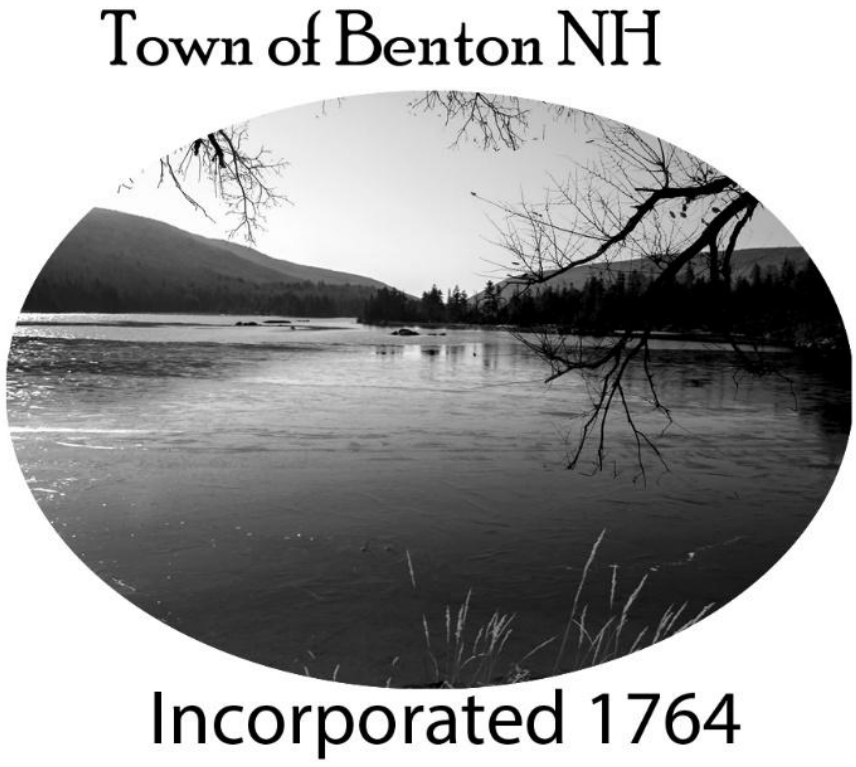
Town of Benton, NH – WORKING
Local Hazard Mitigation Plan 2025 Update
and
Community Wildfire Protection Plan



ACKNOWLEDGEMENTS

This plan was created through the combined efforts of the Town of Benton Emergency Management Director and Select Board, various town officials and residents of Benton. The following organizations have contributed invaluable assistance and support for this project:

New Hampshire Homeland Security Emergency Management (HSEM) – Mitigation and Recovery Section – Various documents and technical expertise

US Department of Agriculture: US Forest Service – Various documents and technical expertise, information presentation at Benton Town Hall

North Country Health Consortium - Technical expertise and documentation pertaining to infectious disease

Town of Benton Multi-Hazard Mitigation Planning Team - Advice, suggestions, proofreading

The following individuals have attended meetings and/or been instrumental in completing this plan:

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Pete Llewellyn	NH Homeland Security Emergency Mgt Stakeholder
Phil Blanchard	North Haverhill Fire Department
Richard Morris	Haverhill Corner Fire Department
Elaine Belanger	Public Health Coordinator, North Country Health Consortium
Martin Noble	Benton Planning Board Chairman

Date of Conditional Approval: _____ (Official)
Date of Final Approval: _____
Date of Adoption by Town: _____
Date Distribution by Town: _____

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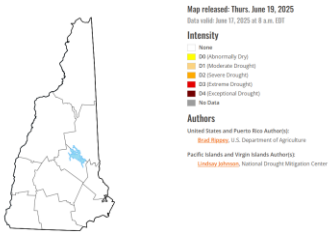
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https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?NH



Executive Summary

The Benton Multi-Hazard Mitigation Plan (Plan) was compiled to assist Benton in reducing and mitigating future loss from natural and manmade hazard events. The Plan was developed by the Benton Multi-Hazard Mitigation Team and residents of the town and contains tools to identify specific hazards and aspects of existing and future mitigation efforts.

Public participation in the development of this Plan was encouraged through the entire process. Notices of meetings were placed in the *Bridge Weekly*, the *Journal Opinion*, as well as the Town of Benton Web site, Tobentonnh.org. During the Annual Budget Meeting held on January 23, 2024 and during the Annual Town Meeting held on March 9, 2024, copies of the 2018 HMP and the 2025 draft HMP were made available and comments and participation were solicited. A copy of the 2018 HMP was uploaded to the Town of Benton website in May 2025 with contact information for the EMD.

During initial planning stages, the Team stressed the importance of creating a comprehensive Plan which realistically identified and prioritized all potential hazards which could impact Benton. In 2022 Benton incurred significant damage to town infrastructure resulting from excessive rainfall and flooding. In July 2022, major structural damage was done to Davis Brook Bridge and damage to several culverts resulted in washed out and impassable roads. Excessive rain with erosion is now considered the natural hazard most likely to occur and is the only hazard which can be favorably impacted by mitigation planning and preparedness. Following approval of this Plan, The Town of Benton will submit a Letter of Intent to apply for a Hazard Mitigation Assistance Grant to repair the culvert on Tunnel Stream Road, the major source of erosion and flooding.

Whereas the threat from Terrorism is always present, the Team felt the lack significant human concentration events and facilities in Benton made the threat low enough so to not merit inclusion in the 2024 Plan.

This update is intended to be dynamic and responsive to future events such as climate change, pandemic/epidemic, and other manmade or natural events. The Emergency Management Director (EMD) will coordinate an annual review in January and mention will be made during public gatherings such as the Annual Town Hall Meeting. During the review process attention will be given to determine progress in accomplishing Mitigation Strategies and Goals found in Table 6-1. A link will remain on the Town of Benton website soliciting hazard mitigation comments and the email address for the EMD.

The 2025 LHMP recognizes the following hazard threats:

Excessive Rain with Erosion	Hurricane
Severe Winter Storm	Pandemic/Epidemic
Extreme Cold Temperatures	Earthquake
Extended Power Outage	Tornado
High Wind	Wildfire
Severe Summer Storm	Hazmat Transport

Benton is a small, rural community which depends on neighboring towns for critical services and Mutual Aid. This Plan includes an updated and extended list of Critical Infrastructure and Key Resources (CIKR), including those from the Town of Haverhill which provides numerous resources to Benton residents for important services, e.g., fire, ambulance and schools.

Approximately 75% of Benton is forest land and as such, wildfire mitigation is a major ongoing goal of this Plan. The team met with officials from the United States Forest Service (USFS), the NH Department of Resources and Economic Development (Division of Forests and Lands) (DRED), and the North Haverhill and Haverhill Corners Fire Departments. This Plan qualifies as a Community Wildfire Protection Plan (CWPP) and satisfies the specifications for Collaboration, Prioritized Fuel Reduction, and Treatment of Structural Ignitability.

The Benton Team recognizes the concept and implementation of this Plan requires periodic review and probable revision and will perform an annual review or after any emergency event. Further, the Plan will be updated every five years or if there are changes to directives related to land use. Once final approval is met, copies of the Plan are to be distributed to the

Town, New Hampshire Homeland Security and Emergency Management (HSEM), the Federal Emergency Management Agency (FEMA), DRED and the USFS.



Tunnel Stream Road, December 2022

Adoption by the local governing body demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the Plan. Adoption legitimizes the Plan and authorizes responsible agencies to execute their responsibilities. The Plan shall include documentation of the resolution adopting the Plan as per requirement §201.6(c)(5).

Chapter I: Multi-Hazard Planning Process

Documentation for the Planning process, including public involvement, is required to meet DMA 2000 (44CFR§201. (c) (1) and §201.6 (c) (1)). The Plan must include a description of the Planning process used to develop the Plan, including how it was prepared, who was involved in the process, and how other agencies participated. A description of the Planning process should include how the Planning team or committee was formed, how input was sought from individuals or other agencies who did not participate on a regular basis, what the goals and objectives of the

A. Authority & Funding

Benton's Multi-Hazard Mitigation Plan was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA), Section 322, and Mitigation Planning, signed into law by President Clinton on October 30, 2000. This multi-hazard plan will be referred to as the Plan. Benton's 2025 Local Hazard Mitigation Plan was prepared by the Benton LHMP Planning Team in conjunction with concerned residents. The Plan was completed without involvement by a third-party contractor.

B. Purpose & History of the FEMA Mitigation Planning Process

The ultimate purpose of Disaster Mitigation Act of 2000 (DMA) is to:

> *"…establish a national disaster hazard mitigation program -*
>
> *To reduce the loss of life and property, human suffering, economic disruption and disaster assistance costs resulting from natural disasters; and*
>
> *To provide a source of pre-disaster hazard mitigation funding that will assist States and local governments (including Indian tribes) in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster".*

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section ―322 – Mitigation Planning which states:

> *"As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government."*[2]

Mission Statement:
To make Benton less vulnerable to the effects of hazards through the effective administration of hazard mitigation planning, wildfire hazard assessments, and a coordinated approach to mitigation policy and planning activities.

Vision Statement:
The community of Benton will reduce the impacts of wildfires and other potential disasters through implementing mitigation measures, public education and deliberate capital expenditures within the community. Homes and businesses will be safer. and the community's ISO rating.

HSEM's goal is to have all New Hampshire communities complete a local multi-hazard plan as a means to reduce future losses from natural and man-made events before they occur. HSEM outlined a process whereby communities throughout the state may be eligible for grants and other assistance upon completion of this multi-hazard plan. The state's regional planning commissions are charged with providing assistance to selected communities to develop local plans.

Benton's 2025 LHMP is a planning tool used to reduce future losses from natural and man-made hazards as required by the Disaster Mitigation Act of 2000; this plan does not constitute a section of the Town's Master Plan. The 2025 Local Hazard Mitigation planning process resulted in significant discussion regarding various natural and manmade hazards by team members.

The DMA places new emphasis on local mitigation planning. It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a means to reduce future losses from natural and man-made events before they occur.

C. Jurisdiction

This plan addresses only one jurisdiction - the Town of Benton, NH. Once approved by the Planning Team, the Plan will be forwarded to HSEM for Conditional Approval. Additionally, this plan will be submitted to the NH Department of Forests & Lands for approval as a Community Wildfire Protection Plan (CWPP) for Benton. Upon review and conditional approval by HSEM, the Benton Select Board will hold a public hearing, consider public comments, and sign a Resolution to Adopt the Plan.

D. Scope of the Plan & Federal & State Participation

A community's multi-hazard mitigation plan often identifies a vast number of natural hazards and is somewhat broad in scope and outline. The scope and effects of this plan were assessed based on the impact of hazards and wildfires on: *critical infrastructure and key resources (CI/KR); current residential buildings; other structures within the town; future development; administrative, technical and physical capacity of emergency response services; and response coordination between federal, state and local entities.*

In seeking approval as a Local Hazard Mitigation Plan and a Community Wildfire Protection Plan, the planning effort included participation of New Hampshire Homeland Security and Emergency Management, the US Forest Service, the Department of Resources and state agencies responsible for forest issues in NH. Designation as a Community Wildfire Protection Plan will allow a community to gain access to federal funding for hazardous fuels reduction and other mitigation projects supported by the US Forest Service. By merging the two federal planning processes (multi-hazard and wildfire), duplication is eliminated, and the town has access to a larger pool of resources for pre-disaster planning.

It is important for communities to involve both the Federal and state agencies responsible for forest issues in NH. Contact the US Forest Services at: White Mountain National Forest, 603-528-721, http://www.fs.fed.us/r9/forests/white_mountain/. Contact the State Forest agency at: NH Division of Forests and Lands, 603-271-2214, http://www.nhdfl.org

The Healthy Forest Restoration Act (HFRA) of 2003 includes statutory incentives for the US Forest Service to give consideration to local communities as they develop and implement forest management and hazardous fuel reduction projects. For a community to take advantage of this opportunity, it must first prepare a CWPP. This multi-hazard mitigation planning process not only satisfies FEMA's criteria regarding wildfires and all other hazards but also addresses the minimum requirements for a CWPP:

Collaboration: A current CWPP must be collaboratively developed or reviewed by local and state government representatives, in consultation with federal agencies and other interested parties.

Prioritized Fuel Reduction: A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.

Treatment of Structural Ignitability: A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

Finally, as required under Code of Federal Regulations (CFR), Title 44, Part 201.6(c) (2) (ii) and 201.6(c) (3) (ii), the Plan must address the community's participation in the National Flood Insurance Program (NFIP), its continued compliance with the program, and, if applicable, as part of vulnerability assessment, the Plan must address the National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged due to floods.

E. Multi-Hazard Planning Process

The planning process consisted of eleven specific steps; some steps were accomplished independently while other areas were interdependent. Many factors affected the ultimate sequence of the planning process: length of meetings, community preparation and attendance, and other community needs. All steps were included but not necessarily in the numerical and sequence listed. A list of steps follows with FEMA requirement indicated by an asterisk (*).

Step 01: *Planning Process, Update Goals
Step 02: *Hazard Identification and Risk Assessment
Step 03: Profile, List and Map Historic and Potential Hazards, Wildfire and Natural
Step 04: Profile, List and Map Critical Infrastructure and Key Resources
Step 05: Assess Community's participation in National Flood Insurance Program
Step 06: Gather Town History and Statistics, Past and Future Development Trends
Step 07: *Mitigation Strategies, Identification and Categorization of New Mitigation Strategies
Step 08: Prioritize Mitigation Strategies to Determine Implementation Plan
Step 09: Team Review of Plan Contents for Submission to HSEM Maintenance
Step 10: *Adoption and Plan Maintenance

§201.6(b) requires that there be an open public involvement process in the formation of a plan. This process shall provide an opportunity for the public to comment on the Plan during its formation as well as an opportunity for any neighboring communities, businesses, and others to review any existing plans, studies, reports, and technical information and incorporation of those in the Plan, to assist in the development of a comprehensive approach to reducing losses from natural disasters.

F. Public Involvement

Team members recognize the importance of community involvement, and all practical efforts were made to invite and encourage public participation. Team members were asked to publicize the update process through word of mouth. A notice was placed in the Bridge Weekly in March 2024 (see below) and on the Town website (https://tobentonnh.org). Additionally, the following information was disseminated at the Town of Benton Meeting on March 9 2024 and is present in Town Meeting/Town Election Notes:

Scott Matz, Benton's Emergency Management Director, is currently working on updating Benton's Hazard Mitigation Plan (HMP). This has to be done every 5 years in order for Benton to remain eligible for FEMA reimbursements for disaster relief. Bill asked for anyone interested in providing input or volunteering to help with the HMP to contact Scott or him.

