessment is the value of built infrastructure such as streets, bridges, curbs, drainage, and utility transmission lines. These values can also be used to determine potential loss estimates in the event of a natural hazard event that damages a part of or an entire facility.

Of course, critical facilities are not the only resources at risk during a hazard event. There are numerous structures in town, both residential and commercial. The total valuation of the structures in Moultonborough is over $2.5 billion dollars. If even a small percentage of those structures are destroyed or damaged during a hazard event, it could be quite costly to repair or replace.

Moultonborough Summary Inventory of Valuation

	Value - 2024	1%	2%	5%
Land	$3,756,874,293	$37,568,743	$75,137,486	$187,843,715
Building	$2,546,427,839	$25,464,278	$50,928,557	$127,321,392
Public Utilities	$36,687,200	$366,872	$733,744	$1,834,360
Exempt	$1,219,200	$12,192	$24,384	$60,960
Total	**$6,341,208,532**	**$63,412,085**	**$126,824,171**	**$317,060,427**

Source: MS-1 form in Moultonborough Annual Report 2024

Aging infrastructure, local implementation of land use and zoning laws, and various social vulnerabilities may increase the risk to natural hazards. Local jurisdictions are provided with the ability to address zoning through RSAs to adopt ordinances that can reduce risk to infrastructure and vulnerable individuals within their communities. By taking advantage of federal funding available through NH HSEM, NH DOT, and NH DHHS, Moultonborough can address the areas of greatest risk in town.

Social Vulnerability refers to the resilience of communities (the ability to survive and thrive) when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks. Socially Vulnerable Populations can include those who have special needs, such as, but not limited to, people without vehicles, people with disabilities, older adults, and people with limited English proficiency.[3]

The aspects considered in this plan focus on those socially vulnerable groups that comprise at least 10% of the residents or households according to the State Hazard Mitigation Plan. In Moultonborough this includes Individuals Aged 65 & Older (33%), those with Disabilities (16%), and Individuals Aged 17 & Younger (12%).

[3] NH State Hazard Mitigation Plan (2023), p. 70.

NATURAL HAZARDS

Below is a list of declared disasters or incidents listed on the HSEM Resource Center page for which public assistance was made available.

Incident Description	Event date, name	Declaration Type	DR #	Declaration Date	Total Funds
Severe Storm and Flooding	*July 11 Storms*	*Major Disaster Declaration*	*4457*	*8/15/2019*	*$3,202,283*
Public Health Outbreak	COVID-19 (1/20/2020-5/11/2023)	*Emergency Declaration*	*EM 3445*	*3/13/2020*	*N/A*
Public Health Outbreak	COVID-19 (1/20/2020-5/11/2023)	*Major Disaster Declaration*	*DR 4516*	*4/3/2020*	*$126,873,601*
Severe Storms and Flooding	*July 17-19 Flooding*	*Major Disaster Declaration*	*4622*	*9/30/2021*	*TBD*
Severe Storms and Flooding	*July 29-30 Flooding*	*Major Disaster Declaration*	*4624*	*10/4/2021*	*TBD*
Severe Storms and Flooding	*Dec. 21-25, 2022*	*Major Disaster Declaration*	*DR 4693*	*3/15/2023*	*TBD*
Severe Storms and Flooding	*July 9-17, 2023*	*Major Disaster Declaration*	*4740*	*9/14/2023*	*TBD*
Severe Storms and Flooding	*Dec. 17-21, 2023*	*Major Disaster Declaration*	*4761*	*2/27/2024*	*TBD*
Severe Storms and Flooding	*Jan. 9-14, 2024*	*Major Disaster Declaration*	*4771*	*4/19/2024*	*TBD*
Winter Storm & Flooding	*April 3-5, 2024*	*Presidential Disaster Declaration*	*4799*	*6/10/2024*	*TBD*
Severe Storm and Flooding	*July 10-13, 2024*	*Presidential Disaster Declaration*	*DR 4812*	*8/5/2024*	*TBD*

The information above was utilized as a guide for further discussion of hazards by the Committee with an emphasis on those most likely to impact Moultonborough. The following section describes the hazard, its **extent**, **probability** of occurrence, and **history**, likely **location**, its likely **impact** in Moultonborough. Hazard names are highlighted based on local risk (Orange - high, yellow – medium, blue – low).

AVALANCHE

An avalanche is a slope failure consisting of a mass of rapidly moving, fluidized snow that slides down a mountainside. The flow can be composed of snow, ice, water, soil, rocks, and trees. An avalanche is a large mass of snow and ice, falling, sliding, or flowing under the force of gravity. An avalanche can be comparable to a landslide, only with snow instead of earth.

Natural and human-caused snow avalanches most often result from structural weaknesses of mountainside and unstable snow and ice formations. Factors leading to these conditions

include recent heavy snow, temperature, wind direction, snowpack conditions, slope angle, and slope orientation. Heavy snowfall followed by high winds often create areas of unstable snow accumulations that can be set in motion by human activities, such as hiking, ice climbing, skiing, and snowboarding.

There are three categories of avalanches:

- Soft Slab – consists of soft, low-density snow
- Hard Slab – consists of dense, hard-packed snow
- Loose Snow (also called sluffs or point releases) – release from a single point, typically on a very steep slope

Extent: Weak
The North American Public Avalanche Danger Scale (NAPADS) from the National Avalanche Center (www.avalanche.org) is a system that rates avalanche danger and provides general travel advice based on the likelihood, size, and distribution of expected avalanches. It consists of five levels, from least to highest amount of danger: 1 – Low, 2 – Moderate, 3 – Considerable, 4 – High, 5 – Extreme. Danger ratings are typically provided for three distinct elevation bands. Although the danger ratings are assigned numerical levels, the danger increases exponentially between levels. In other words, the hazard rises more dramatically as it ascends toward higher levels on the scale.

History: Records (NOAA Storm Events database) indicate no avalanches have occurred in Carroll County. There was no local knowledge of an avalanche occurring in Moultonborough.

Location: The mountainous regions of Carroll, Coos, and Grafton counties are at risk for avalanches, with the highest risk of avalanches occurring in the Presidential Range, particularly on Mount Washington. Though Moultonborough contains the Ossipee Mountains, they pale in comparison to the peaks in Coos, Grafton, and northern Carroll County, with the highest summit in the Ossipee Range standing under 3,000 feet in elevation. Therefore, the committee determined that there are no locations in Moultonborough where avalanches would occur.

Probability of Occurrence: Improbable
Avalanches are a common occurrence in high terrain areas in New Hampshire during the winter and spring months. Early warning systems have resulted in less impact lately, however, as more people get involved in outdoor recreation, the number exposed to avalanche threat could increase.

Impact: Low
Avalanches present a significant threat to hikers, skiers, and other people recreating on the mountain. Falling ice and rocks can cause injury or death. Cracks, holes, and crevasses in the snowpack can cause individuals to become trapped or buried in snow, which can result in extreme cold injuries, suffocation, and possibly death. Twenty-five to thirty people die each year nationally from avalanches. As there are no known instances of, nor likely areas of avalanche, the impacts are considered low.

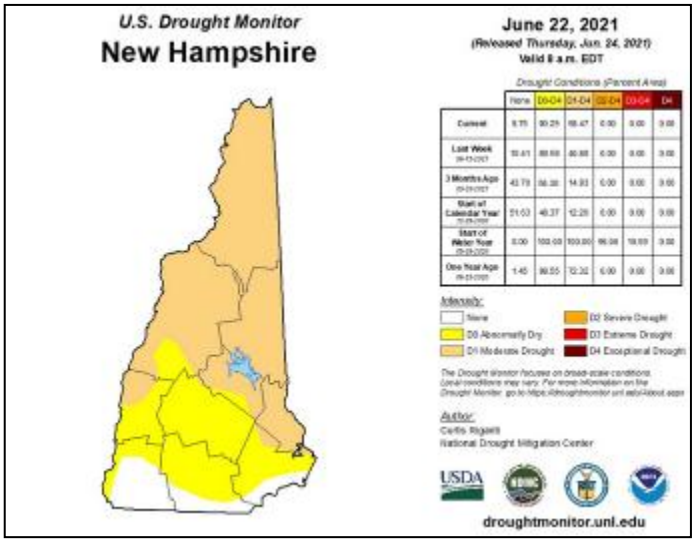
Impact on Vulnerable Communities: There are no known potential impacts associated with avalanche on Moultonborough's vulnerable populations.

DROUGHT

Drought occurs when less than the normal amount of water is available for extended periods of time. It often, but not always, accompanies elevated temperatures. Effects may include decreased soil moisture, groundwater levels, streamflow, and lake, pond, and well levels may drop. Factors that may contribute to drought include reduced rain/snowfall, increased rates of evaporation, and increased water usage. New Hampshire generally receives adequate rainfall; it is rare that the state experiences extended periods of below normal water supplies.

Drought is the absence of water due to below-average precipitation over an extended period, resulting in low stream flows, low surface water, and low groundwater levels. According to NOAA, the climatological community has defined four types of droughts to address their cause(s), timeframe, and effects:

- **Meteorological Drought**: Occurs when dry weather patterns dominate an area, resulting in a lack of precipitation
- **Hydrological Drought**: Occurs when low water supply becomes evident, especially in streams, reservoirs, and groundwater levels—usually after many months of meteorological drought
- **Agricultural Drought**: Occurs when crops become affected by drought conditions
- **Socioeconomic Drought**: Effects of supply and demand of commodities affected by drought conditions



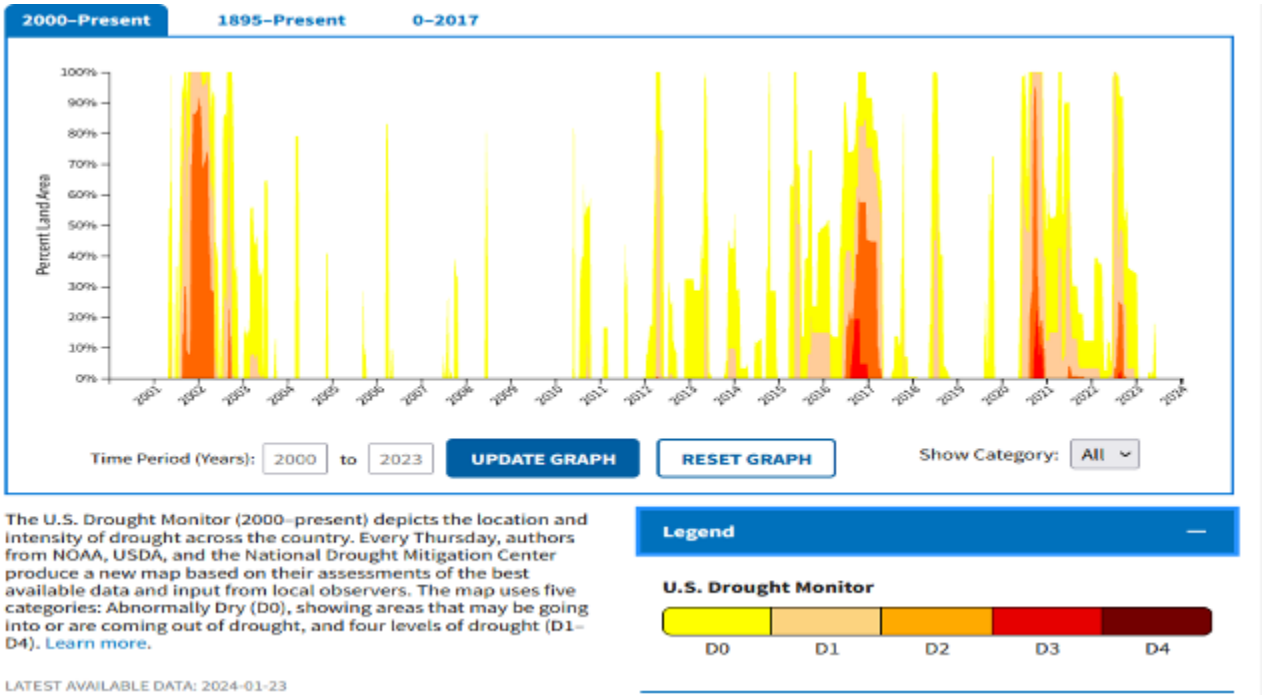
Extent: Severe

A drought can last for months, or even years. 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
- Emergency

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 precipitation, 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. The US Drought Monitor uses a five-level drought intensity scale ranging from Abnormally Dry to Exceptional Drought.

History: There have been five extended droughts in New Hampshire in the past century: 1929 to 1936, 1939 to 1944, 1947 to 1950, 1960 to 1969, and 2001 to 2002 and 2010. The statewide drought of 2001/02 had a minimal impact on water sources for fire protection in Moultonborough. While much of the country experienced drought conditions in 2012, New Hampshire received adequate precipitation. Moderate drought conditions existed in New Hampshire during parts of 2015, 2016 and into April of 2017. In 2020 the state experienced a severe drought (D2-D3) leading to water restrictions and $500K of crop damages. The Fire Chief mentioned that the Town appears to be experiencing periods of drought more frequently in the last decade.



Location: Since drought is a state-wide or regional event, it would affect most areas of the town. Those with shallow (or dug) wells would likely be affected first. Drought can affect fire suppression where access to water for this purpose is limited. The County as a whole is at a higher risk as it hosts significant agricultural and livestock assets that are negatively impacted by drought; though the towns of Effingham and Tamworth are at the highest risk within Carroll County.

Probability of Occurrence: Likely

Impact: Low
A severe drought can affect public water supply, increase the probability of fires, and impede fire suppression. Those areas with minimal fire protection are at a higher risk because of a prolonged drought. Those with shallow wells would also be affected by drought. The Committee discussed that although periods of drought appear to be occurring more frequently, the impact of drought on Moultonborough is still low. Moultonborough is a heavily wooded

community and the majority of residences get their water from private wells. The Committee discussed measures that can be taken to educate residents on outdoor fire safety and provide outreach to private well owners.

Impact on Vulnerable Communities: Potential impacts associated with drought on Moultonborough's vulnerable populations include:

- May be dependent upon others to travel
- May be dependent on a private water supply

EARTHQUAKE > 4.0 RICHTER

An earthquake is a series of vibrations induced in the Earth's crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating.

Extent: Weak Earthquakes are commonly measured using *magnitude*, or the amount of seismic energy released at the epicenter of the earthquake. The Richter magnitude scale is a mathematical device used to compare the size of earthquakes, shown in the table above. Note: The 2023 NH State HMP now qualifies this hazard as *Earthquakes>4.0* as opposed to simply *Earthquakes*.

Richter 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 destroy communities near the epicenter.

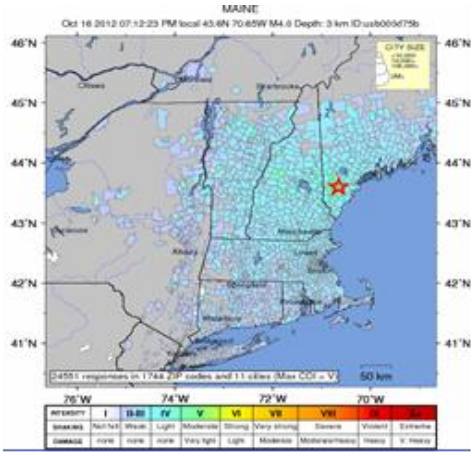
New Hampshire is in an area of moderate seismic activity with respect to other regions of the country. There is the potential for nearby earthquakes to register 5.5 on the Richter Scale, causing slight damage to buildings and structures. Due to the unique geology of New Hampshire, earthquake propagation waves travel up to 40 times further than they do in the western United States, possibly enlarging the area of damage.[4] The strongest earthquakes to strike New Hampshire occurred December 20 and 24, 1940 in the town of Tamworth. Both earthquakes had a magnitude of 5.5 and were felt over an area of 400,000 square miles.

However, if a large earthquake occurred in or around the town, it is assumed that structural damage would be weak to moderate.

History: On average, every other year the Lakes Region experiences an earthquake, though these earthquakes are mild and go mostly undetected by people. Sanbornton and Tamworth are identified as two epicenters in the region.[5] A search of the USGS National Earthquake Information Center database shows that since 1977 there have been 15 earthquakes with a

[4] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html visited February 8, 2011.
[5] http://des.nh.gov/organization/commissioner/pip/factsheets/geo/documents/geo-3.pdf , pg. 3, visited January 25, 2011.

magnitude of at least 3.0 within a 100 km (62 mi.) radius of Moultonborough; the largest was magnitude 4.7. Two such earthquakes have occurred since 2006; a 3.2 event in 2010 centered in Penacook, NH and a 4.7 quake in southern Maine shook the region on October 16, 2012. The image at right indicates the communities where people reported feeling this event.[6].



Areas where the October 16, 2012 earthquake

Location	Date	Magnitude
Hollis Center, ME	October 16, 2012	4.7
Sanbornton	January 19, 1982	4.5
7km SE of Scarborough, ME	April 26, 1957	4.4
Tamworth	December 24, 1940	5.6
Tamworth	December 20, 1940	5.3
Ossipee	October 9, 1925	4.0
2km SSE of South Paris, ME	August 21, 1918	4.2
Portsmouth	November 10, 1810	4.0
Central NH	June 11, 1638	6.5

Since the last plan (2019) there have been four earthquake events within 100 km of Moultonborough, none reached a magnitude of 4.0 and all were below a magnitude of 3.0. Moultonborough has not experienced any significant earthquakes.

Location: An earthquake of 4.0 or greater could affect all areas of Moultonborough, mainly multi-level structures and those that are either constructed of masonry or have masonry chimneys. Some bridges and dams might be impacted.

Probability of Occurrence: Improbable

Impact: Low
According to the US Geologic Survey, the overall earthquake risk to the state is high due to the built environment which means that many structures in the state (buildings, bridges, dams, and power infrastructure) are old or not built to withstand an earthquake.

[6] USGS, Earthquake Archive Search. https://earthquake.usgs.gov/earthquakes/map/

A relatively large earthquake would likely impact the roads, including bridges limiting the ability of emergency services to be rendered. Damages could range from cracked foundations, chimneys, and supports to full collapse. Structures that are taller, older, or built of masonry are most at risk.

Damage from the 1940 earthquakes in Tamworth included some damage to most of the chimneys in the epicenter region of Ossipee, ranging from cosmetic cracks to total collapse. Sections of several foundations collapsed and at least one house rotated on its foundation. In the town of Conway, 15 miles from the epicenter, one house was lost to fire when sparks in a cracked chimney started the blaze. Splits found in the rafters and trusses temporarily closed Ossipee High School. No damages were associated with the October 2012 earthquake, but the potential does exist for some damages to occur.

The fire department could have some response problems if the bridges were impacted, requiring redeployment of apparatus and people or mutual aid assistance. Areas of town with only one egress could become isolated from direct assistance.

All structures in Moultonborough are susceptible to damage by an earthquake. Assuming 1% town-wide damage to buildings, an earthquake could result in nearly $26 million in damages any given year. The Committee agreed that although there is a risk of earthquake, the risk of an earthquake with a magnitude of 4.0 or higher occurring within the next ten years is very improbable; therefore, the Committee determined the Town is not at an overall high risk.

Impact on Vulnerable Communities: Potential impacts associated with earthquakes on Moultonborough's vulnerable populations include:

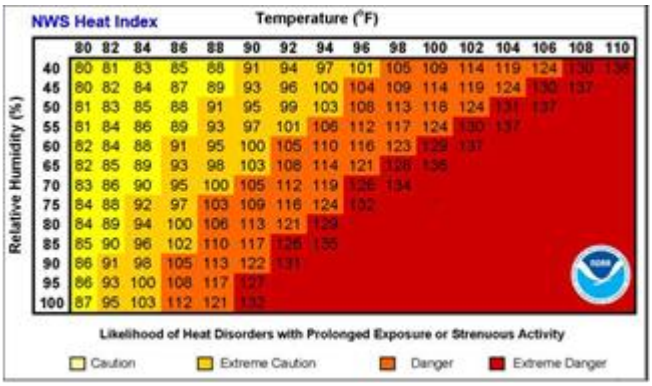
- May have limited mobility for getting assistance, dependence upon others to travel
- Limited resources for seeking medical assistance

EXTREME TEMPERATURES

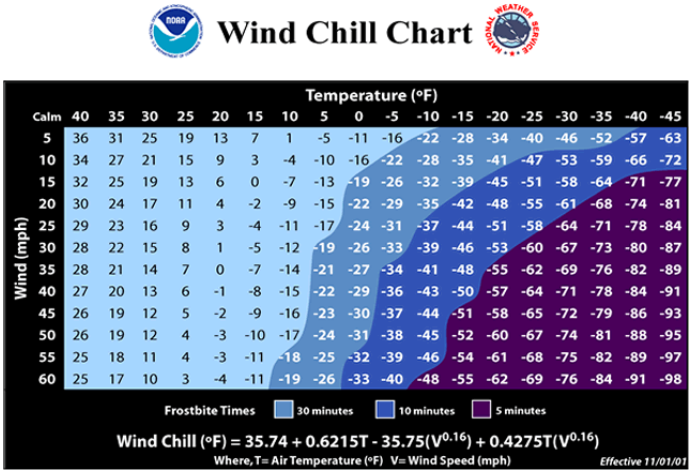
Extreme temperatures are a period of prolonged and/or excessive heat or cold that presents a danger to human health and life. Extreme Heat events occur because of above normal temperatures, which often coincide with high relative humidity, that increase the likelihood of heat disorders with prolonged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

Frostbite occurs when uncovered skin/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 begins to drop below normal values. A normal core body temperature is 98.6°F: mild hypothermia occurs when core body temperature drops between 90 to 95°F and severe hypothermia occurs at core body temperatures of below 90°F. If left untreated, hypothermia can result in unconsciousness and eventually death. Extreme cold can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy.

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: The National Weather Service (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 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.

History:
Moultonborough has experienced regular extreme hot and cold temperatures annually since the last plan update. The Town of Moultonborough experiences extreme heat temperatures several days during the summer, but usually with little impact on the population.

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]
2/3-2/4/2023	Wind Chill	Most areas recorded top 3 coldest wind chill readings on record.	S. Carroll Co.	NOAA Events
6/19-6/20/2024	Heat Index Value >105°F	Excessive heat and high humidity caused a spike in heat related hospital visits across the state	S. Carroll Co.	NOAA Events

Location:
Extreme temperatures can occur anywhere throughout the town of Moultonborough. Those at higher elevation and greater exposure to wind are most likely to be impacted by cold. People living in less accessible parts of town are more likely to be impacted during winter cold spells.

Probability of Occurrence: Probable

Impact: Low-Moderate
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. Facilities without generators and air-conditioners that house the elderly and disabled are very susceptible to human health issues. Utilities are also vulnerable as the demand for air-conditioners rises.

While most of the impact from extreme temperatures is on people and animals, there can also be structural impacts, especially from freezing and expansion of water in pipes and the resulting damages.