Upon conditional approval of this plan, a public hearing will be held before the Select Board formally adopts the Plan; the public will have the opportunity for future involvement as the Plan is periodically reviewed. The public notice will continue to be given by such means as mention in local newspapers and posting meeting information to the Town website. There will also be a public hearing before the five-year update is sent to for NH Emergency Management to ensure that public comments and suggested revisions are considered. Team composition is expected to be lower in smaller communities because of the small population base and the fact that many people wear more than one hat. While much effort was made to include public participation, few general community members chose to participate.





G. Narrative Description of the Process and Methodology

6/17/2023: This marked the initial organizational meeting to review and update the Benton Hazard Mitigation Plan. On hand were Bill Darcy, Scott Matz, Joseph Boutin, Jr., and J. B. Boutin III. General long range plans were discussed such as identifying others interested in HMP planning, uploading a digital copy of the current HMP to the Benton website, and the frequency of future meetings. Initial emphasis was placed on reviewing success with achieving previous mitigation goals and identification of new hazards and appropriate prioritization. Members will next meet in late summer.

10/23/2023: Bill discussed the HMP review and update process with the Benton Select Board. Members were provided the address for accessing an online copy of the 2018 HMP and urged to become familiar with its contents, especially the prioritization of hazard threats and mitigation strategies. Board members were also provided information regarding the availability of FEMA online Independent training courses.

1/16/2024: Bill and Scott met to formalize the creation of Benton's HMP Update Committee and identify interested residents. Also discussed were ideas to disseminate information and encourage public involvement. Team members will research the possibility of assembling an

Email message group containing addresses for town residents to facilitate an expeditious means of emergency contact should that be required.

2/28/24: Bill and Scott spoke on the phone to formulate a roadmap leading to a successful l HMP update prior to July 31. Details were as follows:

Use of the Bridge Weekly newspaper and Town website

Using the Annual Town Meeting on 3/9 to publicize and encourage participation

Schedule meeting with Paul Hatch

Meet with Haverhill Fire Dept

Meet with Forest Ranger for information regarding Community Wildfire Protection Plan

3/19/24: Bill spoke at the Annual Town Meeting to publicize and encourage public participation in the HMP and CWPP update.

3/28/24: Notice appeared in Bridge Weekly newspaper.

9/24: Created an account with Genasys with email contact information for residents. Recommended by Mike Stiebitz.

9/24: EMD Genasys Sys Admin met with Bill and Mike Stiebitz. Scott mentioned that, unfortunately, alert hazard notifications to Town residents wasn't available. Everyone agreed that this deserved mention as a hazard mitigation accomplishment

5//25: Bill and Scott will re-energize work on the LHMP

6/25: Review previously submitted draft 2024 LHMP, update → 2025 LHMP

..



Long Pond July 2023

Chapter II: Community Profile



A. Introduction:

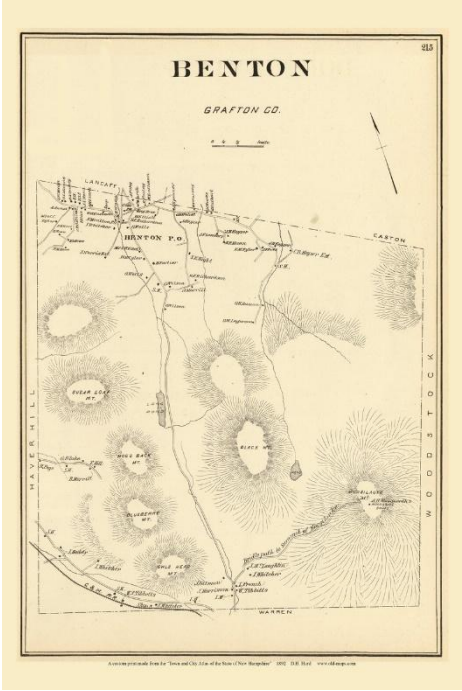
This community was first granted in 1764 as Coventry after the Connecticut home of many settlers, holding the name for over 75 years. In 1839, Governor Isaac Hill proposed renaming the town Benton in honor of Thomas Hart Benton, senator from Missouri. The town was incorporated as such in 1840. Senator Benton was known for championing Western expansion through establishment of express, railroad, navigation, and telegraph interests. A prominent natural feature in Benton is Mount Moosilauke, a popular site for hikers .

Villages and Place Names: Boutin Corner, Coventry, Benton Flats

Population: Year of the First Census Taken: 88 residents in 1790. The current population of Benton is 359. It's important to note that this figure includes over 100 patients residing at the state owned Glencliff Home for the elderly. The median age for Town residents is 62.6.

Population Density 2023: 7.2 persons per square mile of land area. Benton contains 48.5 square miles of land area and 0.2 square miles of inland water area.
https://www2.nhes.nh.gov/GraniteStats/SessionServlet?page=Community.jsp&SID=1&city=000504&cityName=Benton

Unemployment Rate (Apr, 2025): 3.6%
https://datacommons.org/place/geoId/3305060?category=Demographics



B. Benton's History & Past Development Trends

In 1764, when the town's charter was granted by the provincial governor, the name of the town was Coventry with a nominal area of about 37.5 square miles (although in actuality it was closer to 53 square miles); its owners were seventy-one non-residential proprietors; other than rocky summits it was virgin forest; and there were no residents or human activity. Since then its name was changed, its area was diminished, its owners became residents plus the Department of Agriculture; its forest was largely cut and later allowed to re-grow; farmers were replaced mostly by out-of-town workers and retirees; and many and varied commercial enterprises were developed and then disappeared. How and why the town became the Benton of today, from what it earlier was, is the framework of its history.

The charter specified requirements, and when settlement was not made within five years it was deemed forfeit and in 1770 was replaced by a new one in which the town's original area was divided between three individuals and two neighboring towns. Theoretically Coventry ceased to exist, but with the progress of the Revolution and with the Tory allegiance of the three new majority grantees the new charter appears to have been ignored and Coventry's existence was assumed. In 1784 about four square miles of the town, including what is now the Warren village of Glencliff was cut off from its southern boundary and give to Warren, which has lost some of its own territory because of defective charter boundaries. Coventry had next to no settlers and no one to defend its interests.

With the coming of peace settlers arrived at a faster and faster pace. All (and for at least the next century) were subsistence farmers and were faced with the slow and necessary challenge of felling the forest, clearing their land, and building their barns and homes, the earliest of which were simple log huts. Initially the homesteads were along the Oliverian Brook and flat land in the south part of the town and also in the later-named Page district along the western boundary. These lands were the more attractive parts of the town for agriculture and were the most

accessible, whether from up the Connecticut River and through Haverhill or by way of Plymouth and Warren up the Baker River. The homesteads were unauthorized "pitches" which were later regularized, and together with three major surveys which were completed between 1798 and 1803 were incentives for more systematic settlements to the hope-for financial benefit of the proprietors. In addition to farming as such it is significant that provision for a mill farm was made on the Oliverian Brook; this was the first of at least seven water powered mills two of which were both grist and lumber.



The turn to the 19th century brought a flood of settlers to the north part of Coventry and the number of farms and the population grew rapidly. The 1816 year of frost-in-every-month and the resulting crop failures forced more than a few farm families to abandon their holdings and to leave town but their places were soon filled by newcomers and by near 1850 the town had its greatest population. Concern for politics and rivalry among the several sections of town and among several religious groups were popular pastimes, and both the number of farms and the consequent clearing of forest land were at their heights. In 1840 the state legislature confirmed the town's name changed: henceforth it was not Coventry but Benton, named for Missouri's Senator Thomas Hart Benton who was perceived to be a rising star among Democrats.

In the mid-century period there was no village center in Benton but the closest to one was Whitcher Hollow which for a time was the industrial center. A saw and grist mill, a clapboard mill, one or two smithies, wheelwright and cooper shops as well as two houses and a post office were there. In the late 1880s a fire destroyed all but one house, and only the other house with the post office was replaced, to which later an initially-private meeting hall was added. There were other industrial sites including a creamery, a granite quarry of which the product was used in the construction of the railroad bed which in 1855 ran through town on its way to Woodsville from east of Benton's station near Glencliff. Near the latter were charcoal kilns, and in other parts of Benton there were a spruce oil mill, another charcoal operation, and possibly a starch mill. All of the town's industries eventually succumbed to time, loss of market, or other causes but the most serious loss was the burning of Whitcher Hollow.

Farming in Coventry-Benton was generally of the small-time, family run, subsistence type. It was for feeding and clothing a family with only a small cash product if any at all. Oxen power was used: they could survive by browsing while horses required grain that was unavailable or in short supply. Nevertheless, dairy herds, beyond one or two heads, were rare before the mid eighteen hundreds, and with the short season corn and corn ensilage were not practical, particularly in North Benton. What dairy farming did exist, outside of South Benton, did not last beyond about 1980 when bulk milk tanks were required which in turn required larger herds than the existing farms could maintain. Early in the eighteen hundreds sheep farming was common and relatively easy, but the introduction first of Spanish and later of Australian sheep led to the abandonment of that occupation. In the latter eighteen hundreds lumbering began to undermine the farming economy. Early-on sawmills were local enterprises; these largely outlived their usefulness as the local demand for new houses and other buildings ceased, while the non-local demand increased. A few residents bought up farmlands as they became available and shipped timber for milling outside of Benton, and as the end of the nineteenth century approached major industries bought out the local entrepreneurs and stripped much of the available forest.



For almost a century and a half the residents of Coventry-Benton were people who came and settled as farmers. Following the Civil War there was an exodus of young residents who were attracted either to the Boston area for paying jobs or to the Midwest for better farm land; the sale of farms represented another loss of populations; however, the growth of the logging industry brought in some replacements.
Glencliff Home

A limited change involved the purchase of three or four farms and buildings as part of a Glencliff business; these in 1908 were sold to the State to be the new Tuberculosis Sanitarium, now the Glencliff Home for the Elderly. A major change resulted from the 1914 adoption of the federal Weeks Act and the Department of Agriculture's establishment of the White Mountain National Forest, the first parcel of which was in Benton. In the next sixteen years twenty-eight parcels were acquired, the bulk of the eventual 23,658.8 acres of Benton, about three-quarters of

the town's total area, that became part of the Forest. The net result of these changes was that by early in the twentieth century Benton's farms and population had decreased to what their numbers had been a century earlier.


RIFLE-TOTIN' MAMA—Mrs. Ethel A. Boutin, 46, rests gun by telephone while answering first duty call as Benton, N. H.'s only constable. The five-foot, one inch mother of five children also serves as town auditor, member of the school committee, voting checklist supervisor and farmwife.

An enterprise that was an attempt to utilize former farms was that of an inn or lodging house. Benton over time had four of which only the Parker House near the base of Mt. Moosilauke was well known; it became part of the Forest in 1930. In addition, there was the popular Moosilauke Summit House which was open only in the summer and was operated lastly by Dartmouth College until 1942 when it burned. Non-residents continue to visit Benton on its hiking trails including the Appalachian Trail, several Moosilauke trails, and those of Black Mountain and the Benton range. A further attraction is boating and fishing on Long Pond, which the Civilian Conservation Corps formed from a much smaller pond by the erection of the concrete dam in the nineteen-thirties.

The Great Depression and the 1938 hurricane had their impacts on Benton, but with their passing Benton has steadily moved forward from its earlier losses. Its land once again is mostly forest, its population continues increasing, and new houses continue to be built. Residents are both those born in Benton and newcomers; a few are self-employed in Benton; many are employed out of town; and some are retirees. Additionally, there are part-time residents, mostly summer and some winter.

C. Current & Future Development Trends

Housing Statistics 2017	
Total Housing Units	151
Single Family Units	139
Residential Permits	5
Multi-Family Units	0
Residential Permits	0
Manufactured Housing Units	38
Source: NH Employment Security	2017 -2021

When asked what the future holds for Benton, the answer was unanimous: "We like it the way it is!" Benton does not anticipate substantial growth in the future nor is the town expecting major retail or manufacturing businesses to locate in the town. Also, since a large percent of the town is in the White Mountain National Forest, there is little room for development. Therefore, no large influx of business or residential development is expected. As discovery of its recreational resources, natural beauty, low taxes, and minimalist local government become more widespread, slow growth will come from new residents who appreciate its character, assets and benefits.

D. Statistics of Interest to Multi-Hazard & Wildfire Planning

Population	2025	2022	2017	2007	2000	1990	1980	1970
Town of Benton	359	369	364	344	314	330	333	194
Grafton County	93,146	91,126	89,118	85,514	81,826	74,998	65,806	54,914

Regional Coordination

County	Grafton
Regional Planning Commission	North Country Council
Watershed Planning Region	Connecticut River Watershed
Tourism Region	White Mountains

Municipal Services

Type of Government	Select Board
Select Board	Yes, Elected
Planning Board	Yes, Elected
School Board	Yes, Elected (Haverhill Cooperative Board) No school in Benton; students tuitioned to Haverhill Cooperative, SAU 23
Zoning Board Adjustment	No
Master Plan	Yes
Zoning Ordinances	Yes

Capital Improvement Plan	No
Building Permits	Yes

Percent of Local Assessed Valuation by Property Type (2023)

Residential Land and Buildings	93.5%
Commercial Land & Buildings	2.3%
Other (including utilities)	4.2%

Emergency Services & Issues

Police Department	State Police by mandate
Fire Department	From Haverhill and North Haverhill
Town Fire Insurance Rating	10
Emergency Medical Services	Private
Established EMD	Yes

Utilities

Electricity Supplier	PSNH; NH Electric Cooperative
Water Supply	Private Wells
Natural Gas Supplier	None
Cellular Telephone Access	Limited
Public Access Television Station	No
High Speed Internet	Broadband (Conexon), DSL (Consolidated Communications)
Telephone Company	Consolidated Communications, Conexon
Nearest Hospital	Cottage Hospital, 10 miles, 35 beds

Transportation

Evacuation Routes	NH Routes 116 & 25; Bradley Hill Rd & High Street
Nearest Interstate	I-93, Exit 32, Lincoln, 15.5 miles; I-93, Exit 17, Wells River, VT, 17 miles
Railroad	No
Public Transportation	No
Nearest Airport	Dean Memorial, General Aviation Facility, 6 miles, 2500’ runway, lights and navigation aids
Nearest Commercial Airport	Manchester-Boston Regional, Manchester, NH, 96 miles

Fire Information

Fire Stations	No
Fire Warden	Yes

Fire Statistics (ask Forest Ranger)

Benton Wildland Fire Calls 2011-2024	None
Grafton County Fire Statistics 2017	3
Number of Acres Burned	77
State Forest Fires 2022	103
Number of Acres Burned	381

Chapter III: Hazard Identification

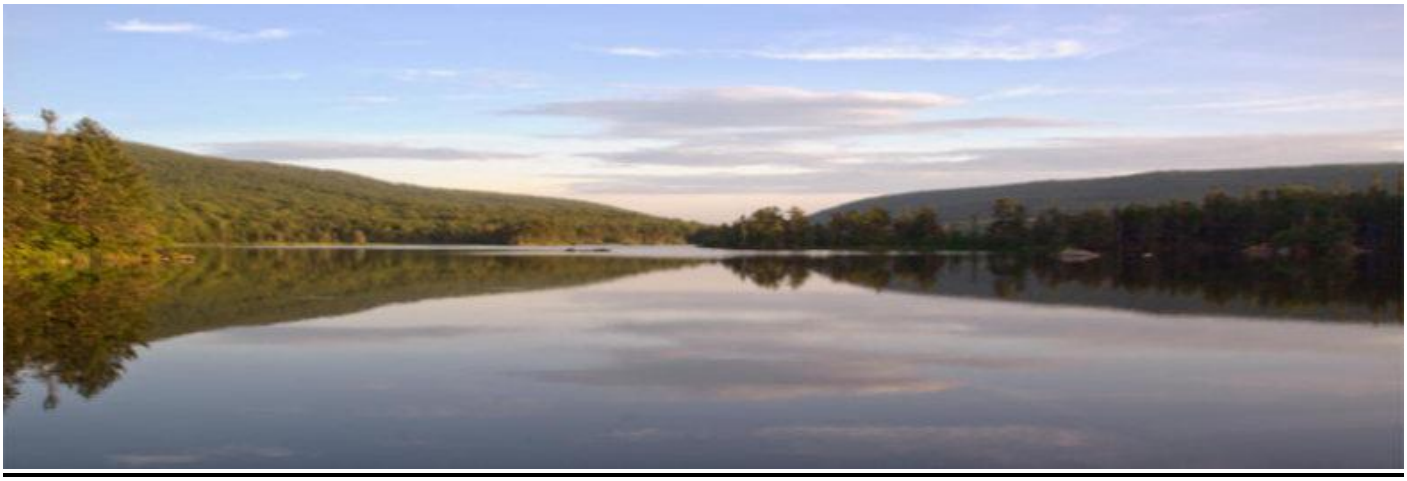
A. Description of the Hazards

The first step in hazard mitigation is to identify hazards; the Team determined that:

- Hazards that are most likely to affect Benton are Excessive Rain with Erosion, Severe Winter Storm, Extreme Cold Temperature, Extended Power Outage, High Winds, and Severe Summer Storm
- Hazards that are less likely to affect Benton are Lightning, Hurricane, Pandemic/Epidemic, and Earthquake
- Hazards that are least likely to affect Benton are Tornado, Wildfire, and HazMat Transport Spill

This Plan provides estimates of the level of impact each listed hazard could have on humans, property and business and averages them to establish an index of severity. The estimate of probability for each hazard is multiplied by its severity to establish an overall relative threat factor. This matrix also shows the frequency of future occurrence (based on a 25-year window).

Based on this matrix, the most significant hazardous threat to Benton is Excessive Rain with Erosion, the second most likely hazard is Severe Winter Storm, and the third most likely hazard is Extreme Cold Temperature.



Long Pond

Table 3.1: Historic Hazard Identification: **Note: Numbers in parenthesis in Table 3.1 represent historic hazards in Benton which are reflected on the maps 2 and 3. Hazards indicated in red are hazards which are both past and future potential hazards.**

Type of Event	Date	Location	Impact
Past or Potential Flooding Hazards: Riverine flooding is the most common disaster event in the State of New Hampshire (aside from frequent inconveniences from rather predictable moderate winter storms). Significant riverine flooding impacts upon some areas in the State in less than ten year intervals. The entire State of New Hampshire has a high flood risk.			
Flooding	1936	Town and State-wide	Double flood: first due to rains and snowmelt; second due to large rainfall
Flooding (Hurricane)	1938	Town and State-wide	Stream states similar to those of March 1936
Flooding	July & August 1986	Town and State-wide	Severe summer storms with heavy rain, flash floods and severe winds
Flooding (Heavy Rain)	August 1990	Town and State-wide	Storm events from August 7-10, 1990 with moderate to heavy rains produced widespread flooding in NH
Flooding	1995	Grafton, Carroll, & Coos Counties	The East Branch of the Pemigewasset River flooded and eroded the banks close to the lagoons
Flooding	Late 1990s	(#4/Map3) Town-wide and Tunnel Stream	Culverts failed; road washouts
Flooding	April 2005	(#1/Map3) Long Pond Road	Culverts failed; road washouts
Excessive Rain, Erosion	July 2017	County and Town-wide	Davis Brook Bridge undermined and road washouts
Excessive Rain, Erosion .	October 2017	County and Town Wide	Culverts failed and road washouts
Severe Storm and Flooding	July 2019	County and Town Wide	FEMA 4457 DR, Culverts failed; road washouts
Severe Storm and Flooding	July 29 - August 2, 2021	Sullivan and Cheshire Counties	FEMA 4624 DR Culverts failed; road washouts
Severe Storm and Flooding	December 22 - 25 2022	Grafton, Coos, Carroll, and Belknap Counties	FEMA 4693 DR Culverts failed; road washouts
Past or Potential Wildfire Hazards: New Hampshire is heavily forested and is therefore vulnerable to wildfire, particularly during periods of drought. The proximity of many populated areas to the state's forested lands exposes these areas and their populations to the potential impact of Wildfire.			
Wildfire	April 24 85	(01/Map 1) Blueberry	Campfire (Code 4); Class B; USFS-Norma
Wildfire	Unknown	(02/Map1) Oliverian CG	Campfire (Code 4); Class B; USFS-Neely
Wildfire	Unknown	(03/Map 1) Blueberry Fire 2008 WFU	Unknown; Unknown; USFS Neely
Wildfire	Unknown	(04/Map 1) Whitcher Brook	Lightning (Code 1); Class B; USFS-Neely
Wildfire	Sep 9 95	(05/Map 1) Long Pond (island)	Campfire (Code 4); Class A; USFS-Neely
Wildfire	Jul 14 80	(06/Map 1) Mt Clough	Campfire (Code 4); Class A; USFS-Norma
Wildfire	Unknown	(07/Map 1) Tunnel Stream	Arson; Class A; Local
Past or Potential Tornado, Downburst & Hurricane Hazards: Tornados are spawned by thunderstorms and occasionally by hurricanes and may occur singularly or in multiples. A downburst is a severe localized wind blasting down from a thunderstorm. Hurricanes develop from tropical depressions which form off the coast of Africa. NH's exposure to impact from hurricanes is real, but modest, as compared to other states in New England.			
Tornado	1816	Coos County	Unknown
Tornado	1821	Coos County	Unknown
Tornado	1880	Coos County	F2 on the Fujita Scale
Hurricane	1938	State-wide	186 mph winds
Tornado	1966	Coos County	F2 on the Fujita Scale
Tornado	1973	Coos County	F2 on the Fujita Scale
Hurricane	1985	Town and State-wide	Hurricane Gloria, > 70 mph winds
Hurricane	1991	Town and State-wide	Hurricane Bob, > 60 mph winds
Tornado	1999	Coos County	F1 on the Fujita Scale
Downburst	1999	Merrimack, Grafton, Coos & Hillsborough Counties	Microburst, 2 roofs destroyed, downed trees, widespread power outages, damaged utility poles and wires
Hurricane	2011	State-wide	Hurricane Irene, >70 mph winds, 16 deaths in New England
	2012	State-wide	Hurricane Sandy, responsible for 1 death

Type of Event	Date	Location	Impact
Hurricane remnants, Tropical Storms	2018-2023	State-wide; throughout New England	Sustained rain, flooding, downed trees, power outages
Past or Potential Severe Winter Weather Hazards: Severe winter weather in New Hampshire may include heavy snow storms, blizzards, Nor'easters, and ice storms. Generally speaking, New Hampshire will experience at least one of these hazards during any winter season. Most New Hampshire communities are well prepared for such hazards.			
Ice Storm	1929	Town & State-wide	Unprecedented disruption and damage to telephone, telegraph, and power system
Ice Storm	1979	Town & State-wide	Major disruptions to power and transportation
Ice Storm	1998	Town & State-wide	Severe ice storm that spread throughout New England and Canada causing major damage to public and private utilities
Snowstorms	1958, 1960, 1961, 1969, 1978, 1982	Town & State-wide	Events marked by snowfalls exceeding 2' in parts of the State
Snowstorms	January 2009	Town & State-wide	26" in one storm
Snowstorms	2018-2023	Strafford, Belknap, Rockingham Counties	Most severe storms ranged from 24" – 34"
Past or Potential Drought Hazards: Droughts are generally not as damaging or disruptive as floods, but are more difficult to define. A drought is a natural hazard that evolves over months or even years and can last as long as several years to as short as a few months.			
Drought	1929-1936	Town & State-wide	Regional
Drought	1939-1944	Town & State-wide	More severe in southeast
Drought	1947-1950	Town & State-wide	Moderate
Drought	1960-1969	Town & State-wide	Regionally, longest recorded continuous spell of less than normal precipitation
Drought	2001-2002	Town & State-wide	Third worst drought on record
Other Past or Potential Hazards: Man-made hazards and other unusual hazardous events have been noted throughout NH. Among others, one concern is the transport of hazardous material through communities by rail and tractor-trailer.			
COVID 19	January 2020 May 2023	World-wide	FEMA 4516 DR

B. Risk Assessment

The next step in hazard mitigation planning was to identify the location of past hazard events and, if possible, what facilities or areas were impacted. The team used a Multi-Hazard Threat Analysis, to identify potential threats and prioritize their threat potential. The team then used a base map that included the 100-year floodplain, political boundaries, water bodies, the road network and aerial photos to locate all of the past hazard events on the base map. This step in the Planning process serves as a stepping stone for predicting where future hazards could potentially occur. The Team identified past events in Benton and Grafton County and listed them in an Historic Hazard Identification table.

To assess the fire base risk, a formula based on the following criteria was used:

- **Ignitability** – Using the 2016 NH Land Cover Assessment GIS Layer - A value between 0 and 9 was assigned based on ignitability to 23 land cover categories from open water to pitch pine forest.
- **Slope** - A value of 1-10 was assigned to various gradients of slope.
- **Aspect** - A value of 0-8 was assigned to various aspects from flat to southwest facing slopes.

These criteria were combined using GIS analysis and weighted equally to determine risk levels throughout the Town. Once the analysis and mapping was complete in GIS, a matrix was created showing varying risk levels: low, medium, and high. Each risk level was assigned a color and was mapped over the Town of Benton (Multi-Hazard Map excluded from this draft). It was noted that the town is dominated by National Forest lands with roughly 42 of the total 48 square miles in town belonging to the USFS.



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C. Benton National Flood Insurance Program (NFIP) Status

Benton is not a member of the National Flood Insurance Program; the Town has no land in the 100 or 500 year floodplain according to available GIS FIRM data. Flooding and erosion, from excessive rainfall, is a significant concern in the Town, mostly as it washes out roadways from time to time. Benton does have a Zoning Ordinance dated 1976. In Article V, Section 203, Floodplain Construction, the Ordinance states that "*The floodplain of Oliverian Stream had been tentatively designated as a Special Flood Hazard Area…the Town of Benton appealed this designation, citing the construction of a flood control dam specifically designed to protect this floodplain from a floor of 100-year magnitude."* The ordinance goes on to say that as of the date of the Ordinance (1976)…"a final decision on this appeal had not been received."

The Ordinance further states:

> *"Whether or not this floodplain is designated a Special Flood Hazard Area susceptible to damage by moving water, the year-round high water table of its soils severely limits the use of this land for other than agricultural purposes. No residential construction or substantial improvement to existing residential structures shall be permitted on soils delineated by the Soil Conservation Service, U.S. Department of Agriculture, as floodplain soils and/or when located with the boundary of any Special flood Hazard area designated in the future by the Federal Insurance Administration, U.S. Department of Housing and Urban Development's…In any future designated special Flood Hazard Area, new construction or substantial movement of the structure, (b) use construction materials and utility equipment that are resistant to flood damage, and (c) use methods and practices that will minimize flood damage." improvement must (a) be designed(or modified) and anchored to prevent floatation, collapse, or lateral*

As a very small and close-knit community, the Benton Select Board and the Multi-Hazard Planning Team are most always aware of new construction and/or substantial improvements that take place in the Town. Although Benton has no designated Special Flood Hazard Areas, the Team feels that it is worthwhile to look into the benefits of joining the National Flood Insurance Program. It has been explained to the Team that benefits of the NFIP also extend to structures that are not in the 100-year floodplain.

In 1968, although well-intentioned government flood initiatives were already in place, Congress established the National Flood Insurance Program (NFIP) to address both the need for flood insurance and the need to lessen the devastating consequences of flooding. The goals of the program are twofold: to protect communities from potential flood damage through floodplain management, and to provide people with flood insurance.

For decades, the NFIP has been offering flood insurance to homeowners, renters and business owners, with the one condition that their communities adopt and enforce measures to help reduce the consequences of flooding.
Source:http://www.floodsmart.gov/floodsmart/pages/about/nfip_overview.jsp

D. Community Wildfire Protection Plan

The purpose of the Town of Benton Community Wildfire Protection Plan is to analyze the risk of wildfire, form partnerships with appropriate local, state, and federal agencies, review and assess emergency response, protect natural resources and inform and educate the public. This Benton CWPP will be primarily concerned with an analysis of Benton forestland ignitability and fuel reduction measures.

During CWPP promulgation, the Team met with Mr. John Neely, USDA, White Mountain National Forest Division. Mr. Neely provided general information regarding how the threat of wildfires are analyzed and then correlated that data to Benton's forestland. Upon returning to his office, Mr. Neely accessed the Interagency Fuel Treatment Decision Support System and prepared highly detailed Benton specific reports titled Landscape Fire Behavior and Landscape Summary.