Impact on Vulnerable Communities: Potential impacts associated with extreme temperature events on Moultonborough's vulnerable populations include:

- May have limited mobility for getting assistance/evacuation, dependence upon others to travel
- Limited resources for seeking medical assistance
- May have health conditions that make them more sensitive to climate conditions
- May spend more time outdoors increasing their exposure to heat and cold

HIGH WIND EVENT (THUNDERSTORM/TORNADO/DOWNBURST)

Moultonborough is likely to experience either of two types of high wind events that usually result from other severe storms and can occur at any time of the year: tornados and straight-line winds. A **tornado** is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. It is hard to see a tornado unless it forms a condensation funnel made up of water droplets, dust and debris. Tornadoes are the most violent of all atmospheric storms. **Straight-line winds** describe any thunderstorm wind that is not associated with rotation and is usually used to differentiate from tornadic winds. There are several sub-types of straight-line winds, including **downdraft**, which is a small-scale column of air that rapidly sinks towards the ground; and **downburst**, which is the result of a downdraft, referred to as a **macroburst** when the area affected is greater than 2.5 miles and **microburst** when less than 2.5 miles.[7]

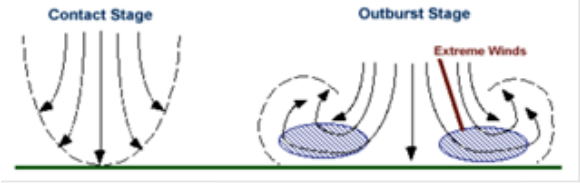


Image source: NH HSEM

Extent: Severe

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.

The Enhanced Fujita Scale is used to categorize tornados based on a combination of wind speed and the type of damage that is observed.

[7] http://ww.nssl.noaa.gov/education/svrwx101/wind/types

Operational Enhanced Fujita (EF) Scale

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)

History:

The most recent damaging tornado to touch down in New Hampshire was on July 24, 2008 rendering around 100 homes "uninhabitable" and killing one person. This event traveled from Epsom to Effingham. Although damage resulted in some Lakes Region locations, areas affected were many miles southeast of Moultonborough. Since 2019 there have been four reported high wind events in Carroll County. Only one event, high winds caused by a severe thunderstorm on July 21, 2022, resulted in a direct impact in Moultonborough (pictured right). Severe winds downed trees throughout town and along NH State Route 25.

History of High Wind Events

Event Type	Date	Location	Extent	General Impacts	Source
High Wind Event	8/22/2020	Mirror Lake, Tuftonboro	70 kts.	Downed 14 trees. Damaged four camps and two vehicles. $150K.	NOAA Events
High Wind Event	3/2/2021	S. Carroll Co.	55 kts.	Numerous power outages and minor structural damages.	NOAA Events
High Wind Event	5/26/2021	East Sandwich	52 kts.	Downed multiple trees and branches.	NOAA Events
High Wind Event	7/21/2022	Moultonborough, Tuftonboro, Effingham	Wind >70 kts. Macroburst	Downed >500 trees. Damaged at least five buildings $110K.	NOAA Events

Location: While thunderstorms can be localized, they often hit the whole town. On average, six tornadoes touch down somewhere in New England each year. There is no way of knowing where or when the next damaging tornado will strike as they are among the most unpredictable weather phenomena. Downbursts are 10 times more likely to occur than tornadoes. All areas of town are susceptible to damage from high winds. However, Moultonborough is nestled in between the Ossipee Mountains and Red Hill, which the Committee noted creates a wind tunnel putting the areas along NH State Route 171, 109, and 25 as well as parts of Moultonboro Neck at a higher risk for all high wind events.
Probability of Occurrence: Probable

Impact: Low-Moderate
In Moultonborough, the major damage from downbursts or tornados would come from falling limbs and trees, which may take down power lines, block roads, or damage structures and vehicles. Damage can occur to most structures in town because of downed trees in any high wind event, including the common thunderstorms. These winds can bring down limbs and trees, causing damage to structures, as well as pulling down power and telephone lines and blocking roads. This is particularly the case along private roadways that may only get limited cutback of vegetation. Trees and wires down across evacuation routes could slow evacuation efforts and draw limited emergency response personnel away from other safety efforts.

Tornados and downbursts could strike anywhere in town with little, if any warning. While individual events may be small and rare, their impacts could be moderate, with a greater impact on property damage and an interruption of services. All structures, especially older varieties, which are not necessarily built to the current building code standards, could be at risk.

All structures in Moultonborough, including most critical facilities, are susceptible to damage by high wind events, whether through downburst, tornado, or hurricane. Assuming 1% to 5%

town-wide damage to buildings, high winds could result in $25.8M to $129M in damages in Moultonborough.

Impact on Vulnerable Communities: Potential impacts associated with high wind events on Moultonborough's vulnerable populations include:

- May have limited mobility for getting assistance, dependence upon others to travel
- Limited resources for seeking medical assistance

INFECTIOUS DISEASES

Infectious diseases are illnesses caused by organisms such as bacteria, viruses, fungi or parasites. Some infectious diseases can be passed from person to person, some are transmitted by bites from insects or animals, and others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection but often include fever and fatigue. Mild infections get better on their own without treatment, while some life-threatening infections may require hospitalization.

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

Extent: Moderate

Experience with the Covid-19 pandemic has dramatically changed views on the risk of infectious diseases as compared to risk mitigation planning for the 2019 Plan. 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 occurrence of the disease:

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

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

History: The 2012-13 flu season was much more severe in New Hampshire than in the previous decade; 35 deaths occurred statewide, the most since 1997. In 2016, the DHHS responded to a total of 102 outbreaks: 73 gastrointestinal illnesses, 23 respiratory illnesses, and 6 other types of illness.

Since March of 2020, the Covid-19 pandemic has had a significant impact on all facets of life, including on emergency medical responders and the operations of municipal services and local schools. While there certainly have been minor outbreaks of flu in town, other outbreaks of infectious disease haven't compared to the coronavirus pandemic.

Date	Description	Impacts	Location	Additional Info
Fall 2014	Enterovirus D-68	>40 ill children in New Hampshire	Statewide	A rare strain of enterovirus resulting in infections nationwide.
2016	Gonorrhea	465 people infected	Statewide	465 cases reported; 250% higher than previous years
2017-2018	Seasonal Influenza Outbreak	As of 2018, 63 influenza related deaths were identified in NH	Statewide	In 2018 the overall effectiveness of the flu vaccine at this time was 36%
2020-23	COVID-19 or Coronavirus pandemic	Hospitals, schools, municipalities, & businesses have taken extra precautions, cancelled many events, and adjusted policies	Worldwide	Respiratory disease >379K cases and 3,495 deaths in NH
Annually	Foodborne outbreaks	Ill individuals associated with outbreaks	Statewide	5-10 outbreaks per year
Annually	Influenza and other raspatory virus outbreaks	Ill individuals associated with outbreaks	Statewide	25-50 outbreaks per year primarily to vulnerable populations
Annually	Norovirus and other gastrointestinal virus outbreaks	Ill individuals associated with outbreaks	Statewide	60-80 outbreaks a year primarily to vulnerable populations

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

Probability of Occurrence: Probable
Epidemics do occur in Moultonborough and other Lakes Region communities from time to time. The Central NH Regional Health Network representative has noted that it is likely that a future epidemic could involve multiple outbreaks at once. After experiencing the COVID-19 pandemic,

the Committee agreed that the probability of occurrence for infectious diseases is higher than it was during the last Plan update (2019).

Impact: Low-Moderate
The concerns associated with infectious disease include the local capacity to respond to not only the residents of Moultonborough but also any visitors. The cost of infectious diseases in Moultonborough is difficult to calculate as any cost would primarily result from health care response. Experience with COVID-19 pandemic has revealed the human and economic costs resulting from the shut down or slowdown of many businesses in town and the region. Although the Committee agreed that the impact of the COVID-19 pandemic on Moultonborough was low, there is no way to predict how future pandemics may differ from that experience and thus the Committee agreed that the impact may be moderate.

Impact on Vulnerable Communities: Potential impacts associated with infectious disease on Moultonborough's vulnerable populations include:

- May have limited mobility for accessing attention
- More likely to have compromised immune systems

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. Flooding is rarely associated with rivers and streams in Moultonborough and is more likely to be associated with lake level rise.

Flooding is most associated with structures and properties located within the 1% annual (or 100-year) floodplain. Areas in this floodplain have been identified as having a 1% chance of flooding any given year. This means that flooding in this area is projected to have an average recurrence interval of 100 years; however, that does not mean that a flood in this area will only occur once every 100 years.

Moultonborough participates in the **National Flood Insurance Program (NFIP)** through the administration of its floodplain ordinance by the Board of Selectmen and the Zoning Administrator. By actively participating in the NFIP property owners can purchase flood insurance through the FEMA program. Active participation includes administration of site plan review, subdivision regulations and zoning, to regulate development in the floodplain using federal standards. Moultonborough joined the National Flood Insurance Program on October 21, 2001. The original Flood Insurance Rate Maps (FIRM) were updated in 2012 for Moultonborough, and are available at Town Hall and in digital form (DFIRM) at on the town website and at https://msc.fema.gov/portal/home.

From the Floodplain Development Ordinance, **Zoning Ordinance 8.0** of the Moultonborough Zoning Ordinance, revised 2024.

Administration and Enforcement:
1. The Board of Selectmen shall enforce the provisions of this Ordinance, and shall be entitled to recover reasonable attorney's fees, as well as all other costs, where they prevail.
2. The Zoning Administrator shall have authority to enforce the provisions of this Ordinance.

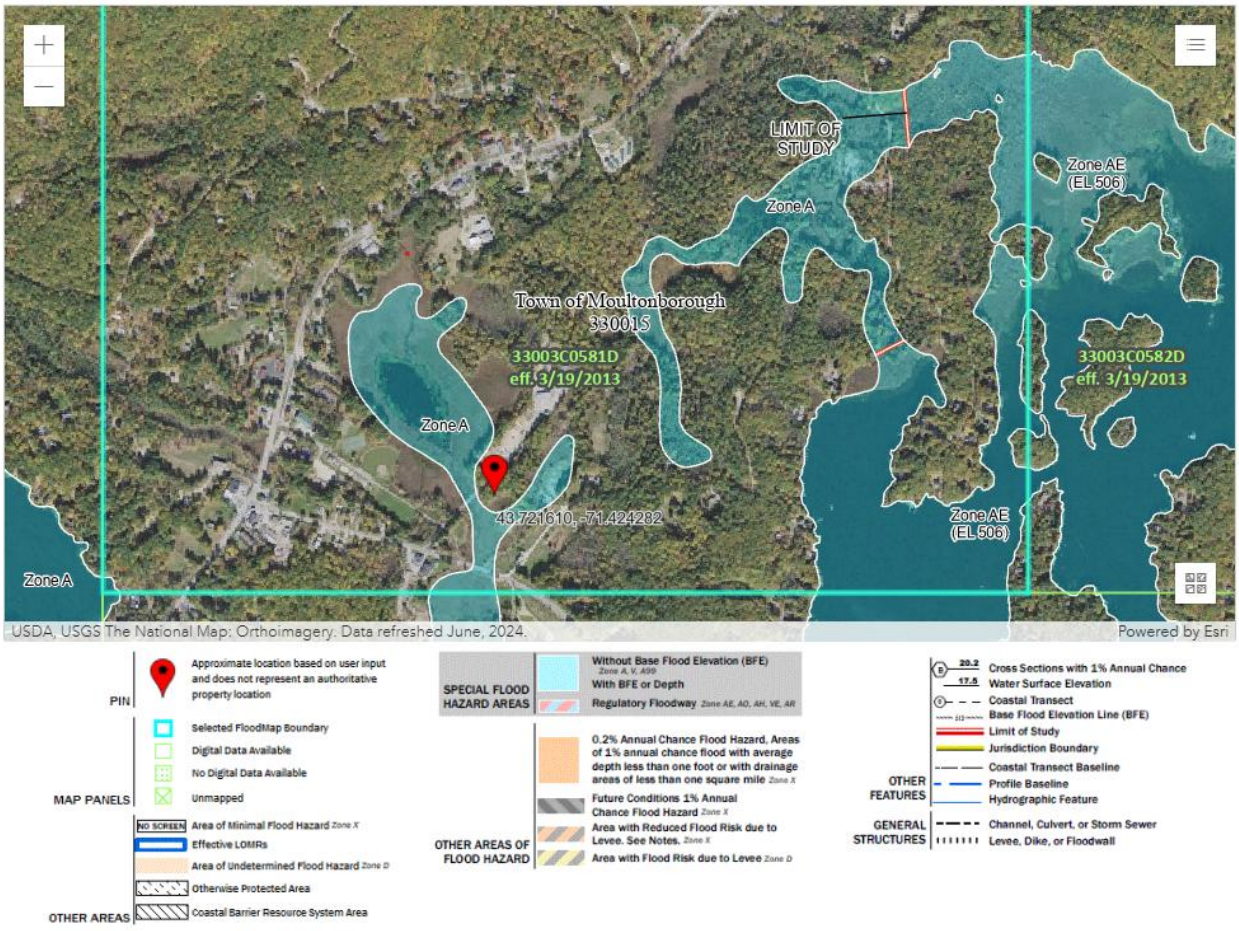
Zoning Ordinance 8.0 Floodplain Development – 8.1 Establishment and Permits & 8.3 Review of All Building Permit Applications:
8.1.1 This ordinance, adopted pursuant to the authority of RSA 674:16, shall overlay and supplement the regulations in the Town of Moultonborough Zoning Ordinance. If any provision of this article differs or appears to conflict with any other provision of the Zoning Ordinance or other ordinance or regulation, the provision imposing the greater restriction or more stringent standard shall be controlling.
8.1.2 The following regulations in this ordinance shall apply to all lands, in the Town of Moultonborough, designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA) in its "Flood Insurance Study for the County of Carroll, NH" dated March 19, 2013, together with the associated Flood Insurance Rate Maps (FIRM), dated March 19, 2013, or as amended, which are declared to be a part of this ordinance and are hereby incorporated by reference.
8.1.3 All proposed development in any special flood hazard area shall require a permit.

8.3 Review of All Building Permit Applications
The code enforcement officer shall review all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding. If a proposed building site is located in a special flood hazard area, all new construction or substantial improvements shall:
8.3.1 be designed (or modified) and adequately anchored to prevent floatation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy,
8.3.2 be constructed with materials resistant to flood damage,
8.3.3 be constructed by methods and practices that minimize flood damage,
8.3.4 be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment, and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

Definitions: (Zoning Ordinance 8.0 Floodplain Development – 8.2.1 Definition of Terms)
"Substantial damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.
"Substantial Improvement" means any combination of repairs; reconstruction, alteration, or improvements to a structure in which the cumulative cost equals or exceeds fifty (50) percent of the market value of the structure. The market value of the structure should equal: (1) the appraised value prior to the start of the initial repair or improvement, or (2) in the case of damage, the value of the structure prior to the damage occurring. For the purposes of this

definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. This term includes structures which have incurred substantial damage, regardless of actual repair work performed. The term does not, however, include any project for improvement of a structure required to comply with existing health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions or any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure".

FEMA map (DFIRM) showing Moultonborough Village with the 100-year-floodplain



As of July 2024, there were twenty-five flood insurance policies in force in Moultonborough. Eight of these properties are in the A-zone, and seventeen are in the X-zone. There have been five paid losses totaling $49,658. One of the losses was in the X-zone and four losses were in the B-, C-, or D-zone. There have been no repetitive losses in Moultonborough. The amount of insurance in force in Moultonborough was $9,032,000, according to FEMA's database.

Extent: Flooding – Moderate
FEMA defines flood hazards by the 100-year and 500-year flood events. A 100-year flood event is defined as a flood event having a 1% chance of being equaled or exceeded in any given year. The 500-year flood event is defined as a flood event having a 0.2% chance of being equaled or exceeded in any given year. The Town of Moultonborough Flood Insurance Rate Maps (FIRM) identify both A and AE zones. A-zones are subject to the 100-year flood, however because there have been no detailed hydraulic studies, there is no Base Flood Elevation (BFE) determined for these zones. The AE zones are subject to the 100- year flood and have BFEs delineated on the FIRM.

Land development can contribute to flood hazards. As areas are covered with additional impervious surfaces, less water is allowed to infiltrate, evaporate, or be transpired by vegetative growth, resulting in more water runoff directly into surface drainages and water bodies. This increases the likelihood of flash floods and substantial overland flow.

Dam Failure
Although Dam Failure is classified as a technological hazard, it seems appropriate to include a discussion of dams in Moultonborough when assessing risks associated with Inland Flooding. According to the NH Department of Environmental Services (DES), a dam is any artificial barrier which impounds or diverts water which: has a height of 6 feet or more; or is located at the outlet of a great pond, regardless of height or storage; or is an artificial barrier which impounds liquid Industrial or liquid commercial wastes, or septage or sewage, regardless of height or storage.

Extent: Weak
Dams in New Hampshire are classified by the New Hampshire Department of Environmental Services Dams Bureau. The four dam hazard classifications (High, Significant, Low, and Non-Menace) are based on the potential losses associated with a dam failure (see Appendix G for a detailed description). High (H) and Significant (S) Hazard dams have the highest potential for damage; this could include damage to state or municipal roadways as well as structures.

There are eight active dams in Moultonborough; two are **Significant** Hazard dams, one is **Low** Hazard, and five are **Non-Menace** Hazard dams. There are no High Hazard dams in Moultonborough. Failure or mis-operation of a Non-Menace dam would not result in probable loss of life or loss of property. Failure or mis-operation of a Low Hazard dam would not result in the possible loss of life. It would result in any of the following:

- Low economic loss to structures or property.
- Structural damage to a 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 under certain conditions.
- Reversible environmental losses to environmentally sensitive sites.

HAZCL	STATUS	USE	NAME	RIVER	LENGTH	IMPND	HEIGHT
NM	ACTIVE	C	HALFWAY BROOK DAM	HALFWAY BROOK	58	0.12	7.4
NM	ACTIVE	R	LEES MILL DAM	LEE MILL POND	200	0.52	16
NM	ACTIVE	C	FARM POND DAM	UNNAMED STREAM	150	0.24	6.5
S	ACTIVE	R	LAKE KANASATKA DAM	TR LAKE WINNIPESAUKEE	240	392	17
S	ACTIVE	R	SHANNON LAKE DAM	SHANNON BROOK	300	4	20
NM	ACTIVE	C	FARM POND DAM	HALFWAY BROOK	150	0.15	7
L	ACTIVE	LWM	CAMP WINAUKEE SEWAGE LAGOON DAM	N/A - NO OUTLET	420	0.2	6
NM	ACTIVE	R	ASHJIAN DAM	UNNAMED STREAM	200	0.23	15

Source: NH Department of Environmental Services

History – Dam Failure:
There is no history of significant dam failures in Moultonborough.

Location:
Lake Kanasatka Dam and Shannon Lake Dam are classified as significant hazard dams. The Committee noted that the location of these dams are such that any way from a dam failure would be absorbed by the surrounding wetlands and environment as there is little to no development adjacent to these dams.

Probability: Improbable

Impact: Low
A dam failure or breach could occur due to extreme rainfall and/or a human caused incident. A failure or breech would result in rapid loss of water that is normally held by the dam resulting in an inundation downstream. The Committee noted that should any dams within town fail, the resulting flow of water would be absorbed by the surrounding wetlands and environment causing very little impact.

History - Inland Flooding:
Historically, the state's two largest floods occurred in 1936 and 1938. The 1936 flood was associated with snowmelt and heavy precipitation. The 1938 flood was caused by the Great New England Hurricane of 1938. Those floods prompted the construction of a series of flood control dams throughout New England, built in the 1950s and 1960s. They continue to be operated by the US Army Corps of Engineers.

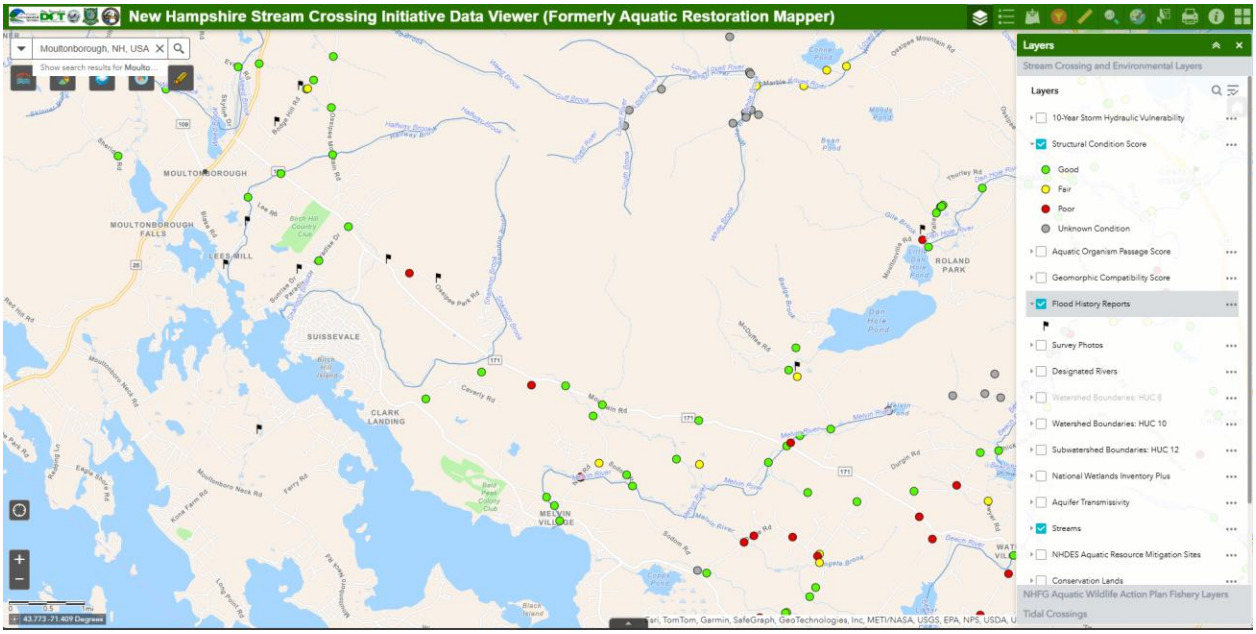
A series of floods in New Hampshire began in October 2005 with a flood that primarily affected the southwest corner of the state and devastated the town of Alstead. The flood killed seven people. It was followed by floods in May 2006 and April 2007 and a series of floods during the late summer and early fall of 2008, one caused substantial flash flooding and washouts in Ashland, New Hampton, Center Harbor, and Meredith. In addition to property damages, one young girl died in Ashland because of the floodwaters from this storm.

Flooding in the region was associated with Tropical Storm Irene in September 2011 and Tropical Storm Sandy in October 2012.

The NOAA database reports only one documented flooding event in Moultonborough since 2019; a flash flooding event on June 28, 2023 causing flooding and undermining on NH Route 109.