When evaluating the threat of wildfire, among the most important factors are aspect, slope, climate, and various other factors of the landscape fuel model. The objectively measurable data contained in the reports provided by Mr Neely support the conclusion that the risk of wildfire in Benton is moderate to low.

From the **Landscape Fire Behavior Report**:

97% of Benton landscape would not support a flame length of more than 4'

Rate of Spread as measured by chains per hour indicates 96% of Benton landscape would not support chains greater than 2-5 per hour

Fire Intensity as measured by BTU/ft-sec indicates 96% of Benton landscape would not support a wildfire greater than 5 BTU/ft sec

96% of Benton landscape would not support a Crown Fire. Any potential wildfire would be overwhelmingly limited to ground level and therefore be easier to contain.

From the **Landscape Summary Report**:

Fuel Model data show that 88% of Benton landscape is comprised of Timber Litter (2&5) which has minimal ignitability.

Stand Height is measured at less than 28 meters for 99% of Benton landscape

There have been very few wildfires in Benton. The last wildfire occurred in 1995 at Long Pond (on an island), resulting from a campfire. Fire permits are required and issued by the Benton Fire Warden and enforced to the fullest extent possible.

The tree species which have the least resistance to ignition are red oak and red pine, most commonly found at Black Mountain, Blueberry Mountain, Hogsback Mountain, and Owls Head Cliff. Although living pine trees are fire resistant, dead and dried pine have far less resistance to ignition. Wild blueberries are considered highly flammable. Mt Moosilauke has high concentrations of red spruce and fir which can be highly ignitable. In addition, Mt Moosilauke is a popular hiking destination which can result in hikers creating an illegal campfire.

Benton Flats has large areas of grass and the presence of dead grass and thatch is also considered a problem area. In addition, the presence of power lines and pipe lines compounds the threat of wildfire in this area.

Also working in Benton's favor is the fact that the town has a low population density and few areas where humans congregate, keeping in mind that 80% of all wildfires are created by humans. Approximately 75% of Benton falls within the White Mountain National Forest. Heavy winter snowfall, the absence of drought, and high humidity serve to minimize the threat of significant wildfire.

Residents of Benton cherish the innate beauty of the natural landscape and recognize that wildfire is perhaps the most preventable hazard we must contend with. Promulgation of this Plan, most especially interaction with the US Department of Agriculture, White Mountain National Forest Division has resulted in the identification of several realistic and meaningful future mitigation strategies. Chief among these newly identified mitigation strategies are the following:

- Analyze the adequacy of presently existing dry hydrants
- Prominently place a fire awareness sign outside the Town Hall
- Maintain woodland roads to reduce and eliminate ignitable debris
- Work with the USDA to identify areas for prescribed burns
- Creation of firebreaks and shaded fuel breaks
- Zoning/building code changes to consider higher fire risk areas
- Requirement for home numbers at the end of driveways to assist first responders
- Conduct a Town Wide flammable liquid turn-in day
-



Dilly Cliff Fire, North Woodstock, NH October 2017

Important CWPP Terms and Definitions:

Intensity, Flame Length, and Spread Rate: Self-explanatory terms useful in creating wildfire modeling systems. Intensity is a function of flame length and spread rate.

Heat/Area: The energy release component from a rate of heat release per unit area.

Crown Fire: A fire that spreads from treetop to treetop, difficult to control.

Canopy Cover: The percent cover of tree canopy in a stand. Specifically, canopy cover describes the vertical projection of the tree canopy onto an imaginary horizontal surface representing the ground's surface.

Stand Height: Tree canopy height most often measured by an airborne laser scanner.

Canopy Base Height: The average height from the ground to a forest stand's canopy bottom. Specifically, it is the lowest height in a stand at which there is a sufficient amount of forest canopy fuel to propagate fire vertically into the canopy.

Canopy Bulk Density: The mass of available canopy fuel per unit canopy volume that would burn in a crown fire with values ranging from 0 to 45.

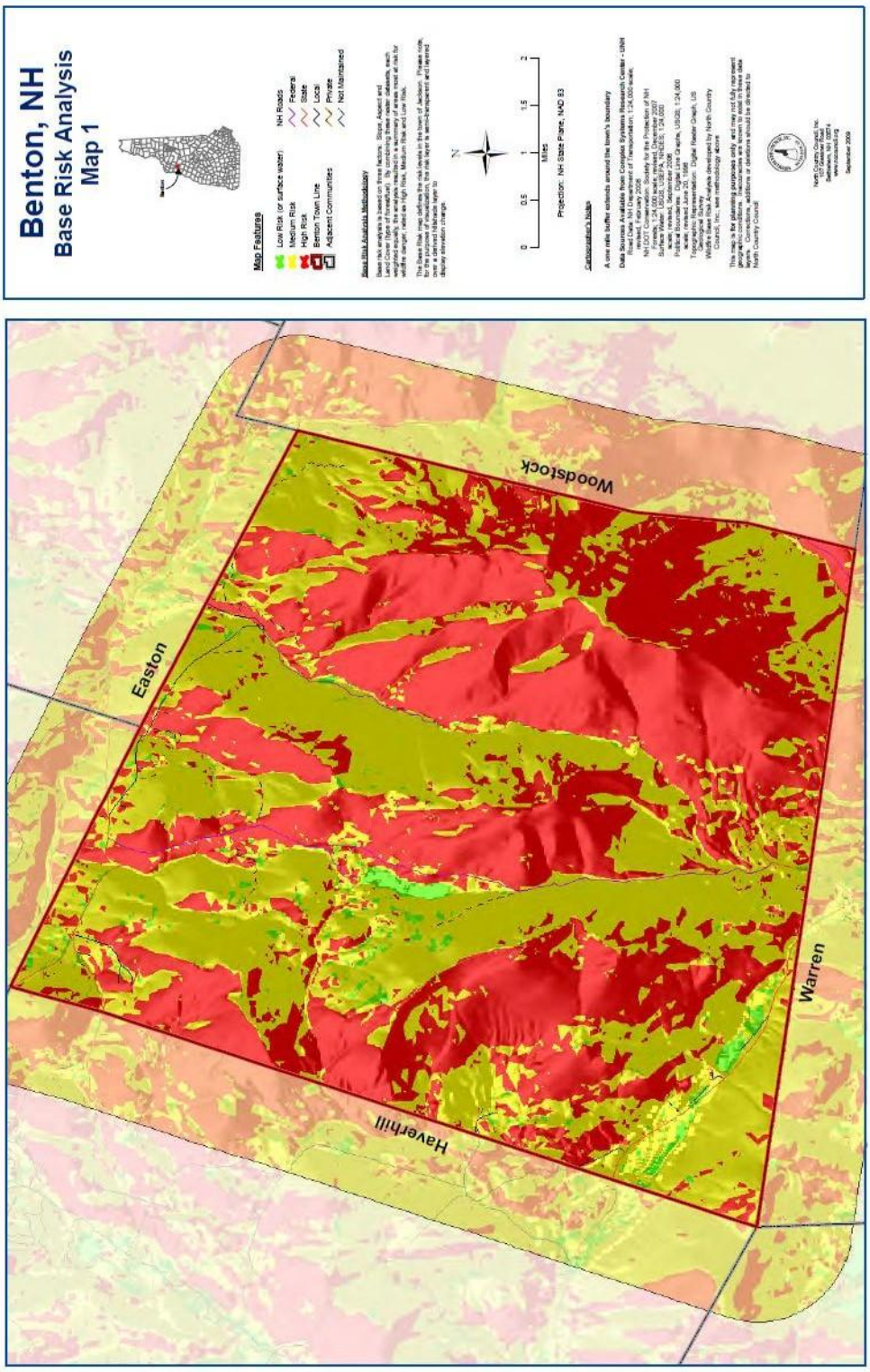
Aspect: The compass direction or azimuth of a slope influences how much heat will be radiated from the sun. South facing slopes receive a higher degree of radiation which results in lower humidity and higher temps.

Slope: Because of the local, up-slope winds, wildfires usually burn up-slope. The steeper the slope, the more rapidly the fire will burn up-slope (and more intensely). The steeper the slope, the more rapidly the fire will burn up-slope.

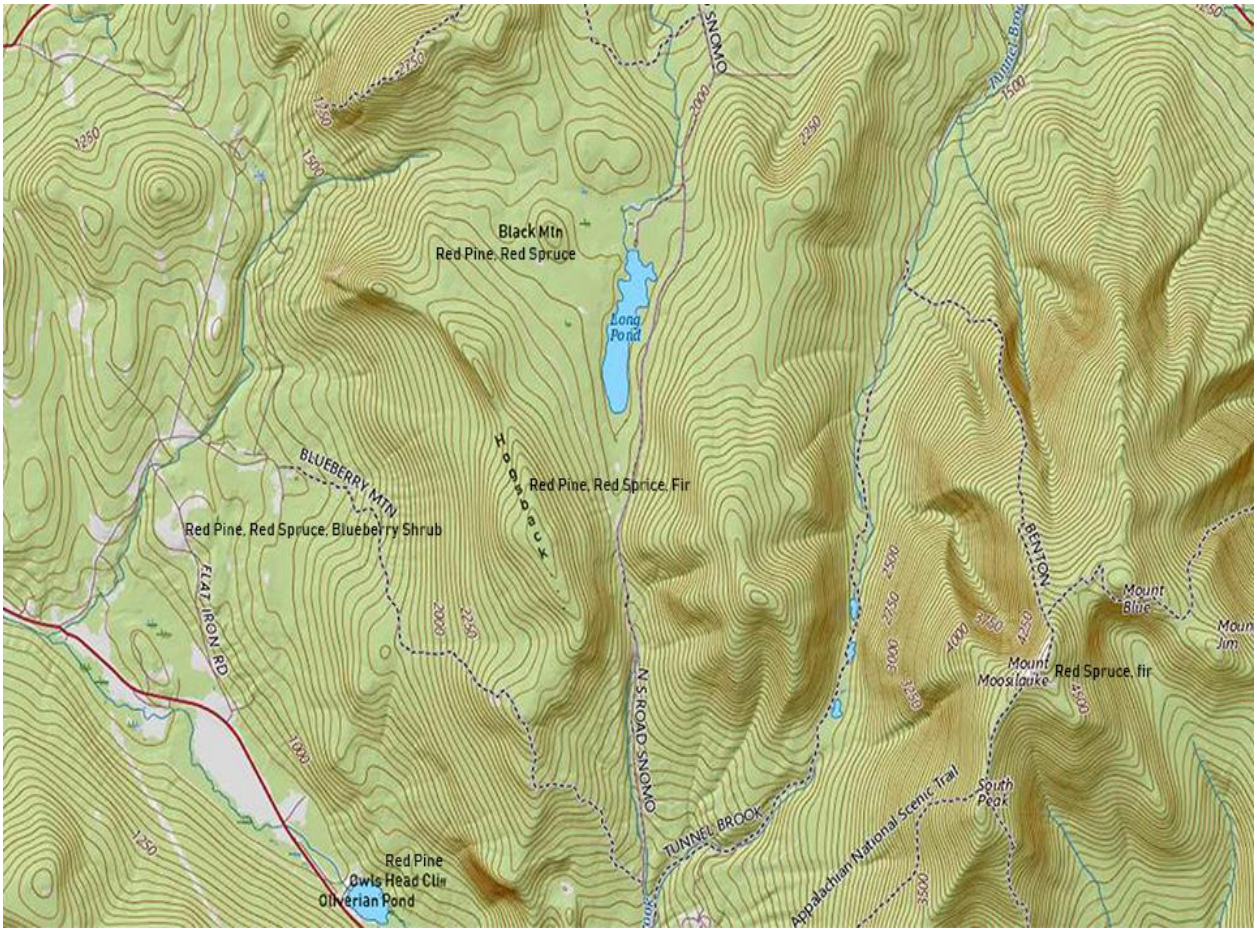
Elevation: Interacts with weather to influence naturally occurring vegetation.

Map 1 - Base Risk Analysis

(11" x 17" maps included in appendix of hard copy plans)



Depicts the areas in Benton which present the greatest risk for wildfire.



E. Probability of Future Potential Disasters

The Town of Benton is relatively safe from experiencing significant future damage from most natural disasters and especially safe from damage resulting from man-made disasters. The Team recognized high probability threat from excessive rain and culvert failures, winter storms, cold temperatures, power outages, high wind, summer storms, and lightning, however, impact to humans, property, and business for all threats was considered moderate to low.

Events from 2018 to date clearly demonstrates the damage to Town infrastructure and private property which can result from excessive rainfall with erosion. The mitigation of future damage from excessive downpour is the Town's number one priority. The effects of the Northern New England Winter will pose a continuing threat, especially for Benton's elderly residents. Severe winter storms and cold temperatures can result in downed power lines with potential loss of heat and water. The cost of replacing frozen water pipes can potentially create great financial burden.

The potential threat from hurricane, earthquake, wildfire, HazMat transport, pandemic/epidemic, etc, generally pose low probability and likewise, moderate to low probability for significant human, property, and business impact.

LHMPs prior to 2018 included potential hazards from hailstorm, drought, and terrorism, however, these were eliminated from this update. While Benton may experience a warm weather hailstorm the resulting damage would range from minimal to none. The most recent state-wide drought occurred in 2002. Recurrence of drought conditions would undoubtedly involve a degree of hardship, however, since there are no commercial farms in Benton this threat was eliminated. The Team took care to evaluate the realistic threat of Benton becoming a possible target for terrorism.

Benton is a small, rural community, with low population density with no obvious terror targets such as transportation centers or shopping malls and no significant events drawing crowds such as the North Haverhill Fair. Therefore, the Team felt the threat from a potential terrorist attack should be eliminated.