Probability of Occurrence: Flooding – Remote, Dam Failure - Improbable

Location: Moultonborough contains 89 linear miles of shoreline, the most of any town in New Hampshire. The Committee noted that most flooding events are a result of lake level rise, and are not attributed to rivers and streams. It was noted that the Balmoral subdivision experiences flooding along its private roads. Sunrise Drive and Robin Lane were noted in the 2019 plan as low lying, private roads that experience flooding, but those residents have since remedied the issues and those areas are no longer of concern.



The NH Stream Crossing Initiative and Mapping Tool and the NH Aquatic Restoration Mapper are mapping and assessment tools coordinated by UNH T2 can be useful resources for tracking the location and status of bridges and culverts along with areas that have flooded in the past. Many state-owned features have been mapped by state agencies. Mapping local features is usually done through the regional planning commission.

Impact – Flooding – Low, Dam Failure – Low
Flooding, whether from heavy rains or ice jams, poses a low risk for Moultonborough. The Committee noted that the Town does not experience impactful outcomes from flooding. This was echoed by the public in the survey responses. Less than a quarter of responses listed flooding as a high concern; similarly, flooding events were rarely mentioned when asked about specific areas of town and specific hazardous events within the last five years.

Impact on Vulnerable Communities: Potential impacts associated with flooding on Moultonborough's vulnerable populations include:

- May live in areas prone to flooding due to the large number of waterfront properties
- May have limited mobility for getting assistance/evacuation, dependence upon others to travel

LANDSLIDE

A landslide is the downward or outward movement of earth materials on a slope that is reacting to a combination of the force of gravity and a predisposed weakness in the material that allows the sliding process to initiate. The broad classification of landslides includes mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. Landslides may be formed when a layer of soil on a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Although gravity becomes the primary reason for a landslide once a slope has become weak through a process such as the one just described, other causes can include: [1]

- Erosion by rivers or the ocean that creates over-steepened slopes through erosion of the slope's base. In the case of rivers, this can occur because of flash flooding
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- Earthquake creates stress that makes weak slopes fail—earthquakes of 4.0 magnitude and greater have been known to trigger landslides
- Wildfires (loss of vegetation)
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore, the formation

of waste piles, or building of man-made structures may stress weak slopes to the point of failure.

Extent: Weak
While there is no universally accepted standard or scientific scale that 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
    - o Measured in square feet, square yards, etc.
    - o 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.

Although the overall vulnerability for landslides in the state is low, there is considerable terrain susceptible to landslide action. This was exemplified in May of 2003 when the Old Man of the Mountain collapsed. The continuous action of freezing and thawing of moisture in rock fissures causes it to split and separate. This action occurs frequently on the steeply sloped areas of the state, increasing the risk of landslides. In addition to being susceptible to this freeze/thaw process, the Ossipee Mountain Range, Squam Range, and other mountains throughout the Lakes Region are also close to seismic faults and at risk of increased pressure to development.

Consideration should be given to the vulnerability of man-made structures in these areas due to seismic- and/or soils saturation-induced landslide activity. Landslide activities are also often attributed to other hazard events. For example, during a recent flood event, a death occurred when a mass of saturated soil collapsed. This death was attributed to the declared flood event.[8] Also, during the 2007 Nor'easter a landslide occurred in Milton, NH resulting in the temporary closure of NH Route 101.

History: Records (NOAA Storm Events database) indicate no landslides have occurred in Carroll County. There was no local knowledge of a landslide occurring in Moultonborough.

Location: Although New Hampshire is mountainous, it consists largely of relatively old geologic formations that have been worn by the forces of nature for eons. Consequently, much of the landscape is relatively stable and the exposure to this hazard type is generally limited to areas in the north and north central portion of the state. Formations of sedimentary deposits along the Connecticut and Merrimack Rivers also create potential landslide conditions. Red Hill and the Ossipee Mountains hold the steepest slopes; however, with no knowledge of landslides occurring within Moultonborough, the Committee agreed the Town is at low risk.

Probability of Occurrence: Remote

[8] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html visited February 8, 2011.

Impact: Low
The primary impacts of a landslide are the damage and destruction to property and infrastructure located in the area where the landslide occurred. The land material moved during a landslide can cause damage to roads, buildings, and infrastructure at the base of the slope on which the landslide occurred. Buildings or infrastructures that are atop the slide, or on the side of the slope where the slide occurs, can be severely damaged or destroyed through its consumption by the slide. The hazard of death and injury to individuals atop, on, or at the base of a slide exists if such individuals are present in those locations when the landslide occurs.

Landslides that occur adjacent to a waterbody, such as a river or lake, can introduce excess sediment, increasing the turbidity of the receiving waterbody and impacting water quality if the quantity of sediment is of sufficient quantity. A very large landslide into a river could cause an obstruction that acts like a dam, creating an impoundment of water which leads to sediment and woody material deposition within it. This could also further create an additional risk of a "dam failure" at some future time when the natural dam breaks down, resulting a rapid release of the stored water from upstream.

Lake Kanasatka is adjacent to Red Hill and could therefore be impacted if a landslide were to occur on that hill. As there are no significant steep slopes near structures, the potential impact to Moultonborough is minimal.

Impact on Vulnerable Communities: As there are no significant steep slopes near structures or residences, the potential impact to Moultonborough is minimal.

LIGHTNING

Lightning is a giant spark of electricity that occurs within the atmosphere, or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the Sun. During a lightning discharge, the sudden heating of the air causes it to expand rapidly, resulting in thunder.

Extent: Moderate
All thunderstorms have the potential to create lightning, which can cause death, injury, and property damage and have great potential to cause damage to electronic equipment as well as structure and wildfires. Although the numbers have trended downward in recent decades, during the last half of the twentieth century more people were killed in the United States each year by lightning than by any other weather event. It can also wreak havoc with electrical and communications systems.

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

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.

History:
According to the NOAA database, there has been one recorded lightning event in Moultonborough since the last plan update, occurring in 2020. This event caused a structure fire resulting in $20K in property damage.

History of Lightning Events this Century

Event	Date	Location	Extent	General Impacts	Source
Lightning	6/10/2005	Moultonborough	Lightning	Lightning struck a tree causing a fire that spread to and destroyed a cottage on Badger Island, $30K in property damage.	NOAA Events
Lightning	8/1/2005	Moultonborough	Lightning	Lightning struck an under construction, two-story home igniting a fire that heavily damaged the structure, $150K property damage.	NOAA Events
Lightning	8/2/2005	Moultonborough	Lightning	Two-story home struck and caught fire damaging the kitchen and new addition, $50K in property damage.	NOAA Events
Lightning	5/15/2020	Moultonborough	Thunderstorm	Structure fire caused by lightning, $20K property damage	NOAA Events

Location: Lightning can strike anywhere in town. Exactly where and when lightning will strike is unknown.

Probability of Occurrence: Probable
In the Lakes Region, fewer than two lightning strikes occur per square kilometer annually. While this value is not particularly high compared with other parts of the country, the frequency of storms with lightning is a local concern, especially during the summer months.

Impact: Low
Forest fires or structural fires can result from lightning strikes. Lightning can injure or kill people near the strike. Structures that are not grounded are the most susceptible to damage.

Power outages, associated with natural hazards like lightning, high winds, inland flooding, severe winter weather have the potential to cause disruption to residents and the functioning of the town. The elderly and disabled who rely on powered medical devices are at risk.

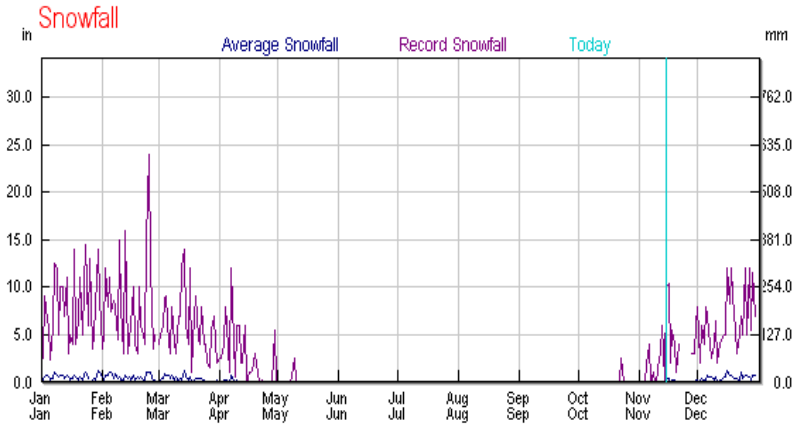
All structures in Moultonborough are susceptible to damage by lightning and resulting fires. There is back-up power for most municipal facilities. Assuming 1% town-wide damage to buildings, each year lightning could result in $25.9M in damages.

Impact on Vulnerable Communities: Potential impacts associated with lightning on Andover's vulnerable populations include:

- May live in a wooded and densely populated area
- May have limited mobility for getting assistance/evacuation, dependence upon others to travel
- Limited resources for seeking medical assistance

SEVERE WINTER WEATHER (SNOWSTORMS, ICE STORMS)

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



Extent: Severe
A heavy snowstorm can be defined as one that deposits four or more inches of snow in a 12-hour period. Snowstorms are a common occurrence throughout the Lakes Region. Blizzards, which may dump 12 to 36 inches or more of snow in a one- to three-day period are less frequent, but can have a serious impact on structures, utilities, and services.

CATEGORY	NESIS VALUE	DESCRIPTION
1	1—2.499	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10.0+	Extreme

The region typically receives greater than 66 inches of snow annually. Records indicate that eight or more inches have fallen in a single day on most dates from late November through mid-March but the average snowfall on any day from November through April is less than an inch. This record also shows that deposits of more than 10 inches have happened in each of these months and on several days in February the area has seen more than 15 and even 20 inches of snow in one day.

A couple of scales have been adopted by NOAA for comparing snowstorms that incorporate the number of inches of snow that accumulate, the area of the storm, and the number of people that could be impacted by the storm. The Northeast Snowfall Impact Scale (NESIS) applies specifically to the northeastern United States. It groups high-impact snowstorms into five categories.

An ice storm coats trees, power lines, streets, vehicles, and roofs with a very slick and heavy coating of ice. In the winter of 1998, a major ice storm crippled much of New Hampshire, coating everything with as much as three inches of ice. The U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory estimates a 40- to 90-year return period for an event with a uniform ice thickness of between 0.75 and 1.25 inches. In 2008, just 10 years later, however, New Hampshire was struck again by another severe ice storm.

The Sperry-Piltz Ice Accumulation (SPIA) Index is used to forecast and classify ice storms based on a combination of the average thickness of ice coating (referencing expected temperature and precipitation levels) and wind speed; ratings range from 0 to 5.

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

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

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

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.

New Hampshire generally experiences at least one or two nor'easters each year with varying degrees of severity. A nor'easter is defined as a large anticyclone weather system (moving south to north) 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 12 hours to three 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.

In the winter months, the state may experience the additional coincidence of blizzard conditions with many of these events. A blizzard is characterized by sustained winds or

frequent gusts to 35 miles per hour or greater and considerable amounts of falling or blowing snow that last for a duration of three hours or longer. The combination of winds and snow reduces visibility to less than a quarter mile.

History: The 1998 ice storm was the costliest FEMA/Presidential Declared disaster in New Hampshire's history. The ice load bent trees and power lines and led to massive power outages throughout the state. The December 2008 ice storm surpassed the 1998 storm, in terms of state-wide damage. The President declared this storm as a major disaster and the state received $15 million in federal aid for recovery.

The NOAA Storm database lists 25 severe winter storm events since 2019. The winter storm in April 2024 was a Declared Disaster. In addition, three of the seven Severe Storms and Flooding declarations since 2019 have been winter-time events.

- December 2022 (major disaster declaration)
- December 2023 (major disaster declaration)
- January 2024 (major disaster declaration)

Downed trees caused by severe winter weather in Moultonborough, 03/2017

Location: Severe winter weather occurs frequently in the northeast and the possibility exists for Moultonborough residents to have to withstand several days without power. There are segments of the population that are more at risk. These include the elderly, people that need regular medical care, and young children. The Committee noted that it is common for residences to have backup power sources. 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.

Probability of Occurrence: Frequent

Impact: Low-Moderate
Major roads, essential services, and flat-roofed buildings are all likely to be impacted by winter storms. While the town is accustomed to seasonal heavy snowfall, any particularly severe event with significant accumulations, especially combined with severe cold can be a burden. These events often lead to ice accumulation, and power loss, significantly increasing the vulnerability of populations and facilities.

Heavy snow can cause damage to property, disrupt services, and make travel unsafe, 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.

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. 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.

No specific critical facilities in Andover were identified as being vulnerable to snow or ice event. Flat-roofed buildings are all susceptible to damage from snow and ice loads.

Maintenance on the major arteries (NH 25, NH 109, and NH 171) falls to NH DOT. There are 72 miles of town roads in Moultonborough that are the Town's responsibility, 16 miles of which are dirt roads. Moultonborough has a large number of private roads totally 110 miles, most of which are dirt.

All structures in Moultonborough are susceptible to damage by winter weather events, whether through ice storms, blizzards, or the heavy, wet snow often associated with a nor'easter. Town facilities are not particularly at risk to Severe Winter Weather. Assuming 1% to 5% town-wide damage to buildings, winter weather could result in $25.9M to $129M in damages annually. The potential for impact to the town from severe winter weather is seen as moderate.

Impact on Vulnerable Communities: Potential impacts associated with severe winter weather on Moultonborough's vulnerable populations include:

- May have limited mobility for getting assistance/evacuation, dependence upon others to travel
- Limited resources for seeking medical assistance

SOLAR STORMS & SPACE WEATHER

The term space weather is relatively new and describes conditions in the Earth's outer space environment. Space weather includes conditions and events on the sun, in the solar wind, in near-Earth space, and in Earth's upper atmosphere that can affect space-borne and ground-based technological systems.[9] Although space weather has occurred since the beginning of time, little was understood about the causes and impacts of these instances on the planet. It has only been in the last 200 or so years that multiple science fields have come together to

[9] https://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html#q12

study space weather. Not all space weather is damaging or affects humans or technology. Perhaps one of the most well-known effects of space weather on the Earth's atmosphere is the Aurora Borealis (aka Northern Lights – northern hemisphere) and the Aurora Australis (southern hemisphere). Aurora displays are a result of solar wind where some of the charged particles become trapped in the Earth's atmosphere.

Extent: Weak

The State of New Hampshire Hazard Mitigation Plan (2023) describes three different types of events: Geomagnetic Storms, Solar Radiation Storms, and Radio Blackout. Each of these is then rated on a five-level scale (minor, moderate, strong, severe, extreme), with descriptions of increasing impacts on power, spacecraft, biological, satellite, high frequency radio, and navigation systems. A solar storm may exacerbate radio communications problems. The Radio Blackout Scale[10] 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)
R5	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
R4	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)
R3	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)
R2	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)
R1	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: There have not been any known occurrences in Moultonborough of solar storms or space weather, and no significant events have been reported statewide. Nearby events include Quebec, Canada, which experienced a 9-hour blackout in March 1989 when solar winds caused a fluctuation in the Earth's magnetic field and caused Hydro-Quebec's transmission to go down.

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

Probability of Occurrence: Improbable

Impact: Low

Solar storms and space weather impact the Earth daily, although the effects are not often felt. It is difficult to estimate the impact of this hazard on Moultonborough as knowledge of this hazard is evolving, but committee members acknowledge that while human and property impacts are low, compromised communications could impact communications and response during other types of hazards, including reaching out for mutual aid, though this has not happened in recent memory.

[10] 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

Impact on Vulnerable Communities: Potential impacts associated with solar storms and space weather on Moultonborough's vulnerable populations are all related to compromised electronic communication and response associated with some other emergency.

TROPICAL & POST-TROPICAL CYCLONES

Tropical and Post-Tropical Cyclones are large storms with winds rotating in a counterclockwise manner. Tropical depressions and hurricanes form over the Atlantic Ocean and often come ashore in the southeastern United States, frequently moving up the Eastern Seaboard. Occasionally such storms come ashore along the northeast coast. Sustained high winds and heavy rains for 12 to 36 hours are characteristic of tropical depressions and hurricanes. 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, poses the threat of becoming one
- Tropical Disturbance: A cluster of showers and thunderstorms that flare up over the tropics. These are usually 100-300 miles in diameter and generally move westward.
- Tropical Storm: Sustained wind levels are between 34 knots and 64 knots (39 to 74 MPH)
- Hurricane: Once a tropical cyclone 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 possesses sufficient tropical characteristics to be considered a tropical cyclone. These 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 a storm surge in coastal areas.

Extent: Moderate

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. Because hurricanes form over the ocean and move relatively slowly, people usually have time to prepare for the event. However, this also means that once the storm arrives, heavy rain and wind can be expected for a couple of days.

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.
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

History: 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. New Hampshire has not experienced a severe hurricane directly since 1938.

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.

In the past five years no hurricanes have hit the region. By the time that a hurricane reaches central New Hampshire, it is rare that it retains the characteristics of a hurricane. Wind speeds usually dissipate but they can still bring a great deal of rainfall to the region. That was the case with the remnants of Hurricanes Irene and Sandy, which hit the area in 2011 and 2012 as

tropical depressions. The NOAA Database shows that a Tropical Storm did hit Carroll County in August 2020.

History of Tropical & Post-Tropical Cyclones Since 2019

Event	Date	Location	Extent	General Impacts	Source
Tropical Storm	8/4/2020	S. Carrol Co.	Tropical Storm Isaias. Wind >70 mph.	Hundreds of downed trees, 30% of customers without power.	NOAA Events

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

Probability of Occurrence: Occasional

Impact: Low
Hurricanes in the Lakes Region could produce heavy rain and strong winds that could lead to flooding and damage to property and infrastructure. Tropical and post-tropical cyclones can cause the same damage that high wind events cause, with the added hazard of possible flooding.

The committee noted that infrastructure such as roads, bridges, communications, and utilities are most vulnerable. All structures in Moultonborough are susceptible to damage by cyclonic events, whether through tropical depression or hurricane. Assuming 2% to 5% town-wide damage to buildings, high winds could result in $51.7M to $129M in damage in Moultonborough in any given year.

Impact on Vulnerable Communities: Potential impacts associated with cyclonic events on Moultonborough's vulnerable populations include:

- May have limited mobility for getting assistance/evacuation, dependence upon others to travel
- Necessary medical care may be disrupted before, during, and after event

WILDFIRE

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

Extent: Severe
New Hampshire has about 500 wild land fires each year; most burn less than half an acre. Much of the Lakes Region (and Moultonborough) is forested and susceptible to fire.

The National Wildfire Coordinating Group (NWCG) has defined seven classes of wildfire based on size:

- Class A - one-fourth acre or less;
- Class B - more than one-fourth acre, but less than 10 acres;
- Class C - 10 acres or more, but less than 100 acres;
- Class D - 100 acres or more, but less than 300 acres;
- Class E - 300 acres or more, but less than 1,000 acres;
- Class F - 1,000 acres or more, but less than 5,000 acres;
- Class G - 5,000 acres or more.

History:
While there have been no wildfire reported on the NOAA Database, and there is no local knowledge of wildfire within Moultonborough, the Committee agrees it to be a high risk due to the amount of wooded land in town. Wildfire has not occurred in Moultonborough since the last plan (2019), but there was a wildfire in northern Carroll County within Crawford Notch State Park, about 50 miles north of Moultonborough, in May of 2022, 107 acres were burned.

Location: Most of Moultonborough is heavily wooded; a fire could occur anywhere.

Probability of Occurrence: Occasional

Impact: Moderate
Some sections of town may have limited access to potential wildfire areas, especially due to steep slopes, but fires in these locations would have a limited impact on structures. Due to the heavily wooded nature of the town, all properties in town have the potential to be impacted by a wild land fire. Assuming 1% town-wide damage to buildings, each year wildfire could result in $25.9M in damages.

Impact on Vulnerable Communities: Potential impacts associated with wildfire on Andover's vulnerable populations include:

- May have limited mobility for getting assistance/evacuation, dependence upon others to travel
- Likely to be more vulnerable to hazards like air quality

Summary of Risk

A matrix was created to determine an overall hazard risk assessment rating (next page). Each criterion (**Extent**, **Probability** of occurrence, and **Impact** – an average of three types) was given a rating to show which hazards are the greatest threat to the community, based on historic events and local knowledge, the town's ability to respond, along with economic and environmental issues.

These ratings were transformed into numerical values. The **overall risk rating** associated with each hazard was determined by multiplying the three factors. For Natural Hazards, a total score

of 12 or more was deemed to be High Risk, a total of between 8 and 12 was deemed to be Medium Risk, and a score of less than 8 was deemed Low Risk.

Definitions

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

Extent - How bad could it get?
• **Weak**: limited magnitude, slow onset, short duration, little damage.
• **Moderate**: moderate magnitude, moderate onset speed, moderate duration, some damage/loss of service for days.
• **Severe**: severe magnitude, fast speed of onset, long duration, devasting damage and loss of service for weeks.
• **Extreme**: extreme magnitude, immediate onset, extended duration, catastrophic damage, uninhabitable conditions.

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

Moultonborough 2025 Hazards	Extent	Probability	Average Impact	Risk
Definition	Magnitude/ Strength	Likelihood this will occur w/in 10 yrs	Average of Human, Property, Business	Probability x Extent x Avg. Impact
Scale **Natural Hazards**	1: Weak 2: Moderate 3: Severe 4: Extreme	1: Improbable 2: Remote 3: Occasional 4: Probable 5: Frequent	1: Low 2: Moderate 3: High 4: Catastrophic	**Low Medium High**
Severe Winter Weather	**3**	**4**	**1.33**	**16.00**
Conflagration	**3**	**2**	**2.33**	**14.00**
Wildfire	**3**	**2**	**2.00**	**12.00**
Drought	**3**	**3**	**1.33**	**12.00**
High Wind Events (Torn./Downb.)	**3**	**2**	**1.67**	**10.00**
Extreme Temps	**2**	**3**	**1.67**	**10.00**
Infectious Diseases	**2**	**3**	**1.33**	**8.00**
Thunderstorm/ Lightning	**2**	**3**	**1.00**	**6.00**
Tropical & Post-Tropical Cyclones	**2**	**3**	**1.00**	**6.00**
Inland Flooding (& Erosion)	**2**	**2**	**1.33**	**5.33**
Landslides	**1**	**2**	**1.00**	**2.00**
Solar Storms & Space Weather	**1**	**1**	**1.00**	**1.00**
Earthquake (>4.0)	**1**	**1**	**1.00**	**1.00**
Dam Failure	**1**	**1**	**1.00**	**1.00**
Avalanche	**1**	**1**	**1.00**	**1.00**

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

SECTION IV: VULNERABILITY ASSESSMENT

After reviewing the various natural hazards and the Town's critical facilities and other resources, the Moultonborough HMP Committee considered how susceptible they considered each category of critical facility/population to be to damage or economic loss (vulnerability). The Committee categorized these critical facilities and populations as follows: Category 1, Emergency Services; Category 2, Essential Structure and Services; Category 3, Special Populations and Places to Protect; and Other, Historical and Cultural Areas. As a group, the Committee gave a rating for each category's vulnerability to each hazard. The **vulnerability ratings** below indicate the Town's greatest vulnerabilities are high winds, tropical & post-tropical cyclones, lightning, wildfire, drought, winter weather, and earthquake.

Moultonborough Vulnerability Matrix	**Category 1**	**Category 2**	**Category 3**	**Other**	**Total**
*Vulnerability is susceptibility to damage or economic loss.	**Emergency Services**	**Essential Structures and Services**	**Special Populations & Places to Protect**	**Historical & Cultural Areas**	
1 - Low 2 - Medium 3 - High	FD, PD, EOC, DPW, Medical, Shelter	Water, Sewer, Transportation, Roadways, Food, Power	Elderly, Disabled, Schools, High Concentration Pop.	Library, Castle in the Clouds, Old Schoolhouse, Old Town Hall, etc.	**KEY: 8-10: High Vulnerability 5-7: Medium Vulnerability Below 5: Low Vulnerability**
High Wind Events (Tornado/Downburst)	2	3	3	2	**10.00**
Tropical & Post-Tropical Cyclones	3	3	2	1	**9.00**
Lightning	2	2	2	2	**8.00**
Wildfire	2	2	3	1	**8.00**
Drought	2	2	2	2	**8.00**
Severe Winter Weather	3	2	2	1	**8.00**
Earthquake	2	2	2	2	**8.00**
Extreme Temperatures	1	2	3	1	**7.00**
Conflagration	1	1	3	1	**6.00**
Infectious Diseases	1	1	2	1	**5.00**
Inland Flooding	1	1	1	1	**4.00**
Dam Failure	1	1	1	1	**4.00**
Landslides	1	1	1	1	**4.00**
Avalanche	1	1	1	1	**4.00**
Solar Storms & Space Weather	1	1	1	1	**4.00**
Total	**24**	**25**	**29**	**19**	

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

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

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

SECTION V: MITIGATION STRATEGIES

A. CURRENT PLANS, POLICIES, AND REGULATIONS

The planning decisions that affect community growth patterns have evolved over the years as Moultonborough has developed. Many local programs have the effect of mitigating disasters; some of these have been in effect for years, others were implemented since the development of the 2019 Hazard Mitigation Plan. A review of existing mitigation strategies was conducted and included review of pertinent documents including the zoning ordinance, subdivision regulations, emergency management plan, site plan regulations, and discussion with Committee members. The following strategies detail existing plans and regulations related to hazard mitigation. Also included is a column with comments noted by the Committee. The review of existing effectiveness utilized these categories:

Poor *..... The policy, plan or mutual aid system is* ***outdated and/or ineffective and*** *needs to be reviewed/updated.*
Average *.....The policy, plan or mutual aid system* ***meets minimum requirements and may require*** *potential reviews/updates.*
Excellent *.....The policy, plan or mutual aid system* ***meets all requirements and requires no*** *reviews/updates.*

The primary planning mechanism in Moultonborough addressing land use development is the master plan. Moultonborough's Master Plan revisions are as follows: Historical and Cultural Resources Chapter, 2021; Natural Resources Chapter, 2019; Economic Development Chapter and Housing Chapter, 2018; and Executive Summary, Land Use Development Chapter, Transportation Chapter, and Vision Chapter, 2016. The town's Zoning Ordinance (2024) along with Subdivision (2020) and Site Plan Review Regulations (2020) are the tools for implementing the vision and goals of the master plan. These various planning documents are responsible for promoting the health, safety, and welfare of the community.

The town's Zoning Ordinance was updated since the last HMP. NH RSA 674:2(e) does allow for the inclusion of a Natural Hazards Section in a local master plan. The town should consider adopting this HMP as part of the master plan by reference.

How the town appropriates its funds is another form of planning, indicating local priorities. In Moultonborough, the Selectmen are responsible for the development of annual and long-term town budgets, which could include some hazard mitigation expenses. Recent town budgets have funded mitigation and response expenses identified in the hazard mitigation plan notably conducting erosion repair on Ossipee Park Road.

Table V-1: Existing Protections and Policies

Moultonborough, NH				
Existing Protection	**Description**	**Responsible Agent**	**Effectiveness* *Poor/Average/Exc.***	**Recommended Changes**
Zoning Ordinance	Floodplain Development limitations	Planning & Land Use Department	Average	
	Participate in NFIP			
	FIRM maps are developed			
	Shoreland Protection through the state's SWQPA.			
	Require access for FD & emergency responders on all property			
	Telecom Towers – require access for public safety			
	Steep Slopes ordinance			
Subdivision Regulations	Stormwater Management Plan is required	Planning & Land Use Department	Average	
Radio Communications	4 cell towers (Red Hill, Glidden Road, Moultonboro Neck Road, NH Route 25, Governor Wentworth Highway)	Police Chief/Fire Chief	Average	
	Police participate in Carroll County Dispatch			
	Lakes Region Mutual Fire Aid for supplementary communications			
Fire Department	Participate in Lakes Region Mutual Aid.	Fire Chief	Average	
	The F.D. reviews site plans and performs final inspections for oil burners, wood stoves, and fireplaces.			
	There is a monthly officers meeting to discuss response, tabletop exercises, and to review their pre-determined response cards.			
	Moultonborough F.D. is a member of the Central NH Haz Mat Team.			
Fire Department	88% of F.D. has operational certification for Haz Mat Responders [operations & decontamination]; goal is 100% certification.	Fire Chief	Average	
	Full-time FD Chief			
	3 full-time officers, 33 call firefighters			
	3 FD Boats with equipment			
	Capital Reserve Fund for FD [not adequate]			
	Adequate radios for FD volunteers			
Dry Hydrants	Cisterns exist at major subdivisions greater than three units	Fire Chief	Average	
	FD conducts inspection & upkeep			
Police Department	Full-time PD Chief	Police Chief	Average	
	7 full-time officers, four part-time officers, one part-time community service officer, and three support staff			
	Capital Reserve Fund for PD			
	P.D. participates in mutual aid.			
	Replacement schedule for gear, weapons, equipment, radios			
	Full-time Director of Public Works			
Highway Department	9 full-stime staff, 1 seasonal staff member	Highway Team Leader	Average	
	CRF: Road Improvements Fund, Public Works Equipment Fund			
	Town maintenance plan – annually cleans catch basins in ditch lines and spillways. Have identified problem areas – beaver, backup, drainage issues, etc.			
	Participate in State Public Works Mutual Aid			
Highway Department	Goal is to have 100% certified in HazMat awareness, NIMS & ICS.	Road Agent	Average	

Moultonborough, NH				
Existing Protection	**Description**	**Responsible Agent**	**Effectiveness* *Poor/Average/Exc.***	**Recommended Changes**
Emergency Operations Plans	EOP – updated 2016	Emergency Management Director	Average	
	School Emergency Plan, 2024	School Superintendent		
Building Codes and Inspector	Inspects fireplaces, electrical systems	Code Enforcement Officer	Average	
	Adopted state building codes (IBC)			
Backup Power (Generators)	Moultonborough Academy	Emergency Management Director	Average	
	Safety Building			
	Moultonborough Neck FD			
	Town Hall			
	Waste Management Facility			
	Hwy Dept.			
Transfer Station	Full-time Director of Public Works	Transfer Station Supervisor	Average	
	4 full-time staff, 1 part-time staff, and 1 seasonal staff			
Buildings & Grounds Department	Full-time Director of Public Works	Facilities Team Leader	Average	
	Maintain all Municipal Facilities			
	2 full-time staff, 2 part-time staff, and 2 seasonal staff			
	CRF: Municipal Building Maintenance Fund			
Shelters	Moultonborough Academy	Emergency Management Director	Average/Poor	Shelter Team (poor) needs to be restarted, everything else average
	Large generator			
	Shelter Team			
	Have an agreement with Red Cross for shelter supplies			
Communication	Civics Plus Communications System established	Emergency Management Director	Poor	Previous Code Red communication system was more effective

A Capital Improvements Program (CIP) is a tool that can be useful in helping a community budget for a variety of expensive capital projects, including those that mitigate hazards (NH RSA 674.5). The CIP can be developed by the Planning Board or a committee appointed by the Board of Selectmen. Moultonborough does have a CIP Committee.

B. STATUS OF 2019 ACTIONS

The 2019 HMP contained 26 recommended actions, 22 mitigation actions for natural hazards and 4 actions for mass casualty. The status of the mitigation actions recommended in the 2019 plan is indicated in Table V-2 as either Completed (C), Deleted (X), or Deferred (D) [Actions related to human-caused hazards are addressed in Appendix G.] A review of the status of these actions revealed that four have been completed and three others are no longer considered pertinent. Deferred Actions (or portions of deferred Actions) were carried forward to be considered along with new Mitigation Actions (Table V-3).

Table V-2: Status of Mitigation Actions from the 2019 Plan Key: C – Completed, X – Delete, D – Deferred

Status of Moultonborough 2019 HMP Actions

Hazard	Projects	Project Status (2025)	Comments
All Hazards	Keep duplicate emergency information records at Town Hall.	**D**	Uploading duplicates to the cloud as needed
All Hazards	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct a propagation study (with soft estimate for implementation).	**X**	No longer relevant as the PD switched to Carroll County Dispatch
All Hazards	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of recommendations of the Step 1 Study (contingent upon funding).	**X**	No longer relevant as the PD switched to Carroll County Dispatch

Hazard	Projects	Project Status (2025)	Comments
All Hazards	Continue use of 2 traffic response equipment and trailer capability to serve as message boards along main roads.	**D**	In process with operating budget funds
All Hazards	Maintain working relationship with the private water utility to share information regarding contingency plans.	**D**	In process with operating budget funds
All Hazards	Maintain working relationship with the sewer utility to share information regarding contingency plans.	**D**	In process with operating budget funds
All Hazards	Encourage residents and town employees to subscribe to Code Red alert system	**X**	No longer using the Code Red alert system
Wildfire	Implement dry hydrant maintenance plan.	**C**	Completed in 2019
Wildfire	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	**D**	In process with operating budget funds
Flooding	Provide education and outreach to homeowners regarding flood proofing their property.	**D**	In process with operating budget funds
Flooding, erosion	Staff will bring draft regulations for driveway standards on steep slopes to the Board of Selectmen for consideration.	**C**	Completed in 2019
Flooding, washout	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.	**D**	In process with operating budget funds

Hazard	Projects	Project Status (2025)	Comments
Flooding, washout	Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	**C**	Completed in 2024
Flooding, washout	Engage in a conversation with the homeowners' associations (along Sunrise Drive and Robin Lane) regarding maintenance of roads and drainage.	**C**	The owners of the private roads addressed the issues.
Flood/Dam Failure	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.	**D**	In process with operating budget funds
High Winds, Severe Winter Weather	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones	**D**	In process with operating budget funds, this outreach is updated annually
High Winds, Severe Winter Weather	Work with utility companies to identify tress that need trimming or removal.	**D**	In process with operating budget funds
	DPW to remove compromised and dead trees in regular course of road improvements	**D**	In process with operating budget funds
Extreme Temps, Severe Winter Weather	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations	**D**	In process with operating budget funds

Hazard	Projects	Project Status (2025)	Comments
Extreme Temps	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building	**D**	In process with operating budget funds
Lightning	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities	**D**	In process with operating budget funds
Lightning	EMD to issue weather notices for planning public events	**D**	In process with operating budget funds

C. MITIGATION GOALS AND TYPES OF ACTIONS

GOALS

In the 2019 Plan, the committee affirmed its support for the goals stated in the State HMP at the time. This included both general and hazard-specific local goals. In 2023 the New Hampshire State Hazard Mitigation Plan published six overarching goals to help align the plan with new focuses on equity and community lifelines. The Moultonborough HMP Committee reviewed both sets of goals and adopted the following wording that incorporates elements of both sets of goals as they apply to Moultonborough.

Goal I: Community and Resource Protection

Minimize the loss and disruption of human life, property, critical facilities, natural resources, and the economy due to natural hazards while improving the emergency communication, alert, and response systems.

Goal II: Outreach and Education

Enhance the protection of the town's residents and visitors, including vulnerable populations within the Town of Moultonborough through public education of the impacts of potential hazards and hazard preparedness, while increasing the public's awareness of the threats and hazards which face the town and possible mitigation measures.

Goal III: Coordination and Communication

Promote regular communication and collaboration between various departments and with local, regional, and state officials; thereby ensuring that those involved are aware of their responsibilities in the continuation of essential services.

Goal IV: Damage Prevention

Minimize the damage and expense which might be caused to public and private buildings and infrastructure due to natural hazards and discourage future development in those areas of town where substantial exposure to hazards exists.

There is a strong emphasis in the Town on Outreach and Education in part because so many of the areas of concern are private property; there is a need for property owners and associations to work with the Town to ensure that services can reach all who are in need.

The Goals will be achieved through:

a. identifying and assessing hazards posing a risk to Moultonborough and developing mitigation measures through a community outreach effort, including vulnerable populations.

b. a coordinated and collaborative effort between federal, State, and local authorities along with other partners (private, NGOs, and VOADs*) to implement appropriate and cost-effective hazard mitigation measures.

c. public education about disaster preparedness and resilience and expanded awareness of the threats and hazards which face the town.

d. strengthen Continuity of Operations and Continuity of Government to ensure continuation of essential services through training, outreach, and education.

e. Reduce the impact of increased severe weather incidents (flooding, snow and ice storms).

*NGO – Non-governmental Organization, VOAD - Voluntary Organizations Active in Disaster

TYPES OF ACTIONS

There are six **types of actions** that communities may take to reduce the likelihood that a hazard might impact the community. Below each **action type** are several examples of those actions.

A. Actions that will keep things from getting worse - Prevention
   a. Zoning – floodplain and steep slope overlays
   b. Open space preservation
   c. Subdivision and Site Plan Review
      i. Impervious surface limits
      ii. Stormwater management
   d. Capital Improvements Plan – limiting the extension of public infrastructure into hazard areas
   e. Building and Fire codes

B. Actions that address individual buildings - Property Protection
   a. Flood-proofing existing buildings
   b. Retrofitting existing buildings to reduce damage
   c. Relocating structures from hazard-prone areas
   d. Public procurement and management of land vulnerable to hazard damage

C. Actions that will inform the public - Public education and awareness
   a. Make hazard information and maps available to residents and visitors.
      i. Paper or electronic
      ii. Targeted at residents and businesses in hazard-prone areas
      iii. Set up displays in public areas, or homeowners associations.
      iv. Give educational programs in schools.
      v. Make information available through newspapers, radio, TV.
   b. Ask businesses to provide hazard information to employees.

c. Adopt a real estate disclosure requirement so that potential owners are informed of risks prior to purchase.

D. Actions that will <u>protect natural resources</u>

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

E. Actions that will protect emergency services before, during, and immediately after an event (<u>Long-term continuity</u>)

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

F. Actions that will control the hazard – <u>Structural projects</u>

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

D. MITIGATION ACTIONS

Through a review of the risk assessment and local vulnerabilities, several Problem Statements were identified and refined by the Committee. Through discussion an updated list of mitigation strategies was developed to address these current problems. Hazards are listed alphabetically, and ID letters/numbers do not indicate any prioritization.

Table V-3: Problem Statements and Potential Mitigation Actions

Project ID	Hazard	Problem Statements	Projects
AH 1	**All Hazards**	In the rare case that the Primary EOC is compromised, making emergency information records inaccessible, limited information would be available.	Ensure redundancy, organization, and accessibility under adverse conditions Employ cloud-based storage system (Microsoft OneDrive/Google Drive).
AH 2	**All Hazards**	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Maintain mobile 2 signboards and train staff in deployment procedures as part of a communications redundancy plan
AH 3	**All Hazards**	Maintain working relationship with the private water utility to share information regarding contingency plans.	Maintain working relationship with the private water utility to share information regarding contingency plans.
AH 4	**All Hazards**	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Maintain working relationship with the sewer utility to share information regarding contingency plans.
AH 5	**All Hazards**	There are some areas of town (Bean Road, Harvard Camp Road, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Work with Carroll County Dispatch to reduce the number of gaps in the emergency communication system

Project ID	Hazard	Problem Statements	Projects
AH 6	**All Hazards**	Lack of information and readiness can exacerbate the risk of hazards	Encourage residents and town employees to subscribe to the community safety notification system
AH 7	**All Hazards**	Black Cat Island only has one access road, which is a wooden bridge that is privately owned.	Maintain a conversation with residences on Black Cat Island Assoc. regarding necessary maintenance and upgrades to the bridge to ensure emergency vehicle access.
D 1	**Drought**	The town can experience periods of drought throughout the year.	Educate residents on outdoor fire safety and provide outreach to private well owners.
DF 1	**Dam Failure**	The Class B state dam at Lake Kanasatka does have a Dam Emergency Plan.	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.
ET 1	**Extreme Temperatures**	Vulnerable populations, including children, seniors, and those with chronic illness or disabilities, and others are at risk of injury or death due to extreme heat or cold, and power outages	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building
F 1	**Flooding**	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding flood proofing their property.
FE 1	**Flooding *or* *Erosion***	Roads could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.
FE 2	**Flooding *or* *Erosion***	Private Roads cross flood-prone areas and have undersized drainage; access to properties at the end of these roads can be limited by heavy or frequent rainfall.	Prioritize discussions with homeowners' associations about maintaining private roads and drainage to ensure emergency vehicle access.

Project ID	Hazard	Problem Statements	Projects
HW 1	**High Winds *(Tornado/ Downbursts)***	Downed limbs and trees can cause property damage and power outages and can block roads.	Work with utility companies to identify tress that need trimming or removal.
HW 2			DPW to remove compromised and dead trees in regular course of road improvements
ID 1	**Infectious Disease**	Infectious diseases could impact residents, visitors, and businesses.	Partner with NH Public & Lakes Region Public Health Services to share information with the public.
LS 1	**Landslide**	There are steep slopes in Town, particularly those by Red Hill and the Ossipee Mountains, that could experience a landslide.	Provide education and outreach to the public regarding landslide risks.
L 1	**Lightning**	All town electronics, including the communications network are vulnerable to damage from lightning.	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities
L 2	**Lightning**	Residents and visitors attending large public gatherings, particularly during peak seasons, may be vulnerable to lightning strikes	EMD to issue weather notices for planning public events
PTC 1	**Tropical & Post-Tropical Cyclones**	As weather events grow in intensity and duration (especially after 24 hours), added pressure is placed on infrastructure, facilities, and maintenance.	Educate homeowners about stocking up on supplies.
SWW 1	**Severe Winter Weather**	Downed limbs and trees can block roads, and during heavy snowstorms many private road contractors aren't able to clear smaller roads. Several areas of town have limited road access, including Paradise Drive and Moultonborough Neck Road.	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones
SWW 2	**Severe Winter Weather**	Heavy snow and ice, and extreme cold and heat, can damage property and cause frostbite, hypothermia, and heat-induced illness and even death	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations

Project ID	Hazard	Problem Statements	Projects
WF 1	**Wildfire**	16 multi-family and 231 single-family homes on Long Island's northwest side face wildfire risk due to terrain, vegetation, and poor access.	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.

The Committee identified the various costs and benefits associated with each action. The estimated cost represents what the town estimates it will cost in terms of dollars or staff hours to implement each action. Table V-4 shows the costs as well as the various benefits associated with each action. This table also includes notes whether the action addresses existing structures/infrastructure or future (new) structures/infrastructure. The ID letters are used simply for tracking purposes; they do not indicate any sort of prioritization.

Table V-4: Actions indicating Hazard, Cost, Structure, Goal, and Type of Action

Project ID	Hazard	Problem	Mitigation Action	Estimated Cost	Potential Funding Source	New/ Existing
AH 1	**All Hazards**	In the rare case that the Primary EOC is compromised, making emergency information records inaccessible, limited information would be available.	Ensure redundancy, organization, and accessibility under adverse conditions Employ cloud-based storage system (Microsoft OneDrive/Google Drive.	10 Hours Staff Time	Operating Budget	Existing
AH 2	**All Hazards**	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Maintain mobile 2 signboards and train staff in deployment procedures as part of a communications redundancy plan	±20 Hours Staff Time	Operating Budget	Existing
AH 3	**All Hazards**	Maintain working relationship with the private water utility to share information regarding contingency plans.	Maintain working relationship with the private water utility to share information regarding contingency plans.	±10 Hours Staff Time	Operating Budget	Existing

Project ID	Hazard	Problem	Mitigation Action	Estimated Cost	Potential Funding Source	New/ Existing
AH 4	**All Hazards**	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Maintain working relationship with the sewer utility to share information regarding contingency plans.	±10 Hours Staff Time	Operating Budget	Existing
AH 5	**All Hazards**	There are some areas of town (Bean Road, Harvard Camp Road, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Work with Carroll County Dispatch to reduce the number of gaps in the emergency communication system	$10,000+/- 80 Staff Hours	Operating Budget Capital Expenditure	New
AH 6	**All Hazards**	Lack of information and readiness can exacerbate the risk of hazards	Encourage residents and town employees to subscribe to the community safety notification system	±10 Hours Staff Time	Operating Budget	New
AH 7	**All Hazards**	Black Cat Island only has one access road, which is a wooden bridge that is privately owned.	Maintain a conversation with residences on Black Cat Island Assoc. regarding necessary maintenance and upgrades to the bridge to ensure emergency vehicle access.	±10 Hours Staff Time	Operating Budget	New
DF 1	**Dam Failure**	The Class B state dam at Lake Kanasatka does have a Dam Emergency Plan.	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.	5 hours/year (25 hours) Staff Time	Operating Budget	Existing
D 1	**Drought**	The town can experience periods of drought throughout the year.	Educate residents on outdoor fire safety and provide outreach to private well owners.	±5 Hours Staff Time	Operating Budget	New

Project ID	Hazard	Problem	Mitigation Action	Estimated Cost	Potential Funding Source	New/ Existing
ET 1	**Extreme Temperatures**	Vulnerable populations, including children, seniors, and those with chronic illness or disabilities, and others are at risk of injury or death due to extreme heat or cold, and power outages	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building	±20 Hours Staff Time	Operating Budget	Existing
F 1	**Flooding**	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding flood proofing their property.	±16 Hours Staff Time	Operating Budget	Existing
FE 1	**Flooding *or* *Erosion***	Roads could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.	$1,000/year + Staff and Equipment ($5,000)	Operating Budget	Existing
FE 2	**Flooding *or* *Erosion***	Private Roads cross flood-prone areas and have undersized drainage; access to properties at the end of these roads can be limited by heavy or frequent rainfall.	Prioritize discussions with homeowners' associations about maintaining private roads and drainage to ensure emergency vehicle access.	±10 Hours Staff Time	Operating Budget	New
HW 1	**High Winds *(Tornado/ Downbursts)***	Downed limbs and trees can cause property damage and power outages and can block roads.	Work with utility companies to identify tress that need trimming or removal.	±10 Hours Staff Time	Operating Budget	Existing
HW 2			DPW to remove compromised and dead trees in regular course of road improvements	±20 Hours Staff Time	Operating Budget	Existing
ID 2	**Infectious Disease**	Infectious diseases could impact residents, visitors, and businesses.	Partner with NH Public & Lakes Region Public Health Services to share information with the public.	±10 Hours Staff Time	Operating Budget	New

Project ID	Hazard	Problem	Mitigation Action	Estimated Cost	Potential Funding Source	New/ Existing
LS 1	**Landslide**	There are steep slopes in Town, particularly those by Red Hill and the Ossipee Mountains, that could experience a landslide.	Provide education and outreach to the public regarding landslide risks	±5 Hours Staff Time	Operating Budget	New
L 1	**Lightning**	All town electronics, including the communications network are vulnerable to damage from lightning.	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities	±20 Hours Staff Time	Operating Budget	Existing
L 2	**Lightning**	Residents and visitors attending large public gatherings, particularly during peak seasons, may be vulnerable to lightning strikes	EMD to issue weather notices for planning public events	±10 Hours Staff Time	Operating Budget	Existing
SWW 1	**Severe Winter Weather**	Downed limbs and trees can block roads, and during heavy snowstorms many private road contractors aren't able to clear smaller roads. Several areas of town have limited road access, including Paradise Drive and Moultonborough Neck Road.	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones	±50 Hours/Year Staff Time	Operating Budget	Existing
SWW 2	**Severe Winter Weather**	Heavy snow and ice, and extreme cold and heat, can damage property and cause frostbite, hypothermia, and heat-induced illness and even death	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations	±20 Hours Staff Time	Operating Budget	Existing

Project ID	Hazard	Problem	Mitigation Action	Estimated Cost	Potential Funding Source	New/ Existing
PTC 1	**Tropical & Post-Tropical Cyclones**	As weather events grow in intensity and duration (especially after 24 hours), added pressure is placed on infrastructure, facilities, and maintenance.	Educate homeowners about stocking up on supplies.	±5 Hours Staff Time	Operating Budget	New
WF 1	**Wildfire**	16 multi-family and 231 single-family homes on Long Island's northwest side face wildfire risk due to terrain, vegetation, and poor access.	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	±80 Hours Staff Time	Operating Budget	Existing

E. PRIORITIZATION OF ACTIONS

After considering the various merits and limitations of each project, the Committee prioritized the projects which had been identified. Committee members agreed to the standard STAPLEE prioritization tool to reflect the concerns of the community. The tool asks the committee to consider seven separate aspects for each Action. Committee members first individually prioritized each action, then the average total score was calculated. There was much discussion during this prioritization process and the final scores were reached through group consensus. Table V-5 shows the Actions and their scores. Total scores range from a high of 21 to a low of 7. See Appendix H for further details regarding the STAPLEE prioritization method and the detailed scores.