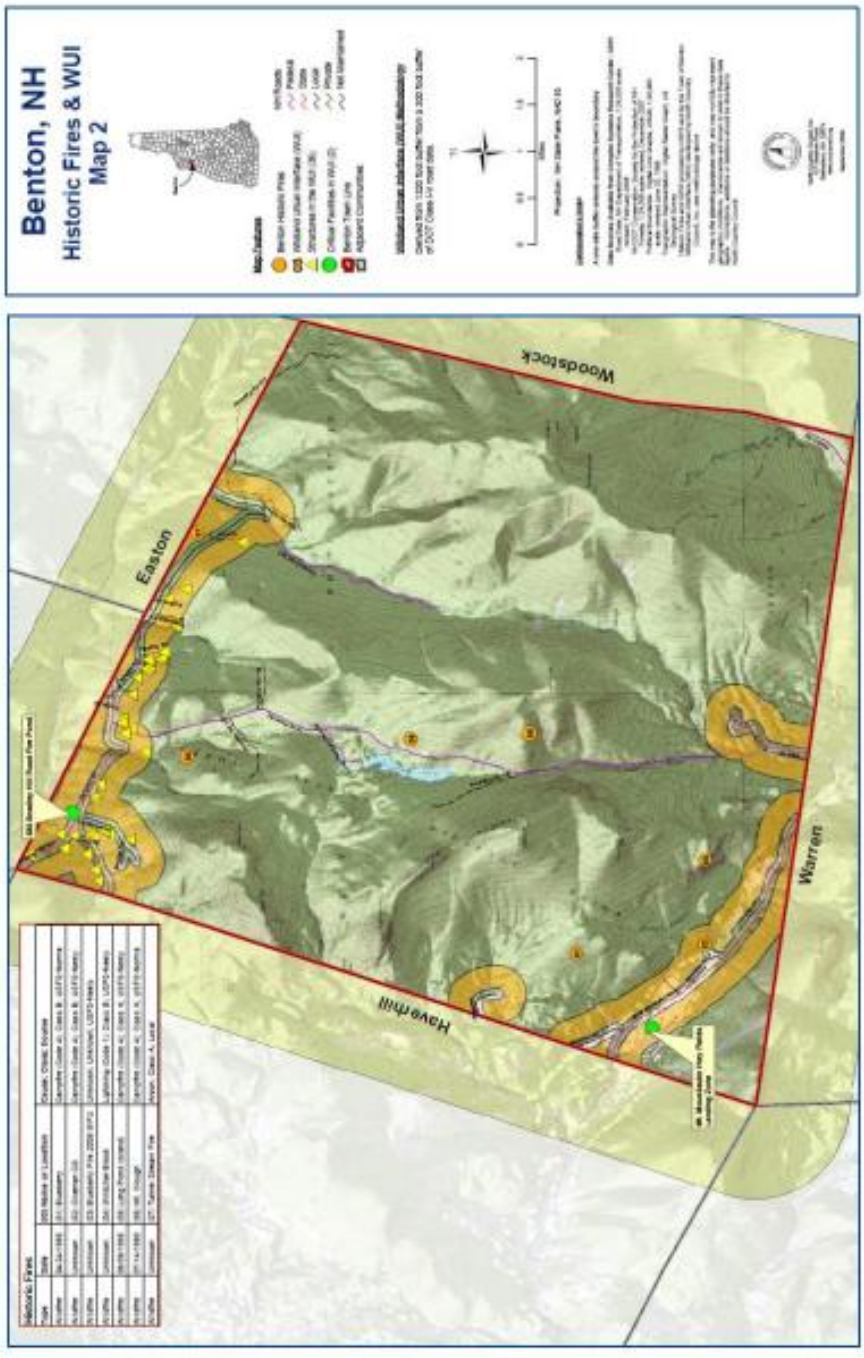
During the Annual Plan Review the Team carefully considered edits to Potential Future. An updated table analyzing the various hazard threats to Benton appears on page 27.

Table 3.2: Multi-Hazard Threat Analysis

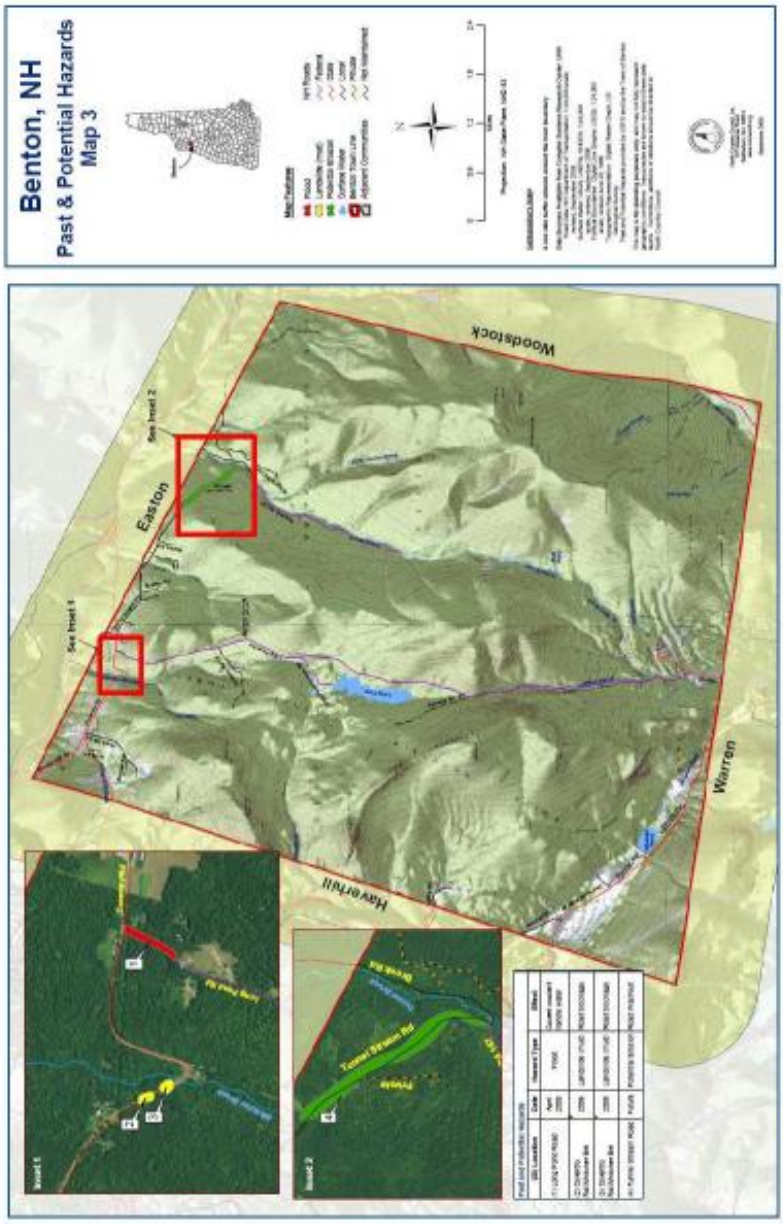
Hazards that are most likely to affect Benton (6)							
Hazards that are less likely affect Benton (4)							
Hazards that are least likely to affect Benton (3)							
Column	A	B	C	D	E	F	G
Scoring 1 = Low 2 = Moderate 3 = High	Probability of death or injury	Physical losses and damages	Interruption of service	Likelihood this occurs within 25 years	**Average of Human, Property & Business Impact** Columns A+B+C/3	**Relative Threat** Columns DxE	
Hazard	**Human Impact**	**Property Impact**	**Business Impact**	**Probability**	**Severity**	**Risk Severity x Probability**	**Mitigation Strategy See pg 42**
Excessive Rain with Erosion	1	3	1	3	1.67	5.00	2,9
Severe Winter Storm	2	2	1	3	1.67	5.00	10,11,12,14
Extreme Cold Temp.	2	2	1	3	1.67	5.00	10,11,12,14
Extended Power Outage	2	2	1	3	1.67	5.00	10,11,12,14
High Winds	2	2	1	3	1.67	5.00	10,11,12,14
Severe Summer Storm	2	2	1	3	1.67	5.00	10,11,12,14
Lightning	2	2	1	2	1.67	3.34	10,11,12,14
Hurricane	2	2	1	2	1.67	3.34	10,11,12,14
Paandemic / Epidemic	3	3	3	3	3.0	9.00	10,11,12,14
Earthquake	2	2	1	2	1.67	3.34	6,7,10,11,12
Tornado	2	2	1	1	1.67	1.67	6,7,10,11,12
Wildfire	1	1	1	1	1.0	1.0	6,7,10.11,12
HazMat Transport Spill	1	1	1	1	1.0	1.0	5,10,11,12

Map 2 - Historic Wildfires & Wildland Urban Interface

(11" x 17" maps included in appendix of hard copy plans)



Map3 – Past & Potential Areas of Concern
(11” x 17” maps included in appendix of hard copy plans)

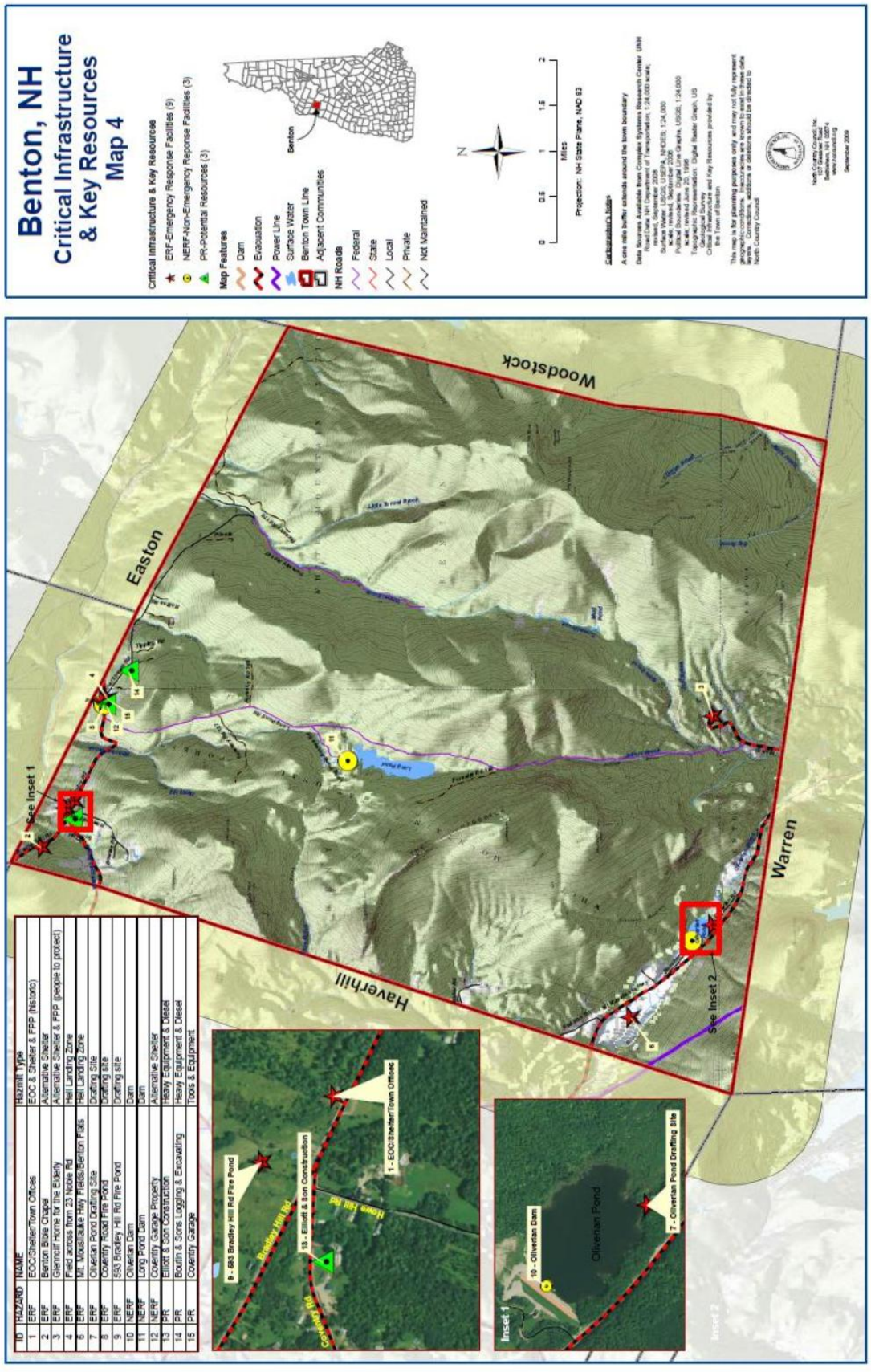


Chapter IV: Critical Infrastructure & Key Resources (CI/KR)

With Team discussion and brainstorming, Critical Infrastructure and Key Resources (CI/KR) within Benton were identified and mapped for the multi-hazard plan. Because of the proximity and the use by Benton residents of the infrastructure and resources of the Town of Haverhill, the critical infrastructure and key resources of Haverhill is included in a separate and more extensive table, which was taken verbatim from the most recent Haverhill HMP.

Table 4-1 Critical Infrastructure & Key Resources

Emergency Response Facilities (ERF)		
ERFs are primary facilities and resources that may be needed during an emergency response.		
ID	**Facility**	**Type of Facility**
1	Town Hall	EOC & Primary Shelter
2	Benton Bible Chapel	Alternate Shelter
3	Glencliff Home for the Elderly	Alternate Shelter
4	Field Across from 23 Noble Road	Helicopter Landing Zone
5	Field at 593 Bradley Hill Road	Helicopter Landing Zone
6	Mt Moosilauke Highway Fields in Benton Flats	Helicopter Landing Zone
7	Oliverian Pond Drafting Site	Drafting Site
8	Coventry Road Drafting Site	Drafting Site
9	593 Bradley Hill Road Fire Pond	Drafting Site
Non-Emergency Response Facilities (NERF)		
NERFs are facilities that although are critical are not necessary for immediate emergency response efforts. This would include facilities to protect public health and safety and to provide backup emergency facilities.		
ID	**Facility**	**Type of Facility**
10	Oliverian Dam	Dam
11	Long Pond Dam	Dam
12	Coventry Garage Property	Secondary Shelter
Facilities and People to Protect (FPP)		
FPPs are facilities that need to be protected because of their importance to the town and to residents who may need help during an emergency or hazardous event.		
ID	**Facility**	**Type of Resource**
3	Glencliff Home for the Elderly	Elderly medical care and housing
1	Town Hall (also EOC and Shelter)	Historic
Potential Resources (PR)		
PRs are potential resources that could be helpful for emergency response during an emergency or hazardous event.		
ID	**Resource**	**Type of Resource**
13	Elliott & Son Construction	Heavy Equipment/Diesel
14	Joe Boutin & Son Logging & Excavation	Heavy Equipment/Diesel
15	Coventry Garage	Tools, Equipment



ID	HAZARD	NAME	Hazmit Type
1	ERF	EOC/Shelter/Town Offices	EOC & Shelter & FPP (historic)
2	ERF	Benton Bible Chapel	Alternative Shelter
3	ERF	Glencrief Home for the Elderly	Alternative Shelter & FPP (people to protect)
4	ERF	Field across from 23 Noble Rd	Heli Landing Zone
6	ERF	Mt. Moosilauke Hwy Fields/Benton Falls	Heli Landing Zone
7	ERF	Olverian Pond Drafting Site	Drafting Site
8	ERF	Coventry Road Fire Pond	Drafting Site
9	ERF	593 Bradley Hill Rd Fire Pond	Drafting site
10	NERF	Olverian Dam	Dam
11	NERF	Long Pond Dam	Dam
12	NERF	Coventry Garage Property	Alternative Shelter
13	PR	Elliott & Son Construction	Heavy Equipment & Diesel
14	PR	Boutin & Sons Logging & Excavating	Heavy Equipment & Diesel
15	PR	Coventry Garage	Tools & Equipment

Chapter V. Multi-Hazard Effects in Benton

A. Identifying Vulnerable Structures

Because damage from floods and wildfires are more predictable than damages from other disasters, it is important to identify critical resources and other structures that would most likely be damaged by these events. To do this, structures falling within the FEMA flood map for the Town would usually be reviewed, but since Benton has no 100-year floodplain, this was not done for the 2018 Plan. Structures that fall within the Wildland Urban Interface (WUI) were identified. Identifying those structures assists the team with creating mitigation strategies and prioritizing those strategies. It is also important to determine which Critical Facilities and Key Resources (CI/KR) are most vulnerable and to estimate the value of their potential loss. Benton has only two CI/KR that fall within the WUI: 1) the fire pond behind 583 Bradley Hill Road designated as a drafting site and 2) the Mt Moosilauke Hay Fields, designated as a landing zone. Neither of these locations have any structures, therefore, there is no potential monetary loss.