Scoring: 3 = Highly effective of feasible, 2 = Neutral, 1 = Ineffective or not feasible

Table V-5: Recommended Actions in Ranked Order

Project ID	Hazard	Mitigation Action	Total
F 1	**Flooding**	Provide education and outreach to homeowners regarding flood proofing their property.	**19.25**
FE 1	**Flooding *or* *Erosion***	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.	**19.25**
DF 1	**Dam Failure**	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.	**19**
AH 4	**All Hazards**	Maintain working relationship with the sewer utility to share information regarding contingency plans.	**18.5**
WF 1	**Wildfire**	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	**18.5**
SWW 1	**Severe Winter Weather**	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations	**18.5**
ET 1	**Extreme Temperatures**	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building	**18.5**
L 1	**Lightning**	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities	**18.5**

Project ID	Hazard	Mitigation Action	Total
AH 1	**All Hazards**	Ensure redundancy, organization, and accessibility under adverse conditions Employ cloud-based storage system (Microsoft OneDrive/Google Drive.	**18.25**
HW 1	**High Winds *(Tornado/ Downbursts)***	Work with utility companies to identify tress that need trimming or removal.	**18.25**
HW 2	**High Winds *(Tornado/ Downbursts)***	DPW to remove compromised and dead trees in regular course of road improvements	**18.25**
L 2	**Lightning**	EMD to issue weather notices for planning public events	**18.25**
LS 1	**Landslide**	Provide education and outreach to the public regarding landslide risks	**18.25**
AH 2	**All Hazards**	Maintain mobile 2 signboards and train staff in deployment procedures as part of a communications redundancy plan	**18**
SWW 2	**Severe Winter Weather**	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones	**18**
D 1	**Drought**	Educate residents on outdoor fire safety, and provide outreach to private well owners.	**18**
AH 3	**All Hazards**	Maintain working relationship with the private water utility to share information regarding contingency plans.	**17.75**
ID 1	**Infectious Disease**	Partner with NH Public & Lakes Region Public Health Services to share information with the public.	**17.5**
PTC 1	**Tropical & Post-Tropical Cyclones**	Educate homeowners about stocking up on supplies.	**17.5**
AH 6	**All Hazards**	Encourage residents and town employees to subscribe to the community safety notification system	**17.25**
FE 2	**Flooding *or* *Erosion***	Prioritize discussions with homeowners' associations about maintaining private roads and drainage to ensure emergency vehicle access.	**17.25**

Project ID	Hazard	Mitigation Action	Total
AH 7	**All Hazards**	Maintain a conversation with residences on Black Cat Island Assoc. regarding necessary maintenance and upgrades to the bridge to ensure emergency vehicle access.	**17**
AH 5	**All Hazards**	Work with Carroll County Dispatch to reduce the number of gaps in the emergency communication system	**15.75**

F. IMPLEMENTATION OF MITIGATION ACTIONS

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

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

In the context of these factors, the Committee discussed the mitigation actions and relative level of priority, recognizing that some actions are of greater priority to different town departments. This implementation schedule is a matrix (Table V-6) indicating the estimated cost of implementation, potential funding sources, the parties responsible for bringing about these actions, and implementation time frame. The time frame used fits within the 5-year term of this plan (Short 1-2 yr, Medium 3-4 yr, Long 5+ yr). These are listed in order of their Time Frame. To keep the plan current, the implementation schedule should be updated and re-evaluated on a regular basis as outlined in the monitoring section of this plan and a record of this process and progress documented in Appendix K.

Table V-6: Implementation Schedule for Mitigation Actions by Time Frame

Project ID	Hazard	Mitigation Action	Estimated Cost	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr
AH 1	**All Hazards**	Ensure redundancy, organization, and accessibility under adverse conditions Employ cloud-based storage system (Microsoft OneDrive/Google Drive.	10 Hours Staff Time	Operating Budget	EMD	S

Project ID	Hazard	Mitigation Action	Estimated Cost	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr
AH 2	**All Hazards**	Maintain mobile 2 signboards and train staff in deployment procedures as part of a communications redundancy plan	±20 Hours Staff Time	Operating Budget	Police, EMD	S
AH 3	**All Hazards**	Maintain working relationship with the private water utility to share information regarding contingency plans.	±10 Hours Staff Time	Operating Budget	Town Administrator	S
AH 4	**All Hazards**	Maintain working relationship with the sewer utility to share information regarding contingency plans.	±10 Hours Staff Time	Operating Budget	Town Administrator	S
AH 5	**All Hazards**	Work with Carroll County Dispatch to reduce the number of gaps in the emergency communication system	$10,000+/- 80 Staff Hours	Operating Budget Capital Expenditure	Police Chief	L
AH 6	**All Hazards**	Encourage residents and town employees to subscribe to the community safety notification system	±10 Hours Staff Time	Operating Budget	EMD	S
AH 7	**All Hazards**	Maintain a conversation with residences on Black Cat Island Assoc. regarding necessary maintenance and upgrades to the bridge to ensure emergency vehicle access.	±10 Hours Staff Time	Operating Budget	Fire Chief	S
DF 1	**Dam Failure**	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.	5 hours/year (25 hours) Staff Time	Operating Budget	EMD	S

Project ID	Hazard	Mitigation Action	Estimated Cost	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr
D 1	**Drought**	Educate residents on outdoor fire safety, and provide outreach to private well owners.	±5 Hours Staff Time	Operating Budget	EMD	S
ET 1	**Extreme Temperatures**	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building	±20 Hours Staff Time	Operating Budget	Fire Chief	S
F 1	**Flooding**	Provide education and outreach to homeowners regarding flood proofing their property.	±16 Hours Staff Time	Operating Budget	Town Planner	L
FE 1	**Flooding *or* *Erosion***	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.	$1,000/year + Staff and Equipment ($5,000)	Operating Budget	DPW	S
FE 2	**Flooding *or* *Erosion***	Prioritize discussions with homeowners' associations about maintaining private roads and drainage to ensure emergency vehicle access.	±10 Hours Staff Time	Operating Budget	EMD, DPW	S
HW 1	**High Winds *(Tornado/ Downbursts)***	Work with utility companies to identify tress that need trimming or removal.	±10 Hours Staff Time	Operating Budget	DPW	S
HW 2		DPW to remove compromised and dead trees in regular course of road improvements	±20 Hours Staff Time	Operating Budget	DPW	S
ID 2	**Infectious Disease**	Partner with NH Public & Lakes Region Public Health Services to share information with the public.	±10 Hours Staff Time	Operating Budget	EMD	S

Project ID	Hazard	Mitigation Action	Estimated Cost	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr
LS 1	**Landslide**	Provide education and outreach to the public regarding landslide risks	±5 Hours Staff Time	Operating Budget	EMD	S
L 1	**Lightning**	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities	±20 Hours Staff Time	Operating Budget	DPW	M
L 2	**Lightning**	EMD to issue weather notices for planning public events	±10 Hours Staff Time	Operating Budget	Fire Chief	S
SWW 1	**Severe Winter Weather**	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones	±50 Hours/Year Staff Time	Operating Budget	DPW	S
SWW 2	**Severe Winter Weather**	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations	±20 Hours Staff Time	Operating Budget	Fire Chief	S
PTC 1	**Tropical & Post-Tropical Cyclones**	Educate homeowners about stocking up on supplies.	±5 Hours Staff Time	Operating Budget	EMD	S
WF 1	**Wildfire**	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	±80 Hours Staff Time	Operating Budget	Fire Chief	S

SECTION VI: PLAN ADOPTION AND MONITORING

A. IMPLEMENTATION

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

Many of the actions in this plan rely on the town's operating budget along with grant funds available through FEMA, NH HSEM, state agencies, and other sources such as those listed in Appendix B. The EMDs will coordinate with the department heads to ensure that funds and staff time for these projects are available. The EMD and Hazard Mitigation Committee will work with the Selectmen to incorporate the various projects into subsequent budgets where appropriate. The EMDs will also coordinate with the NH HSEM Field Representative to ensure that the town applies for appropriate grant funds.

For those mitigation actions which involve updates to the Master Plan, Zoning, or the Subdivision or Site Plan Regulations or development of regulations or standards, members of the Hazard Mitigation Committee will work with the Planning Board to develop appropriate language.

When appropriate, an effort will be made to incorporate this plan into the Emergency Operations Plan. Within a year after the town officially adopts the 2025 update to the Hazard Mitigation Plan, an attempt will be made to have hazard mitigation strategies integrated into existing mechanisms and into all other ongoing town planning activities.

B. PLAN MAINTENANCE & PUBLIC INVOLVEMENT

Plan Evaluation

To track progress and evaluate the mitigation strategies identified in Section V.F., the Moultonborough Hazard Mitigation Planning Committee and the Selectboard will review the Hazard Mitigation Plan **every year (by the end of July) or after a major hazard event**. The **Emergency Management Director** is responsible for initiating this review and shall consult with members of the HMP Committee identified in this Plan. Responsible parties identified for specific mitigation actions will be asked to submit a status report of those actions in advance of the meeting. Tables A and B in Appendix K may be used for recording this plan evaluation. Meetings will entail the following actions:

Documentation of natural hazard events during the past year, local damages (and costs) associated with these events, costs associated with mitigation actions (and any match or reimbursement). Documentation could include a brief description, any associated costs and funding sources, as well as images.

Track progress toward implementation of the current mitigation plan based on status reports from responsible parties. Refer to Section V.B. for an applicable evaluation scale.

Assess the effectiveness of the plan at achieving the plan's stated purpose (Section I.D.) and goals (Section V.C.). Refer to Section V.A. for an applicable evaluation scale.

Other activities and discussions may include:
Review previous hazard events to discuss and evaluate major issues and possible mitigation for future events.
Assess how the mitigation strategies of the plan can be integrated with other Town plans and operational procedures, including the zoning ordinance and local Emergency Operations Plan.

Plan Update

The Emergency Management Director is also responsible for updating and resubmitting the plan to FEMA to be re-approved every five years. The EMDs will convene a plan update committee in mid-2029 to begin updating this plan before it expires. The plan update process will follow the same planning process used in this plan update. If modifications have been made either to the FEMA Local Mitigation Planning Policy Guide or the NH State Hazard Mitigation Plan, these will be incorporated into the planning process. Administrative staff may be utilized to assist, especially with the public involvement process.

Public Participation

For annual monitoring/evaluation process and for the five-year update, techniques that will be utilized for public involvement include:

- Provide invitations to municipal department heads as well as the Planning Board;
- Post notices of meetings at the Town Office and on the town website;
- Submit press releases for publication in appropriate newspapers or media outlets.
- Additional steps to consider include conducting a public survey, holding an evening meeting, or providing for remote participation in meetings.

Entities to invite to future Hazard Mitigation monitoring/evaluation meetings and plan updates include the Emergency Management Directors of the neighboring communities of Sandwich, Tamworth, Ossipee, Tuftonboro, Alton, Gilford, Meredith, Center Harbor, and Holderness. Additionally, the Emergency Preparedness Planner from Capital Area Regional Health Network, social service providers such as Interlakes Community Caregivers, and others working with socially vulnerable communities in Moultonborough.

C. SIGNED CERTIFICATE OF ADOPTION

BOARD OF SELECTMEN
A RESOLUTION ADOPTING THE
MOULTONBOROUGH, NH
HAZARD MITIGATION PLAN UPDATE 2025

WHEREAS, the Town of Moultonborough, NH has historically experienced damage from natural hazards, and it continues to be vulnerable to the effects of those natural hazards as profiled in this plan, potentially resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Moultonborough, NH has developed and received approval pending adoption from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2025 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between June 2025 and July 2025 regarding the development and review of the Moultonborough, NH Hazard Mitigation Plan Update 2025; and

WHEREAS, the Plan specifically addresses hazard mitigation actions and Plan maintenance procedures for the Town of Moultonborough, NH, and

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

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

1. The Plan is hereby adopted as an official plan of the Town of Moultonborough, NH;
2. The respective officials identified in the mitigation actions of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.
4. An annual report on the progress of the plan’s mitigation action items shall be presented to the Selectboard by the Emergency Management Director.

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the town seal of the Town of Moultonborough this

Date:

MOULTOBOROUGH, NH SELECTBOARD

_____ (Signature) _____ (Printed)

_____ (Signature) _____ (Printed)

_____ (Signature) _____ (Printed)

ATTEST:

_____ (Signature) _____ (Printed)

APPENDIX A: TECHNICAL RESOURCES

NH Homeland Security and Emergency Management.....271-2231
http://www.nh.gov/safety/divisions/HSEM/
Hazard Mitigation Section.....271-2231
http://www.nh.gov/safety/divisions/hsem/HazardMitigation/index.html

Federal Emergency Management Agency..... (617) 223-4175
http://www.fema.gov/
FEMA, National Flood Insurance Program, Community Status Book
http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book

Lakes Region Regional Planning Commission 279-8171
http://www.lakesrpc.org/

NH Governor's Office of Energy and Planning 271-2155
http://www.nh.gov/oep/index.htm
New Hampshire Floodplain Management Program
http://www.nh.gov/oep/programs/floodplainmanagement/index.htm

NH Department of Transportation 271-3734
http://www.nh.gov/dot/index.htm

NH Department of Cultural Affairs 271-2540
http://www.nh.gov/nhculture/
Division of Historical Resources.....271-3483
http://www.nh.gov/nhdhr/

NH Department of Environmental Services 271-3503
http://www.des.state.nh.us/
Dam Bureau 271-63406
http://www.des.state.nh.us/organization/divisions/water/dam/index.htm

NH Municipal Association.....224-7447
http://www.nhmunicipal.org/LGCWebsite/index.asp

NH Fish and Game Department.....271-3421
http://www.wildlife.state.nh.us/

NH Department of Natural and Cultural Resources.....271-2411
https://www.dncr.nh.gov/
Division of Forests and Lands.....271-2214
http://www.nhdfl.org/
Natural Heritage Inventory 271-2215
http://www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
Division of Parks and Recreation 271-3255
http://www.nhstateparks.org/

NH Department of Health and Human Services.....271-9389
http://www.dhhs.state.nh.us/

Northeast States Emergency Consortium, Inc. (NESEC)..... (781) 224-9876
http://www.nesec.org/

US Department of Commerce..... (202) 482-2000
http://www.commerce.gov/
National Oceanic and Atmospheric Administration ..... (202) 482-6090
http://www.noaa.gov/
National Weather Service, Eastern Region Headquarters
http://www.erh.noaa.gov/
National Weather Service, Tauton, Massachusetts..... (508) 824-5116
http://www.erh.noaa.gov/er/box/
National Weather Service, Gray, Maine ..... (207) 688-3216
http://www.erh.noaa.gov/er/gyx/

US Department of the Interior
http://www.doi.gov/
US Fish and Wildlife Service.....225-1411
http://www.fws.gov/
US Geological Survey 225-4681
http://www.usgs.gov/
US Geological Survey Real Time Hydrologic Data
http://waterdata.usgs.gov/nwis/rt
US Army Corps of Engineers ..... (978) 318-8087
http://www.usace.army.mil/

US Department of Agriculture
http://www.usda.gov/wps/portal/usdahome
US Forest Service ..... (202) 205-8333
http://www.fs.fed.us/

Eversource ..... (800) 662-7764
http://www.eversource.com/

New Hampshire Electrical Cooperative..... (800) 698-2007
http://www.nhec.com/

Cold Region Research Laboratory.....646-4187
http://www.crrel.usace.army.mil/

National Emergency Management Association ..... (859) 244-8000
http://nemaweb.org

National Aeronautics and Space Administration
http://www.nasa.gov/
NASA Optical Transient Detector – Lightning and Atmospheric Research
http://thunder.msfc.nasa.gov/

National Lightning Safety Institute
http://lightningsafety.com/

The Tornado Project Online
http://www.tornadoproject.com/

National Severe Storms Laboratory
http://www.nssl.noaa.gov/

Plymouth State University Weather Center
http://vortex.plymouth.edu/

APPENDIX B: MITIGATION FUNDING RESOURCES

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

404 Hazard Mitigation Grant Program (HMGP)..... NH Homeland Security and Emergency Management

406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management

Community Development Block Grant (CDBG) ..... NH HSEM, NH OPD, also refer to LRPC

Dam Safety Program .....NH Department of Environmental Services

Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service

Flood Mitigation Assistance Program (FMAP) ..... NH Homeland Security and Emergency Management

Highway Safety Improvement Program..... NH Department of Transportation

Mitigation Assistance Planning (MAP)..... NH Homeland Security and Emergency Management

NH Public Works Mutual Aid..... UNH Technology Transfer (T2)

National Flood Insurance Program (NFIP) ..... NH Office of Planning & Development

Project Impact..... NH Homeland Security and Emergency Management

Roadway Repair & Maintenance Program(s)..... NH Department of Transportation

Shoreland Protection Program .....NH Department of Environmental Services

Various Forest and Lands Program(s) ..... NH Department of Division of Forests and Land

Wetlands Programs.....NH Department of Environmental Services

State Aid Bridge Program for Municipalities ..... NH Department of Transportation (and LRPC)

Contribution to Damage Losses (RSA 235:34) ..... NH Department of Transportation

FEMA's Public Assistance (PA) grant program is authorized through the Stafford Act to provide federal assistance to government organizations and certain Private Nonprofit (PNP) organizations following a Presidential Disaster Declaration. This funding is provided at a 75%/25% cost share to allow government and certain PNP entities to respond and recover from major disasters or emergencies. The Public Assistance program returns damages to their pre-disaster condition. Through the PA program, FEMA provides supplemental assistance in the following categories:

- Emergency Work
    - o Debris Removal
    - o Emergency Protective Measures
- Permanent Work
- Roads and Bridges

- Water Control Facilities
- Public Buildings and Contents
- Public Utilities
- Parks, Recreational, and other facilities

Section 406 of the Stafford Act provides FEMA with the authority to fund cost-effective mitigation measures to repair, restore, or replace eligible damaged facilities, and allows for those structures to be rebuilt or repaired to better than pre-disaster conditions to make them less vulnerable to future hazards. Unlike other hazard mitigation grant programs, Section 406 mitigation is only available in the counties declared in the presidential declaration and only for eligible damaged facilities.[11]

[11] NH State Hazard Mitigation Plan, 2023, p. 26.

Federal Emergency Management Agency (FEMA)

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

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

Environmental Protection Agency (EPA)

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

Mitigation Funding Sources Program	Details	Notes
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. http://www.epa.gov/OWOW/NPS/cwact.html	Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities. http://www.epa.gov/owow/wetlands/initiative/srf.html	States and Puerto Rico

Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. http://www.epa.gov/owow/wetlands/initiative/#financial	See website

Floodplain, Wetland and Watershed Protection Programs

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

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

Bureau of Land Management

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

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

Housing and Urban Development

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

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

U.S. Department of Agriculture

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

Mitigation Funding Sources Program	Details	Notes
USDA Smith-Lever Special Needs Funding	Grants to State Extension Services at 1862 Land-Grant Institutions to support education-based approaches to addressing emergency preparedness and disasters. http://www.csrees.usda.gov/funding/rfas/smith_lever.html	Population under 20,000
USDA Community Facilities Guaranteed Loan Program	This program provides an incentive for commercial lending that will develop essential community facilities, such as fire stations, police stations, and other public buildings. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population under 20,000
USDA Community Facilities Direct Loans	Loans for essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Community Facilities Direct Grants	Grants to develop essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Farm Service Agency Disaster Assistance Programs	Emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and livestock damaged by natural disasters. http://www.fsa.usda.gov/	Farmers and ranchers
USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. http://www.forestsandrangelands.gov/	See website
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a value-added fashion. http://www.fs.fed.us/spf/coop/programs/eap/	80% of total cost of project may be covered
USDA Natural Resources Conservation Service	Emergency Watershed Protection Support Services: Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster. http://www.nrcs.usda.gov/programs/ewp/	See website

USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Funds for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. http://www.nrcs.usda.gov/programs/watershed/index.html	See website

Health and Economic Agencies

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

Federal Loans and Grants for Disaster Relief

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

APPENDIX C: PUBLICITY AND INFORMATION

Press releases like the one below were sent to the *Laconia Daily Sun.* Several informational handouts and the 2019 Hazard Mitigation Plan were distributed to the committee and available at all meetings.