B. Calculating the Potential Loss

It's difficult to ascertain the amount of damage that could result from a natural or man-made hazard. The resulting damage would depend on the hazard's extent and severity, making each event unique. The team, therefore, used the assumption that hazards impacting structures would normally cause damages in the range of 0% to 5% of Benton's structures. Based on this assumption, the potential loss from any of the identified hazards would range from $0 to $1,258,433. This is based on the 2023 Town of Benton Town Valuation which lists the assessed value of all structures in Benton to be $54,308,895. Human loss of life was not included in the potential loss estimates but is always a possibility depending on the type and severity of the hazard.

1) Excessive Rain with Erosion $0 to $1,258,433

Excessive Rain with Erosion and potential culvert failure remains the most serious threat to the Town of Benton. High Winds was the number one threat listed in previous LHMPs. The combination of prolonged Excessive Rain with flooding resulted in significant damage to Town roads, culverts and the Davis Brook Bridge on Tunnel Stream Road. As mentioned in the Executive Summary, Benton experienced two events in 2017 involving Excessive Rain which resulted in over $80,000 in damages to Town infrastructure and $104,000 in road damage paid by the U.S. Forest Service. While flooding from other natural events such as hurricanes and Spring ice melt is possible, damage to river banks, roadways, and culverts will more likely result from Excessive Rain with ensuing Erosion. Benton has no 100-year floodplain and therefore doesn't participate in the National Flood Insurance Program.

2) Severe Winter Storm $0 to $1,258,433

Snowstorms typically occur from December through April. Benton will usually experience at least one or two heavy snowstorms each year. Snowstorms can be accompanied by extreme cold temperatures and power outages which impact all Town residents, but the elderly are especially at risk. The seasonal accumulation of snow can be as significant as a single snowstorm.

3) Extreme Cold Temperatures $0 to $1,258,433

The threat of Extreme Cold Temperatures is always present and one that shouldn't be taken lightly. The average low temperature for the winter months averages between 9 and 13 degrees, however, it's not uncommon to see the thermometer hit -30. Extended temperatures below 32 degrees can result in frozen and burst water pipes. Frostbite and hypothermia can become life threatening. Residents are inclined to supplement oil or propane home heating systems with wood heat in fireplaces and wood stoves.

4) Extended Power Outage $0 to $1,258,433

Extended power outages can occur regardless of the time of year, however, cold weather outages pose a more serious threat. Outages may result from high wind, iced power lines, downed trees, and power grid failure. The inability to power a home heating system, frozen water pipes and the inability to pump water from home wells can easily rise above the level of

inconvenience. Many Benton residences are equipped with a generator as in the Benton Town Hall which may be utilized during an emergency.

As the Team solicited comments and recommendations from Benton residents the following words from Michael Stiebitz are noteworthy. "Contact Consolidated Communications to improve the reliability of our internet/telephone connections, especially during power outages (e.g., installing longer lived battery backups in the equipment box across from Dan Elliott), and request that the NHEC develop an alternative power source for us (rather than the feed from Green Mt. Power across the river in Newbury, VT, which has been the source of most of our power outages in recent memory). This would go a long way to permit first responders to contact and be contacted by households impacted by such disasters."

5) High Winds $0 to $1,258,433

With an elevation of 1,272' above sea level it's not uncommon for Benton to experience high wind throughout the entire year. Isolated high wind and downdrafts are possible with danger being manifested in the form of downed trees, powerlines, flying debris, and residential structural damage. Downed trees or power lines may block roadways and impede emergency response vehicles.

6) Severe Summer Storm $0 to $1,258,433

Summer storms are not an uncommon occurrence in NH and can appear suddenly with very little warning. Summer storms are most commonly characterized by high winds, heavy downpour, lightning, thunder, and hail. The effects of such storms on people and property can be catastrophic and may include downed and uprooted trees, power outages, flooding, over-flowing rivers, road closures and obviously personal injury and death. Mountainous communities such as Benton present a perfect opportunity for extreme storms when warm air at ground level rises to meet cooler air aloft. Storms are most often preceded by gathering dark clouds and the rumble of thunder.

7) Lightning $0 to $1,258,433

Lightning can result from a summer storm or it can be a residual effect from a hurricane or tornado. New Hampshire ranks 16th in the nation for casualties from lightning strikes. Lightning is most common and most deadly in warmer weather, when people are outdoors and engaged in recreational activity. While lightning is not uncommon in Benton and damage could be significant it would most likely not be widespread. The 30-30 rule for lightning safety advises seeking shelter when the time between seeing lightning and hearing thunder is 30 seconds or less, and remaining sheltered for at least 30 minutes after the last thunderclap,

8) Hurricane $0 to $1,258,433

Wind and flood damage are major concerns for those in the path of a hurricane but fortunately hurricanes are somewhat rare for Benton because of our distance from the ocean. On most occasions a hurricane will have been downgraded to a tropical storm by the time it reaches NH. However, in 2011 Hurricane Irene caused damage that can be seen to this day. Trees were uprooted and immense boulders were lifted and relocated along Tunnel Stream and the trail head leading to Mt Moosilauke.

9) Pandemic/Epidemic $0 to $1,258,433

A pandemic and an epidemic are alike in that each involves the spread of an infectious disease in a given geographical area or population. An epidemic is more limited in scope. Measles and flu are examples of an epidemic while COVID, SARS, the Zika Virus, and H1N1 represent recent pandemics. Disease may be spread by contaminated drinking water, infected animals/insects, as well as airborne and contact transmission. The recent experience with COVID makes obvious the critical need for accurate measures to prevent and react to a pandemic outbreak.

10) Earthquake $0 to $1,258,433

The Team took note that New Hampshire is considered to be an area of moderate seismic hazard, meaning that earthquakes of magnitude 6.5 to 7.0 could occur but are unlikely. Typically, New Hampshire will experience one or two earthquakes of magnitude 2.0 to 3.5. A review of data presented by earthquaketrack.com indicates there were 17earthquakes in the previous year with the highest magnitude being 2.2.

11) Tornado $0 to $1,258,423

Heat and humidity can create storms which may potentially spawn tornadoes. In July 2017 four tornado warnings were issued for nearby Woodstock, however, none actually touched down. During the period August 1951 to July 2016 there were 91 tornado sightings in NH resulting in one fatality. For the period July 1963 to July 2012 there were 10 tornado sighting in Grafton County with most rated at the bottom end of the Fujita Scale. Despite the very limited possibility of a tornado impacting Benton the Team felt compelled to include this as a potential hazard.

12) Wildfire $0 to $1,258,433

The Team agreed that the potential for significant damage from wildfire in Benton was low. However, the threat is greatly increased during times of drought, low humidity, and high winds. The most frequent causes of wildfire are lightning, smoking, juvenile, arson, railroad, campfire, debris burning, equipment, powerlines, and fireworks. The greatest risk for wildfire is thought to be at Black Mountain, Blueberry Mountain, and Owls Head Cliff where more ignitable vegetation such as red oak, red pine, and wild blueberries are in greater abundance. Without question, wildfire is the threat that is most within the ability of Benton residents to control through public awareness and effective mitigation strategies.

13) HazMat Transport Spill 0 to $1,258,423

It may be surprising to note that Federal Express (FedEx) and United Parcel Service (UPS) often transport hazardous material doing so on a contract only basis. While strict regulations govern the transport of hazardous materials and accidents are rare, one must recognize the extant threat to humans and to the environment. Roadways in Benton are mostly narrow and winding and due to its rural setting speed limit enforcement is minimal. Tractor trailers with fuel, propane, and other hazardous material transit Benton to connect with Interstate Routes 93 and 91. While probability is low, the possibility of a HazMat incident caused by road conditions, speeding, poor weather, or the involvement of wildlife is recognized. Residents of Benton have also indicated concern for the possibility of HazMat Spill on Route 25 in Benton Flats.

Chapter VI: Existing Mitigation Strategies

After researching historic hazards, identifying CI/KR and determining potential hazards, the next step was to determine what is already being done to limit potential damages from these hazards. This section involved identifying existing mitigation strategies for all hazards and evaluating their effectiveness. Other items reviewed included studies, reports, technical information, and state and federal laws.

The following is an abbreviated list of current policies and regulations adopted by the Town of Benton that protect people and property from potential disasters:

Road Design Standards
US Forest Service
Burning Index
State Division of Forest and Lands/Fire Permits
Emergency Operation Plan (2017)
Subdivision Regulations (1976)
Zoning Ordinance (1976)
Equipment Contracts
Twin State Mutual Aid Agreements

Table 6-1 includes those actions identified that directly or indirectly relate to existing mitigation strategies identified in part through the listing developed in the local all hazard mitigation plan.









** Refer to Table 6.1, the Bibliography, and data in yellow-highlighted boxes in this plan for specific examples. Heavy reliance was placed on previously approved all-hazards mitigation plans and copies of wildfire plans obtained from other towns and counties.*

Table 6.1: Existing Mitigation Strategies

Existing Program or Activity	Description	Area of Town Covered	Enforcing Department	Effectiveness	Improvements, Changes Needed
Road Design Standards	Local standards and state based on Average Daily Traffic	Town-wide	State Government	Very Good	None
U.S. Forest Service	Federal burn regulations and Rx burn	Determined by USFS	U.S. Forest Service	Very Good	None
Burning Index	The US Forest Service has a burning index and it also evaluates the potential damages wildfires can create, the number of people that will be needed to fight it and the type of equipment that might be needed.	Town-wide	U.S. Forest Service	Good	None
State Division of Forest and Lands/Fire Permits	State Regulations for Open Burning	Town-wide	NH Forests and Lands	Very Good	None
Emergency Operations Plan 2017	This plan offers all members of the emergency management team a better understanding of procedures in case of a disaster	Town-wide	EMD	Very Good	None
Subdivision Regulations (1976)	Includes fire and emergency access, drainage, floodplain and bonding provisions	Town-wide	Planning Board	Poor	Update Needed
Zoning Ordinance	Regulations dealing with land use including rural, residential, agriculture and timber management.	Town-wide	Select Board	Fair	Update Needed
Equipment Contracts	Contracts with local heavy equipment owners for support of town maintenance operations	Town-wide	Select Board	Very Good	None Needed
Twin State Mutual Aid Agreements	Offers access to resources appropriate to the scope of the emergency - Woodsville (EMS); North Haverhill (Fire); Haverhill Corner (Fire)	Town-wide	Select Board	Very Good	None Needed
Road Design Standards	All new roads must be built to town specs so that they comply if ever turned over to the town	Town-wide	Select Board	Good	Review Needed

Chapter VII: Multi-Hazard Goals and Mitigation Strategies

A. Multi-Hazard Mitigation Goals

Before identifying new mitigation actions to be implemented, the team established and adopted the following multi-hazard goals. These goals were based on the State of New Hampshire Natural Hazards Mitigation Plan that was prepared and is maintained by HSEM.

- Promote public awareness of Hazard risk and Mitigation.
- To improve upon the protection of the general population, the citizens of the Town and visitors, from all natural and man-made hazards.
- To reduce the potential impact of natural and man-made disasters on the Town's critical support services.
- To reduce the potential impact of natural and man-made disasters on the Town's critical infrastructure and key resources.
- To improve the Town's emergency preparedness, disaster response and recovery capabilities.
- To reduce the potential impact of natural and man-made disasters on private property.
- To reduce the potential impact of natural and man-made disasters on the Town's economy. •
- To reduce the potential impact of natural and man-made disasters on the Town's natural environment.
- To reduce the Town's potential exposure to risk with respect to natural and man-made hazards in general.
- To reduce the potential impact of natural and man-made disasters on the Town's specific historic treasures and interests, as well as other tangible and intangible characteristics that add to the quality of life of the citizens and visitors to the Town.
- To identify, introduce and implement cost effective hazard mitigation measures so as to accomplish the Town's goals and objectives and to raise the awareness and acceptance of hazard mitigation opportunities in general.
- To develop a comprehensive understanding of all state and federal grant programs and aggressively pursue such funding that will serve to minimize and mitigate damage from natural and man-made hazard events.

B. Types of Mitigation Strategies Developed

The following areas developed in this multi-hazard plan could directly or indirectly pertain to the multi-hazard mitigation process; the multi-hazard plan was conducted with these in mind.

Prevention
Education and awareness
Natural Resource Protection
Infrastructure Protection
Emergency Preparedness
Property Protection
Emergency Response
Structure Protection
Communication
Town Planning

C. Multi-Hazard Mitigation Strategies Currently Underway in Benton

As stated in the previous chapter, research was conducted to identify what Benton was currently addressing, as well as what was being done in other communities and at the state and federal level. This allowed the Planning team to address specific mitigation strategies with the knowledge of what regulations the town currently has in place that would make implementation more or less difficult. It also helped identify those who may be responsible for implementation of mitigation strategies once they were identified and which existing mitigation strategies should be addressed with new strategies.

D. Potential Multi-Hazard Mitigation Strategies

Table 7.1 represents a list of mitigation strategies that was compiled from a number of sources including regional planning commissions in the western US, the Forest Service and FEMA. The list was used during a brainstorming session to discuss what issues there may be within Benton. The team involvement and the brainstorming sessions proved helpful on their own; the planning process always brings new ideas, better relationships and a more in-depth knowledge of a community and its surroundings.

Table 7.1: Potential Multi-Hazard Mitigation Strategies

The following is a list of Types of Mitigation Activities that have evolved from the planning process. The formulation of mitigation strategies was done with these basic types of activities in mind.

Prevention Issues	
Local building codes	Zoning ordinances
Subdivision ordinances	Density controls
Design review standards	Forest fuel fire reduction programs
Open space preservation initiatives	Performance standards
Slope development regulations	Special management regulations
Subdivision and development regulations	Emergency response plan
Capital improvement program	Fire Protection Codes NFPA 1
Public Education and Awareness	
Hazard Information Centers	Public education and outreach
“FireWise”	Defensible space brochure
Real estate disclosures	Town of Benton web site
Property Protection	
Acquisition or easements	Current Use or other conservation measures
Relocation of hazard prone areas	Transfer of development rights
Natural Resource Protection	

Best management practices within the forest	Forest and vegetation management
Forestry and landscape management	Wetlands development regulations
Protection Emergency Services	
Critical facilities protection	Emergency response services
Hazard threat recognition	Hazard warning systems, sirens, sirens
Water availability	Water sustainability
Coordination issues	Evacuation routes
Equipment necessary for response	

Chapter VIII: Prior Mitigation Plan and Accomplishments

This Multi-Hazard Mitigation Plan is the second done by the Town of Benton under the Disaster Mitigation Act of 2000. The last one was completed in 2018.

The accomplishments since the first Plan included the following:

- Town is now active in the NH Emergency Notification System
- Update Town of Benton Emergency Operations Plan
- Reroute Tunnel Brook away from the Tunnel Brook Road
- Repaired the Red Listed Davis Brook Bridge to comply with State of NH standards
- Added Emergency Preparedness Information to Town web site
- Purchased stand by generator for Town Hall Emergency Operations Center
- Obtained copy of Regional Pandemic Plan
- EMD completed online NIMS Training
- Town officials provided links to NIMS Training
- Now receiving minutes to monthly N. Country Health Consortium Regional Coordinating Committee meetings

Chapter IX: New Mitigation Strategies and STAPLEE

A. Feasibility and Prioritization

The table which follows this section reflects the newly identified potential multi-hazard and wildfire mitigation strategies as well as the results of the STAPLEE Evaluation as explained below. It should also be noted that although some areas are identified as Multi-Hazard, many of these would apply indirectly to wildfire response and capabilities. Many of these potential mitigation strategies overlap.

The team determined that any strategy designed to reduce personal injury or damage to property that could be done prior to an actual disaster would be listed as a potential mitigation strategy.
This decision was made even though not all projects listed in this table are fundable under FEMA pre-mitigation guidelines. The team determined that this plan was in large part a management document designed to assist the Select Board and other town officials in all aspects of managing and tracking potential emergency planning strategies. For instance, the team was aware that some of these strategies are more properly identified as readiness issues. The team did not want to lose any of the ideas discussed during these planning sessions and thought this method was the best way to achieve that objective.

The goal of each proposed mitigation strategy is reduction or prevention of damage from a multihazard event. To determine their effectiveness in accomplishing this goal, a set of criteria was applied to each proposed strategy that was developed by the Federal Emergency Management Administration. The STAPLEE method analyzes the Social, Technical, Administrative, Political, Legal, Economic and Environmental aspects of a project and is commonly used by public administration officials and planners for making planning decisions. The following questions were asked about the proposed mitigation strategies discussed in the table that follows:

Social: ..... Is the proposed strategy socially acceptable to the community? Is there an equity issue involved that would result in one segment of the community being treated unfairly?

Technical: ..... Will the proposed strategy work? Will it create more problems than it solves?

Administrative: .....Can the community implement the strategy? Is there someone to coordinate and lead the effort?

Political: ..... Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?

Legal: .....Is the community authorized to implement the proposed strategy? Is there a clear legal basis or precedent for this activity?

Economic: ..... What are the costs and benefits of this strategy? Does the cost seem reasonable? for the size of the problem and the likely benefits?

Environmental: .....How will the strategy impact the environment? Will it need environmental regulatory approvals?

Each proposed mitigation strategy was then evaluated and assigned a score based on the above criteria. Each of the STAPLEE categories were discussed and were awarded the following scores: Good = 3; Average = 2; Poor = 1. An evaluation chart with total scores for each new strategy is shown in the table which follows.

The ranking of strategies with the scores displayed in the following pages was merely a guideline for further prioritizing. The team then prioritized the strategies and prepared the action plan using additional criteria:

- Does the action reduce damage?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures?
- Can the action be implemented quickly?

The prioritization exercise helped the committee seriously evaluate the new hazard mitigation strategies that they had brainstormed throughout the multi-hazard mitigation planning process. While all actions would help improve the town's multi-hazard and wildfire responsiveness capability, funding availability will be a driving factor in determining what and when new mitigation strategies are implemented.

B. The Team's Understanding of Multi-Hazard Mitigation Strategies

The team determined that any strategy designed to reduce personal injury or damage to property that could be done prior to an actual disaster would be listed as a potential mitigation strategy. This decision was made even though not all projects listed in the tables which follow are fundable under FEMA pre-mitigation guidelines. The team determined that this Plan was in large part a management document designed to assist the Select Board and other town officials in all aspects of managing and tracking potential emergency planning strategies. For instance, the team was aware that some of these strategies are more properly identified as readiness issues. The team did not want to lose any of the ideas discussed during these planning sessions and thought this method was the best way to achieve that objective.

Table 9.1: Potential Mitigation Strategies & STAPLEE

New Mitigation Project	Type of Hazard	Affected Location	Type of Activity	S	T	A	P	L	E	E	Total
1. Amend Master Plan to help achieve future growth and development goals	Multi-Hazard	Town-wide	Planning	3	3	3	3	3	3	3	21
2. Replace, increase size of culvert at Davis Brook Bridge	Flooding, Erosion	Tunnel Stream Road	Permitting and Construction	3	3	3	3	3	3	3	21
3. Review, update Subdivision Regulations (1976)	Multi-Hazard	Town-wide	Planning	1 Resistance from land owners	3	3	1 Resistance from land owners	3	3	3	17
4. Review, update Zoning Ordinances	Multi-Hazard	Planning	Planning	1 Resistance from land owners	3	3	1 Resistance from land owners	3	3	3	17
5. Review, update Road Design Standards	Multi-Hazard	Town-wide	Planning	3	3	3	3	3	2	3	20
6. Establish dry hydrant at Coventry Garage, obtain easement if necessary	Wild-fire	Town-wide	Emergency Preparation	3	3	3	3	3	2	3	20
7. Establish dry hydrant at Paul Establish dry hydrant at Paul Scott property, obtain easement if necessary	Wild-fire	Town-wide	Emergency Preparation	3	3	3	3	3	2	3	20
8. Maintain supply of Fire-wise brochures	Wild-fire	Town-wide	Education	3	3	3	3	3	2	3	20
9. Continue culvert, ditch assessment and replacement	Flood, erosion	Town-wide	Planning	3	3	3	3	3	3	3	21
10. Educate, advertise value of Code Red System	Multi-hazard	Town-wide	Emergency Preparation	3	3	3	3	3	3	3	21
11. Expand use of Town website for emergency preparedness information dissemination	Multi-hazard	Town-wide	Emergency Preparation	3	3	3	3	3	3	3	21
12. Establish list of online recommended NIMS training for Town Officials	Multi-hazard	Town-wide	Emergency Preparation	3	3	3	3	3	3	3	21

New Mitigation Project	Type of Hazard	Affected Location	Type of Activity	S	T	A	P	L	E	E	Total
13. Research possibility of flammable material turn in day	Wildfire	Town-wide	Prevention	3	3	3	3	3	3	3	21
14. Establish list of special needs Town residents	Multi-hazard	Town-wide	Outreach	3	3	3	3	3	3	3	21
15. Enable Resident self Registration for Emergency Notification System	Multi-Hazard	Town-wide	Outreach	3	3	3	3	3	3	3	21

Chapter X: Implementation Schedule for Prioritized Strategies

After reviewing the finalized STAPLEE numerical ratings, the team prepared to develop the Implementation Plan. To do this, team members created three categories into which they would place all the potential mitigation strategies. Category 1 was to include those items under the direct control of town officials, within the financial capability of the town using only town funding, those already being done or planned, and those that could generally be completed within one year. Category 2 was to include those items that the town did not have sole authority to act upon, those for which funding might be beyond the town's capability, and those that would generally take between 13—24 months. Category 3 was to include those items that would take a major funding effort, those that the town had little control over the final decision, and those that would take in excess of 25 months to complete. Each potential mitigation strategy was placed in one of the three categories and then those strategies were prioritized within each category.

Once this was completed, the team developed an implementation plan that outlined who is responsible for implementing each strategy, as well as when and how the actions will be implemented. The following questions were asked in order to develop an implementation schedule for the identified priority mitigation strategies.

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

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

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

In addition to the prioritized mitigation projects, Table 10.1 includes the responsible party (WHO), how the project will be supported (HOW), and what the timeframe is for implementation of the project (WHEN).

Some projects, including most training and education of residents on emergency and evacuation procedures, could be tied into the emergency operation plan and implemented through that planning effort.

Table 10.1: Implementation Plan

01-01	Expand use of Town website for emergency preparedness information dissemination	EMD	No cost	On going	Multi-Hazard	Town wide	Emergency Preparedness
01-02	Educate, advertise value of Code Red System	EMD	No cost	On going	Multi-Hazard	Town wide	Emergency Preparedness
01-03	Establish list of mandatory NIMS training for Town Officials	EMD	No cost	On going	Multi-Hazard	Town wide	Emergency Preparedness
01-04	Establish list of special needs Town residents	Select Board	No cost	On going	Multi-Hazard	Town wide	Emergency Preparedness
01-05	Maintain supply of Fire Wise brochures	EMD	No cost	On going	Wildfire	Town wide	Education
02-01	Continue culvert, ditch adequacy assessment	Select Board	No cost	On going	Flood, erosion	Town wide	Planning
02-02	Flammable material turn-in day	EMD, Select Board	Grant	Annual	Wildfire	Town wide	Emergency Preparation
03-01	Replace, increase size of culvert at Davis Brook Bridge	Select Board	Grant	On going	Flood, erosion	Town wide	Emergency Preparation
03-02	Establish dry hydrant at Coventry Garage	Select Board	Grant	On going	Wildfire	Town wide	Emergency Preparation
03-03	Establish dry hydrant at Paul Scott property	Select Board	Grant	On going	Wildfire	Town wide	Emergency Preparation
03-04	Amend Master Plan to help achieve future growth and development goals	Select Board	Local	On going	Multi hazard	Town wide	Planning
03-05	Review, update Sub-division Regulations (1976)	Select Board	Local	On going	Multi hazard	Town wide	Planning
03-06	Review, update Zoning Ordinances	Select Board	Local	On going	Multi hazard	Town wide	Planning
03-07	Implement NH Emergency Notification System	EMD	No Cost	On Going	Multi-Hazard	Town wide	Emergency Preparation
03-08	Review, update Road Design Standards	Select Board	Local	On going	Multi hazard	Town wide	Planning

Chapter XI: Monitoring, Evaluation and Updating the Plan

A. Introduction

A good mitigation plan must allow for updates where and when necessary, particularly since communities may suffer budget cuts or experience personnel turnover during both the planning and implementation stages. A good plan will incorporate periodic monitoring and evaluation mechanisms to allow for review of successes and failures or even just simple updates.

B. Multi-Hazard Plan Monitoring, Evaluation and Updates

To track programs and update the mitigation strategies identified through this process, the town will review the multi-hazard mitigation plan annually or after a hazard event. Additionally, the Plan will undergo a formal review and update at least every five years and obtain NH Emergency Management approval for this update or any other major changes done in the Plan at any time. The Emergency Management Director is responsible for initiating the review and will consult with members of the multi-hazard mitigation planning team identified in this plan. The public will be encouraged to participate in any updates. Public announcements will be made through advertisements in local papers, postings on the town website, and posters disseminated in town. A formal public hearing will be held before reviews and updates are official.

Changes will be made to the Plan to accommodate projects that have failed or are not considered feasible after a review for their consistency with STAPLEE, the timeframe, the community's priorities or funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, will be reviewed as well during the monitoring and update of the plan to determine feasibility of future implementation. In keeping with the process of adopting this multi-hazard mitigation plan, a public hearing to receive public comment on plan maintenance and updating will be held during the annual review period and before the final product is adopted by the Select Board. Chapter XI contains a representation of a draft resolution for Benton to use once a conditional approval is received from FEMA.

C. Integration with Other Plans

This multi-hazard plan will only enhance mitigation if balanced with all other town plans. This plan will be integrated with all other town planning documents based on the town's regularly scheduled revision of those documents. All plans will be modified as necessary to incorporate multi-hazard and/or wildfire issues as identified in this or subsequent multi-hazard plans. The Select Board ensures this process will be followed.

Chapter XII: Signed Community Documents and Approval Letters

B. Conditional Approval Letter from FEMA

C. Signed Certificate of Adoption

D. CWPP Approval Letter from DRED

Appendix A: Bibliography

Appendix B: Definition of Hazards

Appendix C: Summary of Possible Multi-Hazard Mitigation Strategies

Appendix D: List of Contacts

Appendix E: Technical and Financial Assistance for Multi-Hazard Mitigation

Appendix F: Wildfire Planning

Wildfire Terminology

Wildfire Funding

Appendix G: Acronyms

Map Documents

Appendix A: Bibliography

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North Country Health Consortium; http://www.nchcnh.org

Appendix B: Alphabetical List of Hazard Definitions

Note: Hazards identified in this Plan are indicated with an asterisk *

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

In the State of New Hampshire there are both structural dams and earthen dams.