Press Release

LAKES REGION PLANNING COMMISSION
103 Main Street, Suite #3
Meredith, NH 03253
Tel 603.279.8171
www.lakesrpc.nh.gov

June 30, 2025

For Immediate Release

Contact: Danielle Scadova-Vose, 603.316.6495, dscadova@lakesrpc.nh.gov

Town of Moultonborough Hazard Mitigation Plan Meeting

The Moultonborough Hazard Mitigation Plan Committee is in the process of updating its 2019 Hazard Mitigation Plan. The committee is represented by a variety of local interests including the Fire, Police, and Highway departments, along with the Town Administrator. The group is reviewing the various hazards that put Moultonborough at risk as well as the development of recommendations to protect the safety and well-being of town residents.

The committee will meet on July 3rd at 10:00 AM at the Moultonborough Public Safety Building, 1035 Whittier Highway. Residents of Moultonborough and representatives from neighboring communities are encouraged to attend. Input to the plan can also be provided through an on-line survey at https://arcg.is/0ffqLC0 or scanning this QR Code.

Hazard Mitigation Planning is as important to reducing disaster losses as are appropriate regulations and land use ordinances. The most significant natural hazards of concern for Moultonborough are being reviewed and evaluated through this process; in the 2019 Plan these included winter weather, severe winds, and extreme temperatures.

With the update to the Hazard Mitigation Plan, town leaders will be able to evaluate the status of current plans, policies, and actions then develop and prioritize actions to reduce the impacts of these and other hazards. Community leaders want the town to be a disaster resistant community and believe that updating the Hazard Mitigation Plan will bring Moultonborough one step closer to that goal.

For more information, please contact Moultonborough Emergency Management Director Chief Dave Bengtson, Fire Chief dbengtson@moultonboroughnh.gov or Danielle Scadova-Vose, Regional Planner at Lakes Region Planning Commission at 603.316.6495. The *2019* Moultonborough *Hazard Mitigation Plan* can be found at https://www.lakesrpc.nh.gov/Pages/Index/228297/hazard-mitigation.

Information

Local Hazard Mitigation Planning

Hazard Mitigation:

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

Questions to address:

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

What is a Hazard Mitigation Plan?

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

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

MITIGATION PROCESS

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

Why create a plan?

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

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

Federal Emergency Management Agency (FEMA) Requirement:

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

Frequently asked questions

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

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

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

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

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

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

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

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

Alton dam breach, 1996

The Essentials

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

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

Lakes Region Planning Commission
103 N. Main St., Suite #3
Meredith, NH 03253

(603) 279-8171 - phone
(603) 279-0200 - fax

L · R · P · C

State and Local Mitigation Planning

Building stronger and safer

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

Reducing risks through mitigation planning

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

Mitigation planning elements

- Public involvement – In addition to government agencies involved in incident management, floodplain management and economic development, the planning process usually involves a range of stakeholders, including representatives of neighborhood groups, civic organizations, academia, environmental groups, the business community and individual citizens. Involving stakeholders is essential to determining the most vulnerable populations and facilities in the community and to assuring community wide support for the plan.
- Risk assessment – A risk assessment is the process of identifying natural hazards and risks associated with them, including threats to public health and safety, property damage and economic loss. The assessment answers the fundamental question, "What would happen if a natural disaster occurred?" and provides a factual basis for the mitigation activities proposed in the strategy. The assessment includes a description of the type, location and extent of natural hazards; the jurisdiction's vulnerability to the hazards; and the type and numbers of buildings, infrastructure and critical facilities located in identified hazard areas.
- Mitigation strategy – Based on the risk assessment, State, local and Tribal governments develop mitigation goals and objectives and a strategy for mitigating disaster losses. The strategy sets forth an approach for implementing activities that are cost-effective, technically feasible and environmentally sound.

Hazard mitigation plan required to receive HMGP Project Grants

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

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

Fact Sheet

State and Local Mitigation Planning

FEMA

Mitigation Examples

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

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

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

Planning tool available for government agencies

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

For more information

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

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

FEMA

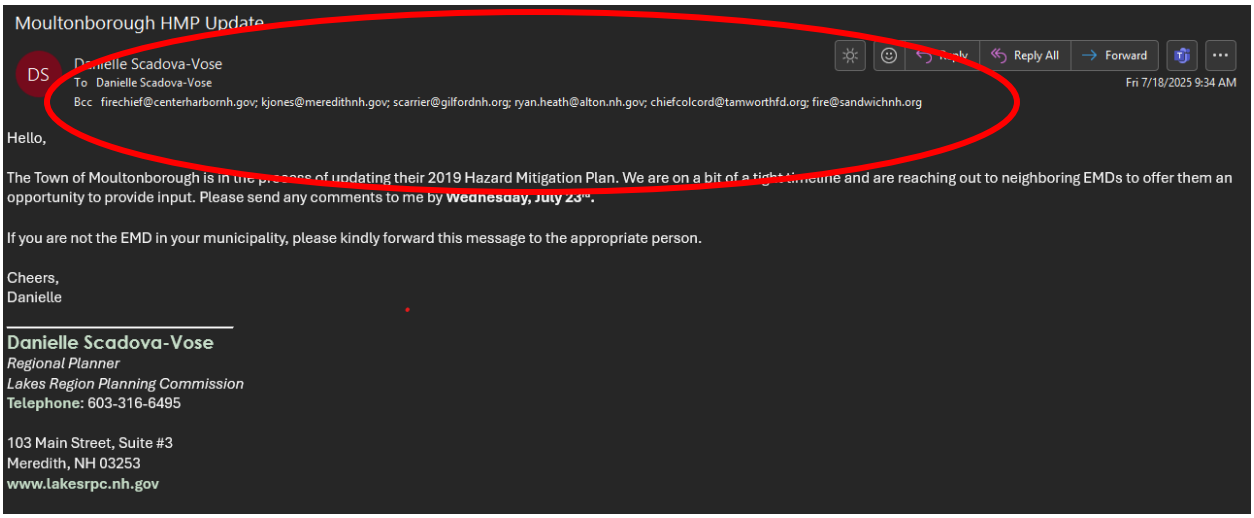
"FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards."

APPENDIX D: MEETINGS, AGENDAS, PARTICIPATION, and SURVEY

Invitations to participate in meetings were sent to committee members and state agencies. Communication was made to neighboring EMDs asking for input.

This section also contains copies of the Committee meeting agendas and a summary of participation. All Committee meetings were held in the Moultonborough Public Safety Building and were open to the public. Agendas were developed by the LRPC planner who also facilitated the meetings. At each meeting there was an opportunity for public input.

Invitations & Communication



Moultonborough HMP Update

DS Danielle Scadova-Vose
To Danielle Scadova-Vose
Bcc firechief@centerharbornh.gov; kjones@meredithnh.gov; scarrier@gilfordnh.org; ryan.heath@alton.nh.gov; chiefcolcord@tamworthfd.org; fire@sandwichnh.org

Reply All Forward
Fri 7/18/2025 9:34 AM

Hello,

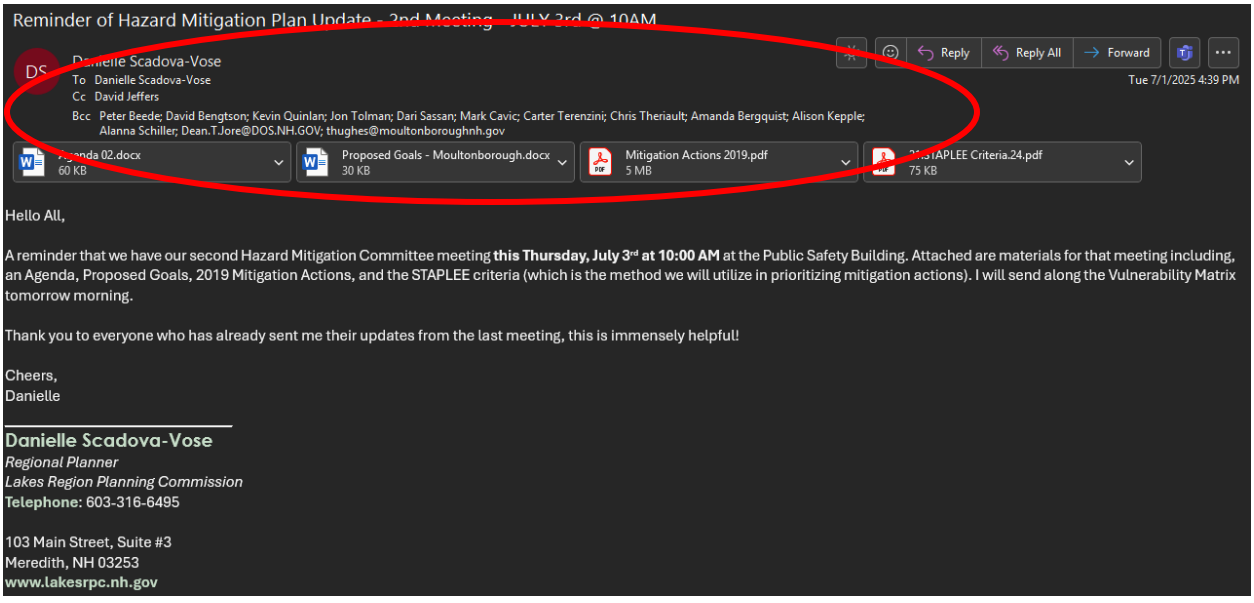
The Town of Moultonborough is in the process of updating their 2019 Hazard Mitigation Plan. We are on a bit of a tight timeline and are reaching out to neighboring EMDs to offer them an opportunity to provide input. Please send any comments to me by **Wednesday, July 23rd**.

If you are not the EMD in your municipality, please kindly forward this message to the appropriate person.

Cheers,
Danielle

Danielle Scadova-Vose
Regional Planner
Lakes Region Planning Commission
Telephone: 603-316-6495

103 Main Street, Suite #3
Meredith, NH 03253
www.lakesrpc.nh.gov



Reminder of Hazard Mitigation Plan Update - 2nd Meeting - JULY 3rd @ 10AM

DS Danielle Scadova-Vose
To Danielle Scadova-Vose
Cc David Jeffers
Bcc Peter Beede; David Bengtson; Kevin Quinlan; Jon Tolman; Dari Sassan; Mark Cavic; Carter Terenzini; Chris Theriault; Amanda Bergquist; Alison Kepple; Alanna Schiller; Dean.T.Jore@DOS.NH.GOV; thughes@moultonboroughnh.gov

Reply Reply All Forward
Tue 7/1/2025 4:39 PM

Agenda 02.docx 60 KB | Proposed Goals - Moultonborough.docx 30 KB | Mitigation Actions 2019.pdf 5 MB | STAPLEE Criteria.24.pdf 75 KB

Hello All,

A reminder that we have our second Hazard Mitigation Committee meeting **this Thursday, July 3rd at 10:00 AM** at the Public Safety Building. Attached are materials for that meeting including, an Agenda, Proposed Goals, 2019 Mitigation Actions, and the STAPLEE criteria (which is the method we will utilize in prioritizing mitigation actions). I will send along the Vulnerability Matrix tomorrow morning.

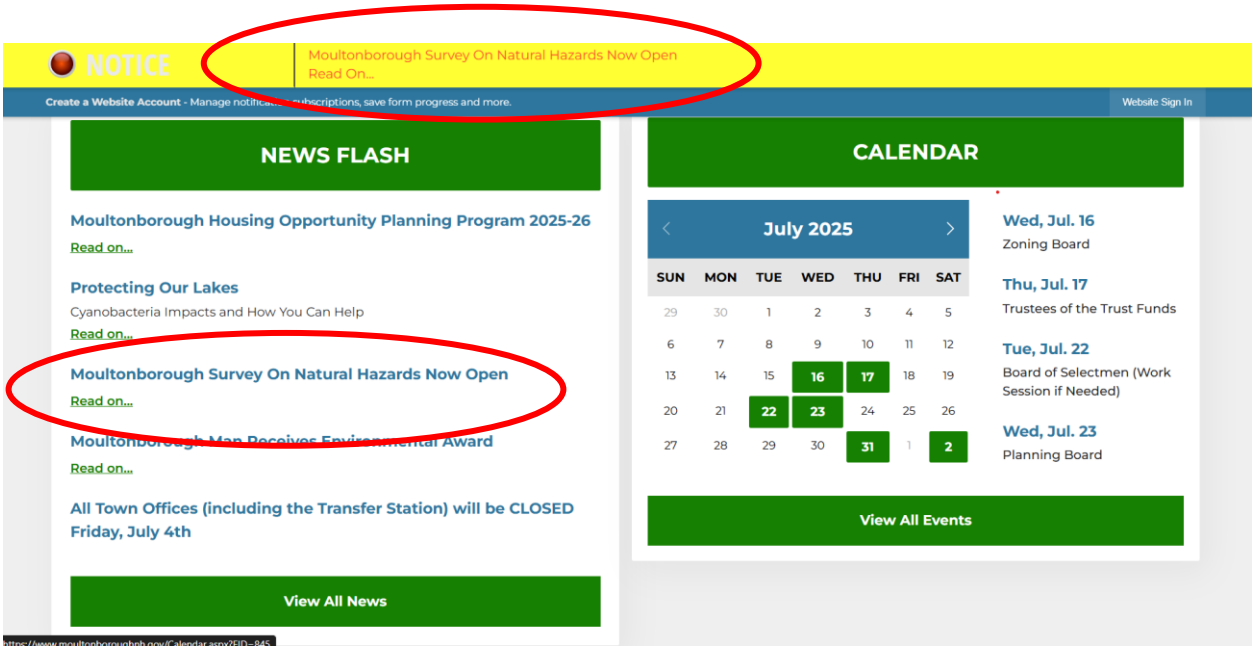
Thank you to everyone who has already sent me their updates from the last meeting, this is immensely helpful!

Cheers,
Danielle

Danielle Scadova-Vose
Regional Planner
Lakes Region Planning Commission
Telephone: 603-316-6495

103 Main Street, Suite #3
Meredith, NH 03253
www.lakesrpc.nh.gov

Survey Advertisement



Moultonborough Hazard Mitigation Plan Update

June 26, 2025 10:00 AM
Moultonborough Public Safety Building
1035 Whittier Highway
Moultonborough, NH

Meeting 1 - AGENDA

1. Introductions

2. Mitigation planning vs. emergency response planning

3. Changes to Plan Development
   a. FEMA Guidance/Checklist (2022)
   b. State HMP (2023)

4. Process
   a. Plan Update Process
   b. Methods for Gathering Information
   c. Community Outreach & Opportunities for Public Input*

5. Information – Changes since last plan
   a. Natural hazards
      i. History of events
      ii. Locations
      iii. Impacts
   b. Critical Facilities
   c. Development Trends
   d. Community Capabilities

6. Schedule for Meetings

7. Public Input

A copy of the 2019 Moultonborough HMP can be found at https://www.lakesrpc.nh.gov/Pages/Index/228297/hazard-mitigation.

*A brief on-line survey has been created to get feedback from the public. It can be accessed with this link https://arcg.is/0ffqLC0 or by scanning this QR Code with a phone or tablet. **Please share this link & QR Code with residents and encourage them to complete this survey.**

Mitigation vs. preparedness/response

The focus of this process is **mitigation**, which is an action taken to reduce or eliminate long-term risk to hazards.

Mitigation is different from preparedness, which is an action taken to improve emergency response or operational preparedness.

Major changes to FEMA Guidelines & Checklist

The 2022 FEMA Guidelines & Checklist place emphasis on several specific areas.

- Natural Hazards as opposed to Human-caused or Technological
- Efforts to include the concerns of under-represented populations

Plan Update Process

a. Hazard Identification
b. Risk Analysis
c. Identify Problems
d. Identify Mitigation Actions
e. Prioritize Mitigation Actions
f. Address Implementation
g. Draft Plan
h. Review & Adoption

Community Capabilities

- Planning & Regulatory
- Administrative and Technical
- Financial
- Education & Outreach
- National Flood Insurance Program (NFIP)

Participants

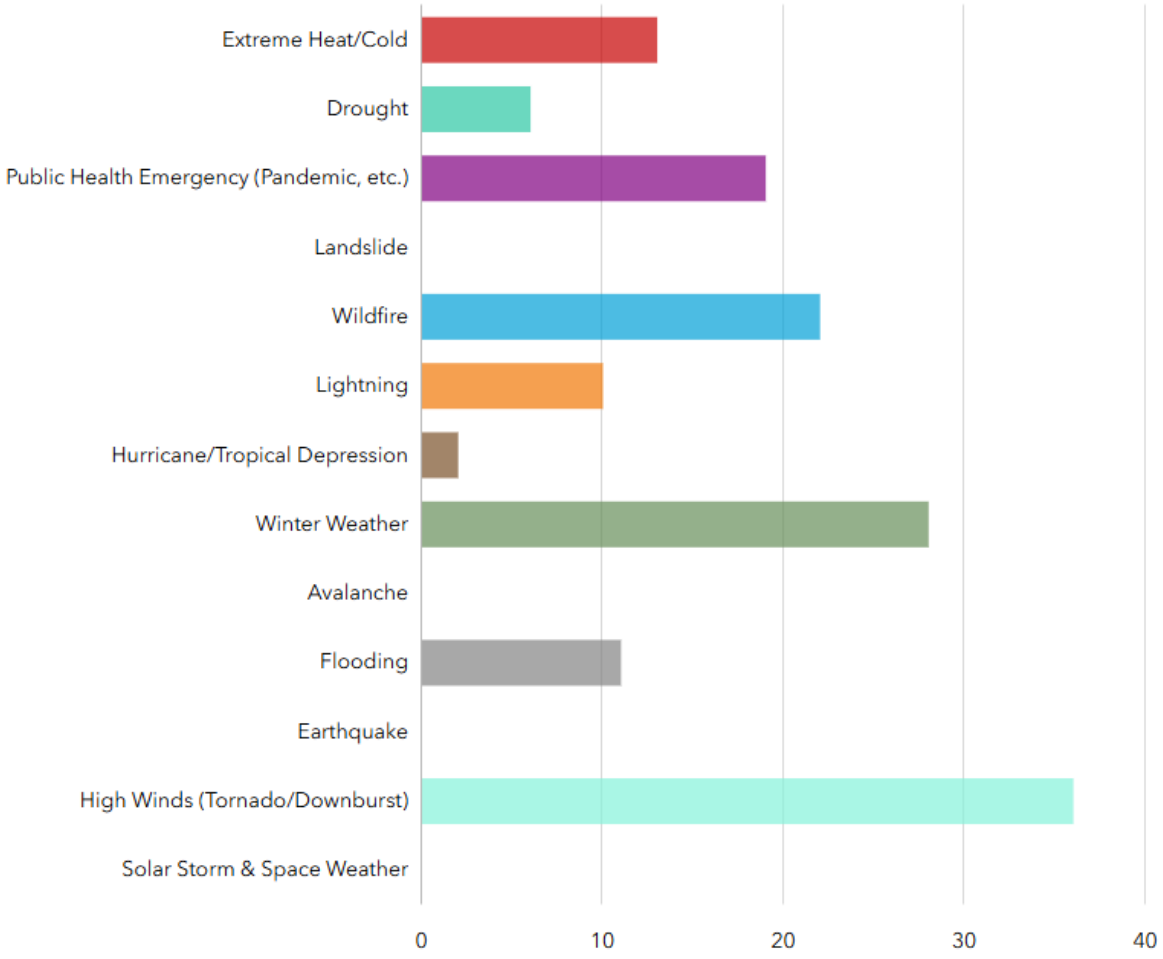
6/26/2025	7/3/2025	7/14/2025			
Meeting #1	Meeting #2	Meeting #3	Homework/ Correspondence	Title	Name
2	2	1	17	EMD	David Bengtson
	2			Police Chief	Peter Beede Jr
2	2		3	DPW Director	Chris Theriault
2	2	1	3.5	Town Administrator	Carter Terenzini
2	2	1	3	Town Planner	Dari Sassan
2	2		3	Selectman	Jonathan Tolman
2	2	1	2	School Representative	Amanda Bergquist, Business Administrator
2			3	Town Assessor	Tom Hughes
	2			NH HSEM, Carroll Co. Field Representative	Dean Jore
2	2	1		Lakes Region Planning Commission	Danielle Scadova-Vose

Public Input - Survey

In addition to postings and press releases requesting public input at meetings, members of the public were also encouraged to complete an on-line survey to provide input to the hazard mitigation planning process. Forty-three responses were received and shared with the committee at meetings as local risk was considered and problems/mitigation actions discussed.

The questions and responses are below.

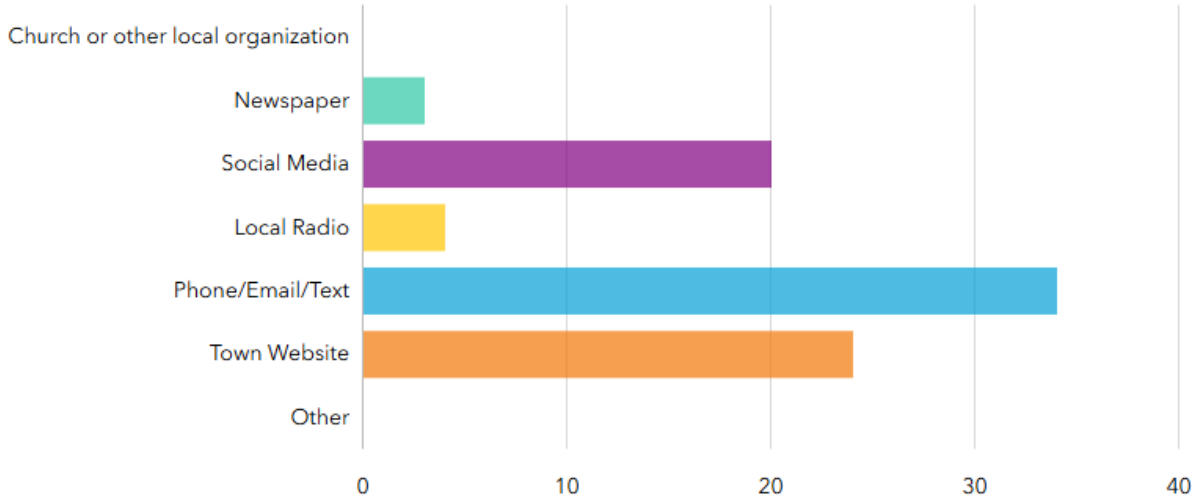
1. Which of these hazards are of greatest concern to you? (Select up to four from the list.)



2. Which road(s) or areas are you most concerned about in Moultonborough when severe weather occurs? (List the road segment or area of town. Why are you concerned?)
   - •Route 25
   - •Winaukee, MB Neck
   - •Waterfront areas, as they seem to receive higher wind gusts (including microbursts) than most areas. Also, all large wooded areas (>100 acres) are potential wildfire hotspots.
   - •Vonhurst road -- dirt road, concerned with getting washed out with severe wet weather, or being iced over to the point of not being able to travel up the incline.
   - •village kitchen to School

•Suissevale. Inability of emergency vehicles to navigate narrow, unplowed roads
•Sheridan Road Holland Street Bean Road Moultonborough Neck Road All of these roads have trees and utility wires /poles in close proximity to each other
•Shaker Jerry- low lying road. Ossipee Park Road - Extreme incline- Runoff Route 109 - Wind issues in past
•Rte 25, Rte 109, Moultonboro Neck
•RT25 access. All areas if wildfire starts and spreads
•Rt109 and 171
•RT. 25
•Routes 171 and 109. I only have personal experience with these roads because this is where I live and where most of my commute is. Winter weather and downed trees tend to be our biggest concerns in this area.
•Route 25- there is no alternative route around town if that is shut down/ severely slowed down. The closest detour is Holland St into Sandwich and down Bean Rd into Center Harbor. Fox Hollow Road is also only a 1 lane road throughout the winter but serves a large population of houses and people
•Redding Lane, RT25,
•Redding Lane, Blackey Cove Road, Wilson Road, Eagle Shore Road, and the streets connected to them. Redding Lane in several sections is surrounded by woods that have never been cleared and are loaded with dry dead wood. As Redding is the only avenue of escape (except the lake), if a wildfire were to start in these woods, many residents would be trapped.
•Redding Lane
•Red Hill Road and Route 25 as I need to get my brother out to dialysis 3 times per week
•Moultonborough Neck, Whittier Highway, Long Point Needle to be able to get to other resources and ability to travel to safety.
•Moultonborough neck road. Some services consider it unpassable during winter storms. In addition power always seems to go out on this road and impacts any houses after the outage point.
•Moultonborough Neck Road, Black Cat Island Bridge, AND any dead end road
•Moultonborough Neck Road
•Moultonborough Neck / Winaukee
•Moultonboro Neck Rd. High travel count ... year round. I live on Moultonboro neck rd.
•Moultonboro neck rd and rt 25
•Moultonboro Neck
•Catlin Estate Rd:Kona Farm Area : Mboro Neck Rd
•Beede where we live, Winaukee & Moultonboro Neck
•Any road with a steep grade or has brooks and rivers that lay beside it
•All secondary/narrow roads that are easily blocked by large trees/power lines/wash-outs.
•all rural dirt roads
•All roads- all sections of town must be accessible for emergency services
•All main roads
•All dead wooded areas

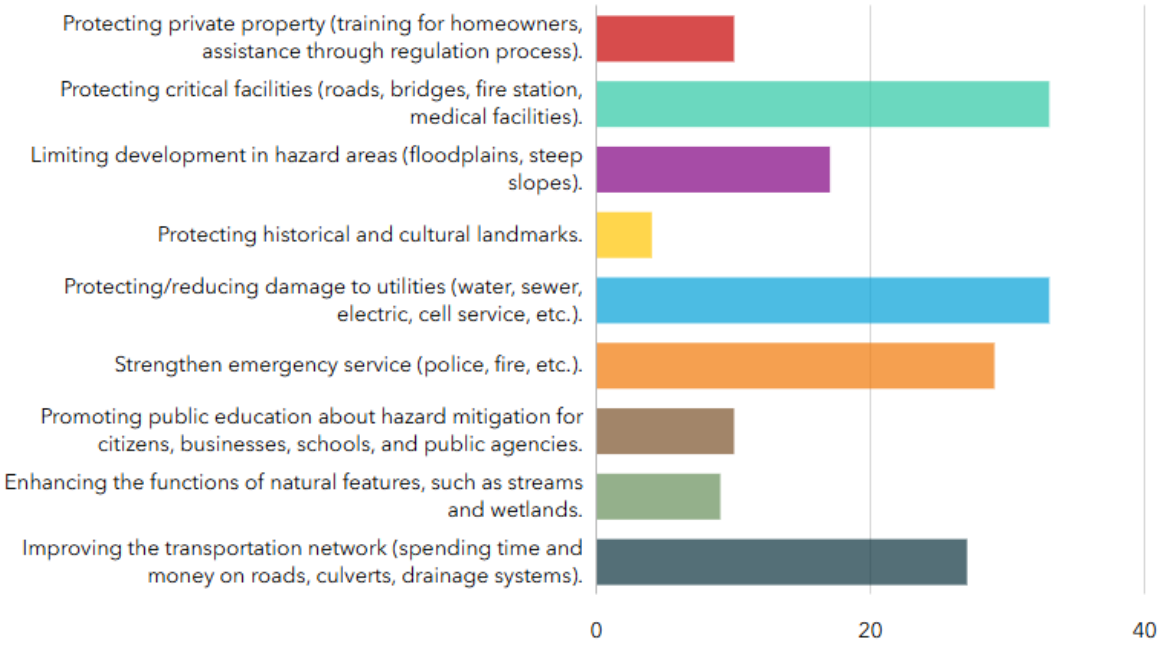
3. What are the best methods for you to receive information about how to make your business, home, and/or members of your household safer from hazards?



4. Can you describe any hazard events that impacted Moultonborough, especially those that occurred in the last five years? (Up to three events).
   - Wind storms that have taken down trees damaged buildings and kids camps. I believe one had a propane tank leak as well adding to the danger we face.
   - Wind storm that brought down trees and power lines several years ago especially along 109 and Bald Peak area. Power was out for over a week in certain areas
   - Wind events, snow events.
   - Trees downed and in the road due to high winds. Last year ... year before ...etc.
   - The Ossipee Mtn downburst a few years ago. Wide spread tree damage and downed power lines. Power was out for days.
   - Storm Stella
   - Snow storm Last winter All areas Cancelled school
   - Severe rain that washed away roads. The town or state came and tried to fix the run off damage to my driveway and made things worse.
   - Severe high winds associated with Thunder & Lightning 7/7/25 Throughout Moultonborough Large tree limb fell on my house power lines requiring me to contact NHCOOP and request a line truck. The COOP responded at 10 pm and cut the limb using a bucket truck. NHCOOP did a great job.
   - Power outages that last days. We had one 6 months ago. I ended up moving in with some friends in Lincoln, NH
   - Power outage and road closure due to downed trees. There are many dead trees standing close to the road (Moultonboro Neck road and Winaukee Rd) that are not removed until they fall on power lines or across the road. They are not all in NHEC's right of way. There are by far too many power interruptions.
   - Not specifically - however, I am seeing significant neighborhood property damage from down tress, have been a property owner for 20 years full time resident 5 years.. April 2024 - 4 days power outage and road blockage July 2023 -road blockage power outage 1 day (micro twister on lake) Spring 2022 -winter storms
   - Microburst A some years back Especially on old Rt 109 No travel through Old Rt.109
   - Mar 17' Snow/hurricane that had the power out for several days
   - Late winter storm April 2024 all over area roads blocked by down trees and broken power poles left many in town without power for days
   - Late winter storm 2024 lost power and landline internet for several days

- Ice storm in April of 2022 High wind micro burst December 2023 Winter blizzard that dropped over 2 feet of snow
- I can't think of anything terribly significant happening within the last five years.
- High winds caused trees to fall blocking our road / Winaukee road and created a downed power line
- Drought, extreme dry times last summer
- Cyanobacteria blooms in Lake Kanasatka and parts of Winnipesaukee over the last few years. With limitations on swimming, we may see negative health effects and/or a decrease in tourism as the problem grows.
- Covid
- Microburst 2. July 21, 2022 3. Blackey Cove 4. Many trees down, road blocked, power out, boat damaged from dock panels being blown out.
- Microburst 2. July 21, 2022 3. Blackey Cove 4. Many trees came down cutting power lines. Power was out for several days, damaged a garage roof (fallen tree punctured roof), minor damage to our dock and boat (wind lifted dock deck panels and tossed them on the boat).
- High wind storm, Dec 2023 Long point Rd impassable for 4+ days, fiends almost ran out of propane to heat year round home. 2) Braun Bay Sandbar recreation area overuse, August 2019, public safety(injuries, death)/environmental hazard 3) Cyanobacteria outbreaks, ex. July 4th 2024, Braun Bay and other parts of lake, affects personal safety in lake, bad for environment and tourism trade for state.
- C19 Pandemic - town did well, but health services sparce if another occurs. 2) Lightning strikes - blows out stuff in house - More than five years ago: 2) Microburst that downed trees in winter, making Cottage Rd impassable, power out for 3.5 days. Neighborhood impacted. House got cold. 3) Winnipesaukee Lake flooding - basement got 1/4" water on floor

5. Natural Hazards can have a significant impact on a community, but planning for (or mitigating) these events can help lessen the impacts. Planning may require the use of Town and Federal funds, as well as Town staff and volunteer support. Please select the four mitigation strategies you would prioritize for the Town of Moultonborough.

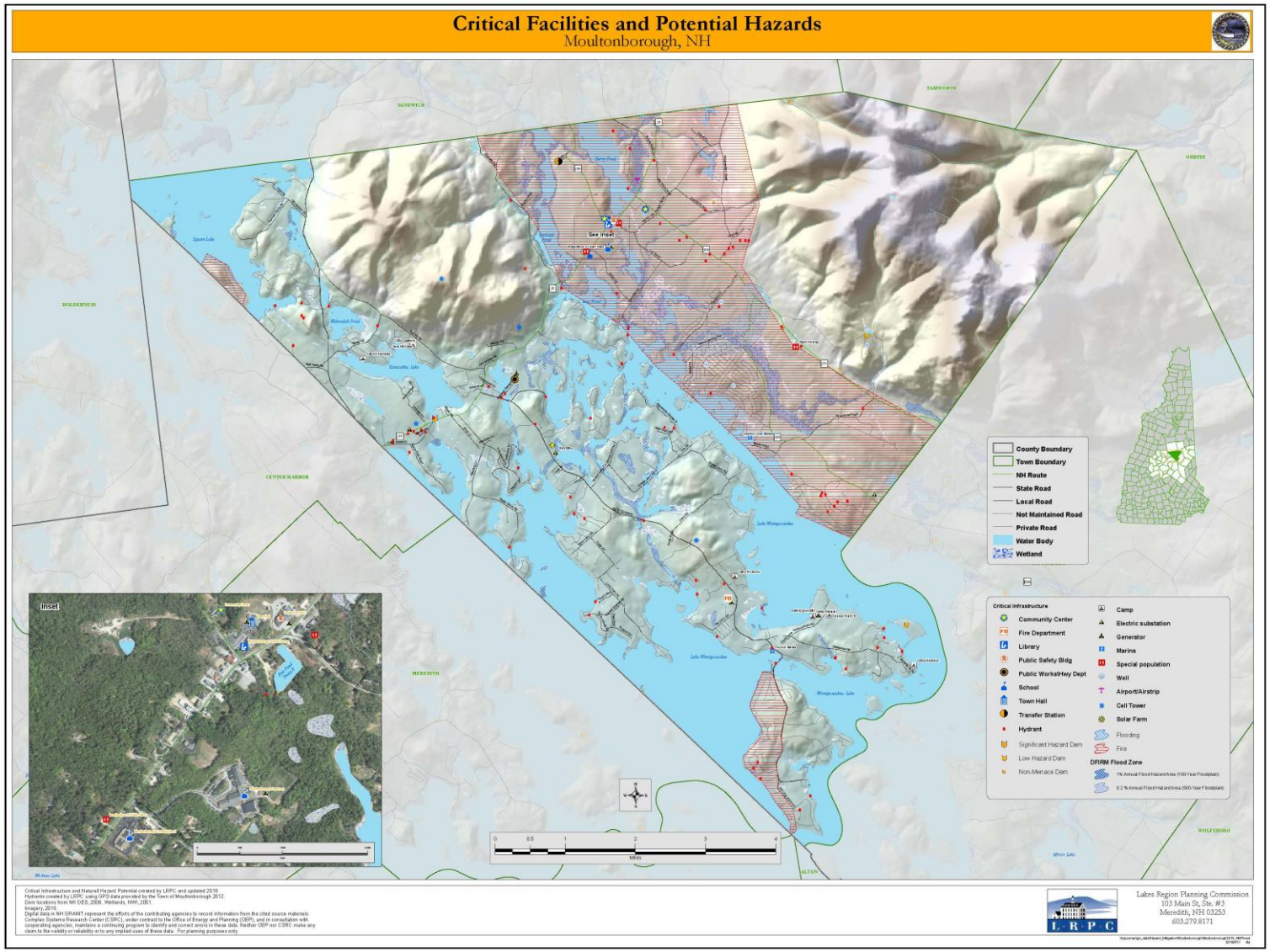


APPENDIX E: PAST HAZARD EVENTS

Hazard	Date	Location	Description	Damages	Source
Earthquake	12/20/1940	Central NH	5.5 on Richter scale		NH OEM
Earthquake	12/24/1940	Central NH	5.5 on Richter scale		NH OEM
Flood	4/18/1997	Carroll County	Three to five inches of rain in 8 to 12 hours caused small rivers and streams to rise rapidly. Many roads were closed due to washouts and water over roadways, particularly near Somersworth and Rochester in Strafford County, Tamworth and Wolfeboro in southern Carroll County, and near Canaan in Grafton County. Some homes were evacuated.		NOAA
Flood	4/1/1998	Carroll County	3"- 8" of rain caused small rivers and streams to rise. Roads flooded and/or washed out.		NOAA
Flood	6/14/1998	Carroll County	3"- 8" of rain caused small rivers and streams to rise.		NOAA
Flood	5/13/2006	Carroll County	12 inches of rain in some locations in a 72-hour period.		NOAA
Hail	7/16/1984	Carroll County	1.75 inches in diameter		NOAA
Hail	6/24/1985	Carroll County	0.75 inches in diameter		NOAA
Hail	6/8/1987	Carroll County	0.75 inches in diameter		NOAA
Hail	6/13/1987	Carroll County	1.00 inches in diameter		NOAA
Hail	7/26/1994	Carroll County	0.75 in. hail accompanied by a very strong downburst from a thunderstorm. 150 other homes damaged, and several cars crushed by felled trees. 140 acres of trees sustained damage. 1800 households lost power	>1.5 million	NOAA
Hail	7/18/2000	Moultonborough	0.75 inches in diameter		NOAA
Heavy Snow	2/14/1958	Carroll County	More than a foot of snow		NH OEM
Heavy Snow	3/2/1960	Carroll County	Upwards of 2' of snow; high winds		NH OEM
Heavy Snow	1/18/1961	Carroll County	Up to 25" of snow		NH OEM
Heavy Snow	2/22-28/1969	Statewide	98" in Western Central New Hampshire, 2' to 3' across New Hampshire		NH OEM
Heavy Snow	2/5/1978	Carroll County	More than 2' of snow - "Blizzard of '78"		NH OEM
Heavy Snow	1/31/1993	Carroll County	Up to 13 inches of snow. Communities experienced electrical power failures.		NOAA
Heavy Snow	1/17/1994	Statewide	75,000 Residents lost power		NOAA

Hurricane	9/21/1938	Statewide	13 Deaths, 2 Billion feet of marketable lumber blown down, flooding throughout the State, total Direct Losses - $12,337,643 (1938 Dollars)	$12,337,643.00	NH OEM
Ice	1/5/1979	Statewide	Power and Transportation disruptions		NH OEM
Ice	1/7/1998	Statewide	More than $17 million in power line damage alone	>17 million	NH OEM
Lightning	6/10/2005	Moultonborough	Lightning sparked a fire that destroyed a summer cottage on Lake Winnipesaukee's Badger Island. The lightning struck a nearby pine tree and ignited a ground fire as it traveled along the ground. The ground fire quickly spread to the cottage.	$30,000.00	NOAA
Hazard	**Date**	**Location**	**Description**	**Damages**	**Source**
Lightning	8/1/2005	Moultonborough	Lightning struck a two-story home that was under construction and ignited a fire that heavily damaged the structure. The lightning apparently struck a nearby 70-ft tall pine tree behind the home and traveled into the building.	$150,000.00	NOAA
Lightning	8/2/2005	Moultonborough	For the second night in a row, lightning struck a two-story home in Moultonborough. Fire flared up about 4 hours after the initial strike and caused considerable damage to the kitchen and a new addition.	$50,000.00	NOAA
Thunderstorm	7/26/1994	Carroll County	Thunderstorm Winds gusted as high as 82 mph near Moultonborough		NOAA
Thunderstorm	7/26/1994	Carroll County	$5 million in total cost.	$5,000,000.00	NOAA
Thunderstorm	7/6/1999	Moultonborough	Thunderstorm Winds gusted as high as 60 knots near Moultonborough		NOAA
Thunderstorm/Lightning	7/30/1999	Moultonborough	Lightning struck a tree in Moultonboro and followed an underground wire to a nearby historic post and beam barn where it ignited a fire. The fire caused moderate damage to the structure.		NOAA
Thunderstorm	6/20/2006	Moultonborough	Winds 50 knots, trees down		NOAA
Tornado	7/18/1963	Carroll County	F2 - $25,000 in damage	$25,000.00	NOAA
Tornado	8/7/1986	Carroll County	F1 - $250,000 in damage	$250,000.00	NOAA
Tornado	8/7/2001	Carroll County	F1 - $2.5 million in damage	$2,500,000.00	NOAA

APPENDIX F: POTENTIAL HAZARDS MAP



APPENDIX G: SUPPLEMENTAL INFORMATION (Hazards & Prep/Response Actions)

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

Flooding due to Dam Failure

Dam failure results in rapid loss of water that is normally held back by a dam. These types of floods can be extremely dangerous and pose a threat to both life and property. Dam classifications in New Hampshire are based on the degree of potential damages that a failure or disoperation of the dam is expected to cause. The classifications are designated as non-menace, low hazard, significant hazard, and high hazard and are summarized in greater detail in Table G-1.

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

Table G-1: New Hampshire Dam Classifications[12]

Classification	Description
Non-Menace	A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is: • Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or • Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.
Low Hazard	A dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: • No possible loss of life. • Low economic loss to structures or property. • Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services. • The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course. • Reversible environmental losses to environmentally-sensitive sites.
Significant Hazard	A dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: • 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.

[12] 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.

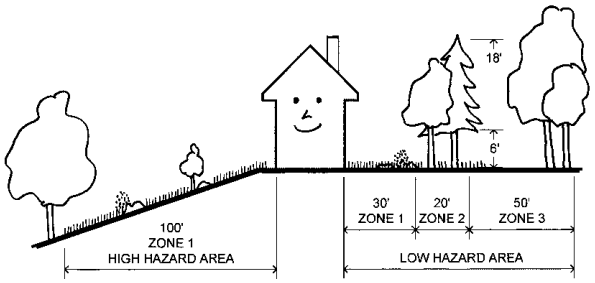
	• Major environmental or public health losses, including one or more of the following: • Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair. • The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated 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 misoperation of the dam would result in probable loss of human life as a result of: • Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions. • Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot. • Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services. • The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII. • Any other circumstance that would more likely than not cause one or more deaths.

Wildfire

Several areas in the region are relatively remote in terms of access and firefighting abilities. Of greatest concern are those areas characterized by steep slopes and vast woodlands, with limited vehicular access. These areas include the Ossipee, Squam, Belknap, and Sandwich Mountain Ranges.

As these once remote areas begin to see more development (the urban wildfire interface), care should be taken to ensure that adequate fire protection and buffers are established. Techniques include increased buffers between wooded areas and residential buildings, requirements for cisterns or fire ponds, a restriction on the types of allowable building materials such as shake roofs, and special considerations for landscaping. While historically massive wildfires have been western phenomena, each year hundreds of woodland acres burn in New Hampshire.

The greatest risk exists in the spring when the snow has melted and before the tree canopy has developed, and in the late summer – early fall. Appropriate planning can significantly reduce a community's vulnerability to wildfires. There are four-zone suggestions from the Firewise community program that could be potentially helpful for Andover's homeowners.[13]



FIREZONES

ZONE 4 is a natural zone of native or naturalized vegetation. In this area, use

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

selective thinning to reduce the volume of fuel. Removing highly flammable plant species offers further protection while maintaining a natural appearance.

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

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

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

Conflagration

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

Alton Bay Christian Conference Center, 2009

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.

Human-Caused Hazard Actions

Project ID	Hazard	Mitigation Actions	Estimated Cost	Potential Funding Source	Responsible Party
MC 1	**Mass Casualty**	Planning and training exercises, including regional drills, to mitigate vulnerabilities to active shooter and similar incidents.	±20 Hours Staff Time	Operating Budget	Police Chief, Fire Chief
MC 2	**Mass Casualty**	Develop traffic calming measures to increase safety for motorists, bicyclists and pedestrians	±20 Hours Staff Time + $50,000	Operating Budget	Town Administrator, Town Planner, Police Chief
MC 3	**Mass Casualty**	Work with Marine Patrol to advocate for better warning buoys to mark unseen ledges and rocks in the water. Record & report missing/broken buoys.	±5 Hours Staff Time	Operating Budget	Fire Chief

APPENDIX H: PRIORITIZATION DETAILS

As the Committee began the process of prioritizing these actions, the group utilized the standard STAPLEE project prioritization. The committee reviewed each mitigation action in the standard STAPLEE categories (**Social**, **Technical**, **Administrative**, **Political**, **Environmental**, and **Economic**). Below is the STAPLEE Criteria Sheet used by the Committee. It was noted that the 'Economic' category could include the cost of the project, potential outside funding sources, and the potential impacts on the local economy. Detailed project scores follow.

STAPLEE Criteria

Committee members are asked to consider both the costs and benefits of implementing identified mitigation actions. The starting point is to consider all actions as positive steps towards making the community a safer place. Any of the STAPLEE criteria that would hinder the action from moving to implementation should be noted. When evaluating the mitigation actions, the following questions are designed to help identify potential obstacles to implementation for each criterion.

Social
- ☐ Will the action unfairly affect any one segment of the population?
- ☐ Will it disrupt established neighborhoods or adversely affect cultural resources?
- ☐ Is it compatible with present and future community values?

Technical
- ☐ Is the proposed action technically feasible?
- ☐ Will it reduce losses in the long term with minimal secondary impacts?

Administrative
- ☐ Does the community have the capability to implement the action? (staff, technical expertise, funding)
- ☐ Can the community provide the necessary maintenance?
- ☐ Can it be accomplished in a timely manner?

Political
- ☐ Is there local/regional support for this sort of mitigation activities or program?

Legal
- ☐ Does the community have the authority to implement the action?
- ☐ Is enabling legislation necessary? (ordinance, resolution, etc.)

Environmental
- ☐ Are there likely to be positive or negative impacts to the environment if this action is implemented?
- ☐ Does the action comply with local, state, and federal environmental regulations?
- ☐ Is it consistent with community environmental goals?

Economic
- ☐ Can the cost of this action be managed by the community? (operating budget or capital improvements)
- ☐ Are state/federal grant programs applicable?
- ☐ Will this reduce costs, for example improving insurance ratings?
- ☐ How does this action fit in with existing economic development plans?
- ☐ Is it likely that this action will result in economic benefits for the community?

Note: Some HMP Committees choose not to use the "Political" category for rating. Some committees choose to combine the "Economic" and "Costs" categories.

This table shows the detailed scoring of the Mitigation Actions by the Moultonborough Hazard Mitigation Committee. For each action, the benefits and costs of implementing the action (under each of the seven categories) were considered and scored 3, 2, 1 with a 'three' meaning that the benefits were greater than the costs in a particular category, a 'one' indicating that the costs outweighed the benefits, and a 'two' meaning that the while there are costs associated with the project, they are balanced out by the benefits. The seven category scores were summed for an overall project total. The maximum total score was 21, the minimum was 7. Actual results ranged from 19.25 to 15.75. These ratings were arrived at through committee discussion and group consensus after averaging individual member scores.

Scoring: 3 = Highly effective or feasible, 2 = Neutral, 1 = Ineffective or not feasible

Project ID	Hazard	Problem	Mitigation Action	Social	Technical	Administrative	Political	Legal	Cost	Environmental	Total
F 1	**Flooding**	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding flood proofing their property.	2.75	3.00	2.75	2.75	2.50	3.00	2.50	**19.25**
FE 1	**Flooding or Erosion**	Roads could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.	2.75	3.00	3.00	2.75	2.25	3.00	2.50	**19.25**
DF 1	**Dam Failure**	The Class B state dam at Lake Kanasatka does have a Dam Emergency Plan.	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.	2.50	3.00	2.75	2.75	2.50	2.75	2.75	**19**
AH 4	**All Hazards**	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Maintain working relationship with the sewer utility to share information regarding contingency plans.	2.50	3.00	3.00	2.50	2.25	2.50	2.75	**18.5**

Project ID	Hazard	Problem	Mitigation Action	Social	Technical	Administrative	Political	Legal	Cost	Environmental	Total
WF 1	**Wildfire**	16 multi-family and 231 single-family homes on Long Island's northwest side face wildfire risk due to terrain, vegetation, and poor access.	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	2.75	3.00	2.75	2.50	2.25	2.75	2.50	**18.5**
SWW 1	**Severe Winter Weather**	Heavy snow and ice, and extreme cold and heat, can damage property and cause frostbite, hypothermia, and heat-induced illness and even death	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations	2.50	3.00	2.75	3.00	2.50	2.25	2.50	**18.5**
ET 1	**Extreme Temperatures**	Vulnerable populations, including children, seniors, and those with chronic illness or disabilities, and others are at risk of injury or death due to extreme heat or cold, and power outages	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building	2.50	3.00	2.75	3.00	2.50	2.25	2.50	**18.5**
L 1	**Lightning**	All town electronics, including the communications network are vulnerable to damage from lightning.	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities	2.50	3.00	2.75	3.00	2.50	2.25	2.50	**18.5**
AH 1	**All Hazards**	In the rare case that the Primary EOC is compromised, making emergency information records inaccessible, limited information would be available.	Ensure redundancy, organization, and accesibility under adverse conditions Employ cloud-based storage system (Microsoft OneDrive/Google Drive.	2.50	3.00	3.00	2.75	2.50	2.25	2.25	**18.25**

Project ID	Hazard	Problem	Mitigation Action	Social	Technical	Administrative	Political	Legal	Cost	Environmental	Total
HW 1	**High Winds (Tornado/ Downbursts)**	Downed limbs and trees can cause property damage and power outages and can block roads.	Work with utility companies to identify tress that need trimming or removal.	2.75	3.00	2.75	2.50	2.25	2.50	2.50	**18.25**
HW 2	**High Winds (Tornado/ Downbursts)**	Downed limbs and trees can cause property damage and power outages and can block roads.	DPW to remove compromised and dead trees in regular course of road improvements	2.75	3.00	3.00	2.50	2.25	2.50	2.25	**18.25**
L 2	**Lightning**	Residents and visitors attending large public gatherings, particularly during peak seasons, may be vulnerable to lightning strikes	EMD to issue weather notices for planning public events	2.75	3.00	2.50	3.00	2.50	2.25	2.25	**18.25**
LS 1	**Landslide**	There are steep slopes in Town, particularly those by Red Hill and the Ossipee Mountains, that could experience a landslide.	Provide education and outreach to the public regarding landslide risks	2.50	2.75	2.50	2.75	2.50	2.75	2.50	**18.25**
AH 2	**All Hazards**	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Maintain mobile 2 signboards and train staff in deployment procedures as part of a communications redundancy plan	2.50	3.00	3.00	2.75	2.50	2.00	2.25	**18**

Project ID	Hazard	Problem	Mitigation Action	Social	Technical	Administrative	Political	Legal	Cost	Environmental	Total
SWW 2	**Severe Winter Weather**	Downed limbs and trees can block roads, and during heavy snowstorms many private road contractors aren't able to clear smaller roads. Several areas of town have limited road access, including Paradise Drive and Moultonborough Neck Road.	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones	2.75	3.00	2.75	2.50	2.50	2.00	2.50	**18**
D 1	**Drought**	The town can experience periods of drought throughout the year.	Educate residents on outdoor fire safety, and provide outreach to private well owners.	2.50	2.75	2.50	2.75	2.50	2.50	2.50	**18**
AH 3	**All Hazards**	Maintain working relationship with the private water utility to share information regarding contingency plans.	Maintain working relationship with the private water utility to share information regarding contingency plans.	2.50	3.00	3.00	2.50	2.25	2.25	2.25	**17.75**
ID 1	**Infectious Disease**	Infectious diseases could impact residents, visitors, and businesses.	Partner with NH Public & Lakes Region Public Health Services to share information with the public.	2.50	2.75	2.50	2.75	2.50	2.25	2.25	**17.5**
PTC 1	**Tropical & Post-Tropical Cyclones**	As weather events grow in intensity and duration (especially after 24 hours), added pressure is placed on infrastructure, facilities, and maintenance.	Educate homeowners about stocking up on supplies.	2.75	2.75	2.50	2.75	2.50	2.00	2.25	**17.5**

Project ID	Hazard	Problem	Mitigation Action	Social	Technical	Administrative	Political	Legal	Cost	Environmental	Total
AH 6	**All Hazards**	Lack of information and readiness can exacerbate the risk of hazards	Encourage residents and town employees to subscribe to the community safety notification system	2.50	2.50	2.50	2.75	2.50	2.25	2.25	**17.25**
FE 2	**Flooding or Erosion**	Private Roads cross flood-prone areas and have undersized drainage; access to properties at the end of these roads can be limited by heavy or frequent rainfall.	Prioritize discussions with homeowners' associations about maintaining private roads and drainage to ensure emergency vehicle access.	2.50	3.00	2.50	2.25	2.25	2.25	2.50	**17.25**
AH 7	**All Hazards**	Black Cat Island only has one access road, which is a wooden bridge that is privately owned.	Maintain a conversation with residences on Black Cat Island Assoc. regarding necessary maintenance and upgrades to the bridge to ensure emergency vehicle access.	3	3	2	2	2	2	3	**17**
AH 5	**All Hazards**	There are some areas of town (Bean Road, Harvard Camp Road, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Work with Carroll County Dispatch to reduce the number of gaps in the emergency communication system	2.50	2.25	2.25	2.50	2.50	2.00	1.75	**15.75**

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

Moultonborough Hazard Mitigation Plan, 2019
Moultonborough Master Plan, Last Chapter Update 2021
Moultonborough Zoning Ordinance, 2024
Moultonborough Subdivision Regulations, 2020
Moultonborough Site Plan Regulations, 2020
Moultonborough MS-1, 2024 – local structural valuation

Homeland Security & Emergency Management, New Hampshire Department of Safety
- *New Hampshire State Hazard Mitigation Plan, 2023 Update*
NH Department of Transportation Traffic Volume (TDMS),
https://nhdot.public.ms2soft.com/tcds/tsearch.asp?loc=Nhdot&mod=TCDS
NH Division of Forests and Lands, https://www.nh.gov/nhdfl/

National Flood Insurance Program through NH Office of Planning and Development
https://www.nh.gov/osi/planning/programs/fmp/index.htm
FEMA's Map Changes Viewer
National Oceanic and Atmospheric Administration website, http://www.ncdc.noaa.gov/
Census 2020 and American Community Survey
FEMA Community Information System
FEMA Flood Map Service Center - https://msc.fema.gov/portal/home

APPENDIX J: FEMA WEBLIOGRAPHY

DISASTERS AND NATURAL HAZARDS INFORMATION

FEMA-How to deal with specific hazards	http://www.ready.gov/natural-disasters
Natural Hazards Center at the University of Colorado	http://www.colorado.edu/hazards
National Oceanic and Atmospheric Administration (NOAA): Information on various projects and research on climate and weather.	http://www.websites.noaa.gov
National Climatic Data Center active archive of weather data.	http://lwf.ncdc.noaa.gov/oa/ncdc.html
Northeast Snowfall Impact Scale	http://www.erh.noaa.gov/rnk/Newsletter/Fall%202007/NESIS.htm
Weekend Snowstorm Strikes The Northeast Corridor Classified As A Category 3"Major"Storm	http://www.publicaffairs.noaa.gov/releases2006/feb06/noaa06-023.html

FLOOD RELATED HAZARDS

FEMA Coastal Flood Hazard Analysis & Mapping	http://www.fema.gov/national-flood-insurance-program-0/fema-coastal-flood-hazard-analyses-and-mapping-1
Floodsmart	http://www.floodsmart.gov/floodsmart/
National Flood Insurance Program (NFIP)	http://www.fema.gov/nfip
Digital quality Level 3 Flood Maps	http://msc.fema.gov/MSC/statemap.htm
Flood Map Modernization	http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization
Reducing Damage from Localized Flooding: A Guide for Communities, 2005 FEMA 511	http://www.fema.gov/library/viewRecord.do?id=1448

FIRE RELATED HAZARDS

Firewise	http://www.firewise.org
NOAA Fire Event Satellite Photos	http://www.osei.noaa.gov/Events/Fires
U.S. Forest Service, USDA	http://www.fs.fed.us/land/wfas/welcome.htm
Wildfire Hazards - A National Threat	http://pubs.usgs.gov/fs/2006/3015/2006-3015.pdf

GEOLOGIC RELATED HAZARDS

USGS Topographic Maps	http://topomaps.usgs.gov/
Building Seismic Safety Council	http://www.nibs.org/?page=bssc
Earthquake hazard history by state	http://earthquake.usgs.gov/earthquakes/states/
USGS data on earthquakes	http://earthquake.usgs.gov/monitoring/deformation/data/download/
USGS Earthquake homepage	http://quake.wr.usgs.gov
National Cooperative Geologic Mapping Program (NCGMP)	http://ncgmp.usgs.gov/

Landslide Overview Map of the Conterminous United States	http://landslides.usgs.gov/learning/nationalmap/
Kafka, Alan L. 2008. Why Does the Earth Quake in New England? Boston College, Weston Observatory, Department of Geology and Geophysics	http://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html
Map and Geographic Information Center, 2010, "Connecticut GIS Data", University of Connecticut	http://magic.lib.uconn.edu/connecticut_data.html
2012 Maine earthquake	http://www.huffingtonpost.com/2012/10/17/maine-earthquake-2012-new-england_n_1972555.html

WIND-RELATED HAZARDS

ATC Wind Speed Web Site	http://www.atcouncil.org/windspeed/index.php
U.S. Wind Zone Maps	http://www.fema.gov/safe-rooms/wind-zones-united-states
Tornado Project Online	http://www.tornadoproject.com/
National Hurricane Center	http://www.nhc.noaa.gov
Community Hurricane Preparedness Tutorial	http://meted.ucar.edu/hurrican/chp/hp.htm
National Severe Storms Laboratory, 2009, "Tornado Basics"	http://www.nssl.noaa.gov/primer/tornado/tor_basics.html

GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND MAPPING

The National Spatial Data Infrastructure & Clearinghouse (NSDI) and Federal Geographic Data Committee (FGDC) Source for information on producing and sharing geographic data	http://www.fgdc.gov
The OpenGIS Consortium Industry source for developing standards and specifications for GIS data	http://www.opengis.org
Northeast States Emergency Consortium (NESEC): Provides information on various hazards, funding resources, and other information	http://www.nesec.org
US Dept of the Interior Geospatial Emergency Management System (IGEMS) provides the public with both an overview and more specific information on current natural hazard events. It is supported by the Department of the Interior Office of Emergency Management.	http://igems.doi.gov/
FEMA GeoPlatform: Geospatial data and analytics in support of emergency management	http://fema.maps.arcgis.com/home/index.html

DETERMINING RISK AND VULNERABILITY

HAZUS	http://www.hazus.org
FEMA Hazus Average Annualized Loss Viewer	http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cb8228309e9d405ca6b4db6027df36d9&extent=-139.0898,7.6266,-48.2109,62.6754
Vulnerability Assessment Tutorial: On-line tutorial	http://www.csc.noaa.gov/products/nchaz/htm/

for local risk and vulnerability assessment	mitigate.htm
Case Study: an example of a completed risk and vulnerability assessment	http://www.csc.noaa.gov/products/nchaz/htm/case.htm

DATA GATHERING

National Information Sharing Consortium (NISC): brings together data owners, custodians, and users in the fields of homeland security, public safety, and emergency management and response. Members leverage efforts related to the governance, development, and sharing of situational awareness and incident management resources, tools, and best practices	http://nisconsortium.org/
The Hydrologic Engineering Center (HEC), an organization within the Institute for Water Resources, is the designated Center of Expertise for the US Army Corps of Engineers	http://www.hec.usace.army.mil/
National Water & Climate Center	http://www.wcc.nrcs.usda.gov/
WinTR-55 Watershed Hydrology	http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&cid=stelprdb1042901
USACE Hydrologic Engineering Center (HEC)	http://www.hec.usace.army.mil/software/
Stormwater Manager's Resource Center SMRC	http://www.stormwatercenter.net
USGS Current Water Data for the Nation	http://waterdata.usgs.gov/nwis/rt
USGS Water Data for the Nation	http://waterdata.usgs.gov/nwis /
Topography Maps and Aerial photos	http://www.terraserver.com/view.asp?tid=142
National Register of Historic Places	http://www.nps.gov/nr/about.htm
National Wetlands Inventory	http://www.fws.gov/wetlands/
ICLUS Data for Northeast Region	http://www.epa.gov/ncea/global/iclus/inclus_nca_northeast.htm

PLANNING

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

OTHER FEDERAL RESOURCES

U.S. Army Corps of Engineers: Provides funding for floodplain management planning and technical assistance and other water resources issues.	www.nae.usace.army.mil
Natural Resources Conservation Service: Technical assistance to individual land owners, groups of landowners, communities, and soil and water conservation districts.	www.nrcs.usda.gov
NOAA Coastal Services Center	http://www.csc.noaa.gov/
Rural Economic and Community Development: Technical assistance to rural areas and smaller communities in rural areas on financing public	www.rurdev.usda.gov

works projects.	
Farm Service Agency: Manages the Wetlands Reserve Program (useful in open space or acquisition projects by purchasing easements on wetlands properties) and farmland set aside programs	www.fsa.usda.gov
National Weather Service: Prepares and issues flood, severe weather and coastal storm warnings. Staff hydrologists can work with communities on flood warning issues; can give technical assistance in preparing flood-warning plans.	www.weather.gov
Economic Development Administration (EDA): Assists communities with technical assistance for economic development planning	www.osec.doc.gov/eda/default.htm
National Park Service: Technical assistance with open space preservation planning; can help facilitate meetings and identify non-structural options for floodplain redevelopment.	www.nps.gov
Fish and Wildlife Services: Can provide technical and financial assistance to restore wetlands and riparian habitats.	www.fws.gov
Department of Housing & Urban Development	www.hud.gov
Small Business Administration: SBA can provide additional low-interest funds (up to 20% above what an eligible applicant would qualify for) to install mitigation measures. They can also loan the cost of bringing a damaged property up to state or local code requirements.	www.sba.gov/disaster
Environmental Protection Agency	www.epa.gov

OTHER RESOURCES

New England States Emergency Consortium (NESEC): NESEC conducts public awareness and education programs on natural disaster and emergency management activities throughout New England. Resources are available on earthquake preparedness, mitigation, and hurricane safety.	www.nesec.org
Association of State Floodplain Managers (ASFPM): ASFPM has developed a series of technical and topical research papers, and a series of Proceedings from their annual conferences.	www.floods.org
National Voluntary Organizations Active in Disaster (VOAD) is a non-profit, nonpartisan membership organization that serves as the forum where organizations share knowledge and resources throughout the disaster cycle—preparation, response, recovery and mitigation.	http://www.nvoad.org

FEMA RESOURCES

Federal Emergency Management Agency (FEMA)	www.fema.gov
National Mitigation Framework	http://www.fema.gov/national-mitigation-framework
Federal Insurance and Mitigation Administration (FIMA)	http://www.fema.gov/fima
Community Rating System (CRS)	http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-rating-system
FEMA Building Science	http://www.fema.gov/building-science
National Flood Insurance Program (NFIP)	http://www.fema.gov/national-flood-insurance-program
Floodplain Management & Community Assistance Program	http://www.fema.gov/floodplain-management
Increased Cost of Compliance (ICC): ICC coverage provides up to $30,000 for elevation and design requirements to repeatedly or substantially damaged property.	http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage
National Disaster Recovery Framework	http://www.fema.gov/national-disaster-recovery-framework
Computer Sciences Corporation: contracted by FIMA as the NFIP Statistical Agent, CSC provides information and assistance on flood insurance to lenders, insurance agents and communities	www.csc.com
Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan: A Guidebook for Local Governments	https://www.fema.gov/ar/media-library/assets/documents/89725
Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning	http://www.fema.gov/media-library/assets/documents/4317

Mitigation Best Practices Portfolio http://www.fema.gov/mitigation-best-practices-portfolio

FEMA Multi-Hazard Mitigation Planning Website	http://www.fema.gov/multi-hazard-mitigation-planning
FEMA Resources Page	http://www.fema.gov/plan/mitplanning/resources.shtm
Local Mitigation Plan Review Guide	http://www.fema.gov/library/viewRecord.do?id=4859
Local Mitigation Planning Handbook complements and liberally references the Local Mitigation Plan Review Guide above	http://www.fema.gov/library/viewRecord.do?id=7209
HAZUS	http://www.fema.gov/protecting-our-communities/hazus
Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards	http://www.fema.gov/library/viewRecord.do?id=6938
Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials	http://www.fema.gov/library/viewRecord.do?id=7130

IS-318 Mitigation Planning for Local and Tribal Communities Independent Study Course	http://training.fema.gov/EMIWeb/IS/is318.asp

APPENDIX K: MONITOR, EVALUATE, & UPDATE

Table A: Periodic Hazard Mitigation Plan Review Record (Assessing overall plan effectiveness: Poor, Fair, Good, Excellent)

Meeting Schedule (dates)	Tasks Accomplished	How well is plan achieving stated purpose and goals?	Lead Parties	Public Involvement (citizens, neighboring communities)
July, 2026	□ Documentation □ Track implementation □ Assess effectiveness □ Other			
July, 2027	□ Documentation □ Track implementation □ Assess effectiveness □ Other			
July, 2028	□ Documentation □ Track implementation □ Assess effectiveness □ Other			
July, 2029	□ Documentation □ Track implementation □ Assess effectiveness □ Other			

Table B: Project Implementation Checklist (Action Status: C-Completed, X – Delete, D – Deferred)

Project ID	Hazard	Mitigation Action	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr	Status July 2026	Status July 2027	Status July 2028	Status July 2029
AH 1	**All Hazards**	Ensure redundancy, organization, and accessibility under adverse conditions Employ cloud-based storage system (Microsoft OneDrive/Google Drive.	Operating Budget	EMD	S				
AH 2	**All Hazards**	Maintain mobile 2 signboards and train staff in deployment procedures as part of a communications redundancy plan	Operating Budget	Police, EMD	S				
AH 3	**All Hazards**	Maintain working relationship with the private water utility to share information regarding contingency plans.	Operating Budget	Town Administrator	S				
AH 4	**All Hazards**	Maintain working relationship with the sewer utility to share information regarding contingency plans.	Operating Budget	Town Administrator	S				
AH 5	**All Hazards**	Work with Carroll County Dispatch to reduce the number of gaps in the emergency communication system	Operating Budget Capital Expenditure	Police Chief	L				
AH 6	**All Hazards**	Encourage residents and town employees to subscribe to the community safety notification system	Operating Budget	EMD	S				

Project ID	Hazard	Mitigation Action	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr	Status July 2026	Status July 2027	Status July 2028	Status July 2029
AH 7	**All Hazards**	Maintain a conversation with residences on Black Cat Island Assoc. regarding necessary maintenance and upgrades to the bridge to ensure emergency vehicle access.	Operating Budget	Fire Chief	S				
DF 1	**Dam Failure**	Maintain communication with the owners (NH DES) as Dam Emergency Plan is updated.	Operating Budget	EMD	S				
D 1	**Drought**	Educate residents on outdoor fire safety, and provide outreach to private well owners.	Operating Budget	EMD	S				
ET 1	**Extreme Temperatures**	Reach out to residents and visitors with information on availability and locations of heating and cooling centers, including schools, recreation building, library, and public safety building	Operating Budget	Fire Chief	S				
F 1	**Flooding**	Provide education and outreach to homeowners regarding flood proofing their property.	Operating Budget	Town Planner	L				
FE 1	**Flooding *or* *Erosion***	Conduct regular ditch maintenance to mitigate the flow of water alongside roadways.	Operating Budget	DPW	S				

Project ID	Hazard	Mitigation Action	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr	Status July 2026	Status July 2027	Status July 2028	Status July 2029
FE 2	**Flooding *or* *Erosion***	Prioritize discussions with homeowners' associations about maintaining private roads and drainage to ensure emergency vehicle access.	Operating Budget	EMD, DPW	S				
HW 1	**High Winds *(Tornado/ Downbursts)***	Work with utility companies to identify tress that need trimming or removal.	Operating Budget	DPW	S				
HW 2		DPW to remove compromised and dead trees in regular course of road improvements	Operating Budget	DPW	S				
ID 2	**Infectious Disease**	Partner with NH Public & Lakes Region Public Health Services to share information with the public.	Operating Budget	EMD	S				
L 1	**Lightning**	Regular monitoring and maintenance of grounding and surge protection equipment to mitigate against loss of function of Critical Facilities	Operating Budget	DPW	M				
L 2	**Lightning**	EMD to issue weather notices for planning public events	Operating Budget	Fire Chief	S				
SWW 1	**Severe Winter Weather**	Work with and educate private homeowner associations throughout town on vegetation trimming and recommended minimum road standards, including width, base, and clear zones	Operating Budget	DPW	S				

Project ID	Hazard	Mitigation Action	Potential Funding Source	Responsible Party	Time Frame S: 1-2 yr, M: 3-4 yr, L: 5+ yr	Status July 2026	Status July 2027	Status July 2028	Status July 2029
SWW 2	**Severe Winter Weather**	Reach out to residents and visitors with information on preparing for inclement weather, including storing fuel and food, and checking on neighbors and vulnerable populations	Operating Budget	Fire Chief	S				
PTC 1	**Tropical & Post-Tropical Cyclones**	Educate homeowners about stocking up on supplies.	Operating Budget	EMD	S				
WF 1	**Wildfire**	Reach out to the homeowner's associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	Operating Budget	Fire Chief	S				