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

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

***Epidemic/Pandemic**
The CDC's official definition of an epidemic is: "The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time."[12]

***Erosion, Landslide, Mudslide**
Erosion and Mudslides
Erosion is the process of wind and water wearing away soil. Typically, in New Hampshire, the land along rivers is relatively heavily developed. Mudslides may form when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Erosion and mudslides become significant threats to development during floods. Floods speed up the process of erosion and increase the risk of mudslides.
Landslide
A landslide is the downward or outward movement of slope-forming materials reacting under the force of gravity and includes: mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. Landslides have damaged or destroyed roads, railroads, pipelines, electrical and telephone lines, mines, oil wells, buildings, canals, sewers, bridges, dams, seaports, airports, forests, parks and farms.

Expansive Soils
According to the USGS, expansive soils are soils that shrink or swell as the moisture content decreases or increases. Structures built on these soils may experience shifting, cracking, and breaking damage as soils shrink and subside or expand.

Soils freezing during winter and thawing in spring may result in some structural damage in New Hampshire, primarily in the form of foundation cracks and potholes on the state's roads.

***Extended Power Failure**
Extended power failure as intended in this Plan is power failure that lasts for periods of one week or more. Power failure can be caused by many things: downed power lines (due to storm, wind, accident, etc.); failure of public utilities to operate or failure of the national grid. Extended power failure can present not only lighting difficulties but also heating, water supply and emergency services. Extended power failure is particularly hazardous in remote areas and for elderly populations.

***Extreme Temperatures/Extreme Heat**
A Heat Wave is a prolonged period of excessive heat, often combined with excessive humidity." Heat kills by pushing the human body beyond its limits. In extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature.

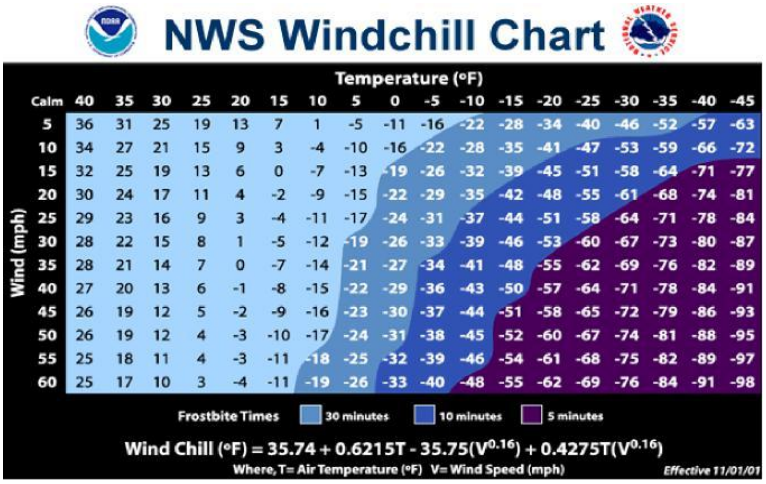
Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat. Conditions that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Consequently, people living in urban areas may be at greater risk from the effects of a prolonged heat wave than those living in rural areas. Also, asphalt and concrete store heat longer and gradually release heat at night, which can produce higher nighttime temperatures known as the "urban heat island effect."[13]

The chart below explains possible health conditions that may result from high heat.[14]

Category	Heat Index	Possible heat disorder for at risk groups
Extreme Danger	130°F/54°C or greater	Heat stroke or sunstroke likely
Danger	105°-129°F (41-54°C)	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke likely with prolonged exposure and/or physical activity
Extreme Caution	90–105°F (32-41°C)	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity
Caution	80-90°F (27-32°C)	Fatigue possible with prolonged Exposure and/or physical activity

Extreme Cold: What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather,
near freezing temperatures are considered ―extreme cold." Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your body more rapidly; these weather related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies in susceptible people, without shelter or who are stranded, or who live in a home that is poorly insulated or without heat.[15]

The National Weather Service Chart below shows Windchill as a result of wind and temperature.[16]



13 NOAA, Index/Heat Disorders; http://www.srh.noaa.gov/ssd/html/heatwv.htm
14 FEMA; http://www.fema.gov/hazard/heat/index.shtm
15 CDC; http://emergency.cdc.gov/disasters/winter/pdf/cold_guide.pdf
16 National Weather Service; http://lwf.ncdc.noaa.gov/oa/climate/conversion/windchill.html

Flood

Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges.

Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of the year. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to go.

100-year Floodplain Events

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

Rapid Snow Pack Melt

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

River Ice Jams

Rising waters in early spring often breaks ice into chunks that float downstream and pile up, causing flooding behind them. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice in riverbeds and against structures presents a significant flooding threat to bridges, roads and the surrounding lands.

Severe Storms

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

Hailstorm

Hailstones are balls of ice that grow as they're held up by winds, known as updrafts that blow upwards in thunderstorms. The updrafts carry droplets of super-cooled water – water at a below-freezing temperature that is not yet ice. The super cooled water droplets hit the balls of ice and freeze instantly, making the hailstones grow. The faster the updraft, the bigger the stones can grow. Most hailstones are smaller in diameter than a dime, but stones weighing more than a pound have been recorded. Details of how hailstones grow are complicated, but the results are irregular balls of ice that can be as large as baseballs, sometimes even bigger. While crops are the major victims, hail is also a hazard to vehicles and windows.

***Hazardous Material - Fixed Location and/or Transport (transportation accident)**

Chemicals are found everywhere; they purify drinking water, increase crop production, and simplify household chores. But chemicals also can be hazardous to humans or the environment if used or released improperly. Hazards can occur during production, storage, transportation, use, or disposal. A community is at risk if a chemical is used unsafely or released in harmful amounts into the environment where you live, work, or play.

Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

Chemical manufacturers are one source of hazardous materials, but there are many others, including service stations, hospitals, and hazardous materials waste sites.

Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores.

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in plants.[17]

***High Wind (windstorm)**

As defined by NOAA, wind is defined as **"**The horizontal motion of the air past a given point. Winds begin with differences in air pressures. Those pressures which are higher at one place than another place set up a force pushing from the high pressure toward the low pressure; the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air is accelerated. Meteorologists refer to the force that starts the wind flowing as the "pressure gradient force." High and low pressures are relative. There's no set number that divides high and low pressure. Wind is used to describe the prevailing direction from which the wind is blowing with the speed given usually in miles per hour or knots.‖ In addition, NOAA's issuance of a Wind Advisory takes place when sustained winds reach 25 to 39 mph and/or gusts to 57 mph.[18]

Below is the Beaufort Wind Scale, showing expected damage based on wind (knots), developed in 1805 by Sir Francis Beaufort of England, and posted on NOAA's Storm Prediction Center website.[19]

17 FEMA; *http://www.fema.gov/hazard/hazmat/index.shtm*

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4' becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8'. taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13' whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-20', white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (13-20') waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong Gale	High waves (20 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (20-30') with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (30-45 ft.) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray,visibility greatly reduced	

[18] NOAA; *http://www.nws.noaa.gov/glossary/index.php?letter=w*
[19] NOAA, Storm Prediction Center, *http://www.spc.noaa.gov/faq/tornado/beaufort.html*

***Hurricane**
A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. The eye of the storm is usually 20-30 miles wide and the storm may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage.
Flooding is often caused from the coastal storm surge of the ocean and torrential rains, both of which may accompany a hurricane; these floods can result in loss of lives and property.

Land Subsidence
As stated by USGS, ―land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials. Subsidence is a global problem and, in the United States, more than 17,000 square miles in 45 States, an area roughly the size of New Hampshire and Vermont combined, have been directly affected by subsidence."[20]

The principal causes are aquifer-system compaction, drainage of organic soils, underground mining, hydro compaction, natural compaction, sinkholes, and thawing permafrost. More than 80 percent of the identified subsidence in the Nation is a consequence of our exploitation of underground water, and the increasing development of land and water resources threatens to exacerbate existing land-subsidence problems and initiate new ones."[21]

Levee Failure
A levee is a natural or artificial slope or wall, usually earthen and often parallel to the course of a river. The main purpose of an artificial levee is to prevent flooding of the adjoining countryside; however, they also confine the flow of the river, resulting in higher and faster water flow.

Levees can fail in a number of ways; the most frequent (and dangerous) form of levee failure is a breach. A breach is when part of the levee actually breaks away, leaving a large opening for water to flood the land protected by the levee. A breach can be a sudden or gradual failure that is caused either by surface erosion or by a subsurface failure of the levee.

Sometimes levees are said to fail when water overtops the levee, usually when flood waters exceed the crest of the levee. Overtopping, as this is called, can lead to significant landside erosion of the levee or be the cause of a complete breach.

Severe Thunderstorms & Lightning
All thunderstorms contain lightning. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction of the air causes a shock wave that we hear as thunder, which can damage building walls and break glass.

Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the sun.

Although thunder that is heard during a storm cannot hurt you, the lightning that is associated with the thunder can not only strike people but also strike homes, out-buildings, grass and trees sparking disaster. Wildfires and structure loss are at a high risk during severe lightning events.

Smaller than areas affected by hurricanes and winter storms, a typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Nearly 1,800 thunderstorms are happening at any moment around the world.

Although thunderstorms and their associated lightning can occur any time of year, they are most likely to occur in the summer months and during the later afternoon or early evening hours and may even occur during a winter snowstorm.

20 USGS, http://water.usgs.gov/ogw/subsidence.html
21 Ibid

Radon



Radon is a cancer-causing radioactive gas. You cannot see, smell or taste radon, but it may be a problem in your home. The Surgeon General has warned that radon is the second leading cause of lung cancer in the United States today. If you smoke and your home has high radon levels, you're at high risk for developing lung cancer. Some scientific studies of radon exposure indicate that children may be more sensitive to radon. This may be due to their higher respiration rate and their rapidly dividing cells, which may be more vulnerable to radiation damage. The diagram to the right shows how radon enters a house.[22]

Since many of NH residents rely on well water and/or live in older homes that are not sealed for radon protection, radon levels are a concern in many communities. Home testing kits may be purchased for a reasonable fee at local hardware and home improvement stores.

***Severe Winter Storm**

Ice & Snow Events

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

Heavy Snow Storms

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

Ice Storms

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

Snow Avalanche

As defined by The American Heritage® Science Dictionary, an avalanche is the sudden fall or slide of a large mass of material down the side of a mountain. Avalanches may contain snow, ice, rock, soil, or a mixture of these materials. Avalanches can be triggered by changes in temperature, by sound vibrations, or by vibrations in the earth itself.[23]

Avalanche occurrence in the State of New Hampshire is primarily limited to the slopes of the Presidential Range where there is little or no tree cover.

Terrorism

Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom.

Terrorists often use threats to: *create fear among the public; try to convince citizens that their government is powerless to prevent terrorism; get immediate publicity for their causes.*

Acts of terrorism include: *threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber-attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons.*

High-risk targets for acts of terrorism include: *military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers.* Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail.

Within the immediate area of a terrorist event, you would need to rely on police, fire, and other officials for instructions. However, you can prepare in much the same way you would prepare for other crisis events.[24]

22 How radon enters a house; www.homeprocanada.ca/radon/HP_radon.htm

23 Avalanche; derived from The American Heritage® Science Dictionary Copyright © 2005 by Houghton Mifflin Company; posted online by The Free Dictionary, definition 1; http://www.thefreedictionary.com/avalanche

24 FEMA; http://www.fema.gov/hazard/terrorism/info.shtm

***Tornado and Downburst**

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

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

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

A downburst is a strong downdraft which causes damaging winds on or near the ground according to NOAA. Not to be confused with downburst, the term "microburst" describes the size of the downburst. A comparison of a microburst and the larger macroburst shows that both can cause extreme winds.

A microburst is a downburst with winds extending 2 $^{1}/_{2}$ miles or less, lasting 5 to 15 minutes and causing damaging winds as high as 168 MPH.

A macroburst is a downburst with winds extending more than 2 $^{1}/_{2}$ miles lasting 5 to 30 minutes. Damaging winds, causing widespread, tornado-like damage, could be as high as 134 MPH.

***Wildfire**

Wildfire is defined as an uncontrolled and rapidly spreading fire.

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

Appendix C: Summary of Possible Multi-Hazard Mitigation Strategies

I. RIVERINE MITIGATION

A. Prevention

Prevention measures are intended to keep the problem from occurring in the first place, and/or keep it from getting worse. Future development should not increase flood damage. Building, zoning, planning, and/or code enforcement offices usually administer preventative measures.

1. Planning and Zoning - Land use plans are put in place to guide future development, recommending where - and where not - development should occur and where it should not. Sensitive and vulnerable lands can be designated for uses that would not be incompatible with occasional flood events - such as parks or wildlife refugees. A Capital Improvements Program (CIP)can recommend the setting aside of funds for public acquisition of these designated lands. The zoning ordinance can regulate development in these sensitive areas by limiting or preventing some or all development - for example, by designating floodplain overlay, conservation, or agricultural districts.

2. Open Space Preservation - Preserving open space is the best way to prevent flooding and flood damage. Open space preservation should not, however, be limited to the floodplain, since other areas within the watershed may contribute to controlling the runoff that exacerbates flooding. Land Use and Capital Improvement Plans should identify areas to be preserved by acquisition and other means, such as purchasing easements. Aside from outright purchase, open space can also be protected through maintenance agreements with the landowners, or by requiring developers to dedicate land for flood flow, drainage and storage.

3. Floodplain Development Regulations - Floodplain development regulations typically do not prohibit development in the special flood hazard area, but they do impose construction standards on what is built there. The intent is to protect roads and structures from flood damage and to prevent the development from aggravating the flood potential. Floodplain development regulations are generally incorporated into subdivision regulations, building codes, and floodplain ordinances.

Subdivision Regulations: These regulations govern how land will be divided into separate lots or sites. They should require that any flood hazard areas be shown on the plat, and that every lot has a buildable area that is above the base flood elevation.
Building Codes: Standards can be incorporated into building codes that address flood proofing for all new and improved or repaired buildings.
Floodplain Ordinances: Communities that participate in the National Flood Insurance Program are required to adopt the minimum floodplain management regulations, as developed by FEMA. The regulations set minimum standards for subdivision regulations and building codes. Communities may adopt more stringent standards than those set forth by FEMA.

4. Stormwater Management

Development outside of a floodplain can contribute significantly to flooding by covering impervious surfaces, which increases storm water runoff. Storm water management is usually addressed in subdivision regulations. Developers are typically required to build retention or detention basins to minimize any increase in runoff caused by new or expanded impervious surfaces, or new drainage systems. Generally, there is a prohibition against storm water leaving the site at a rate higher than it did before the development. One technique is to use wet basins as part of the landscaping plan of a development. It might even be possible to site these basins based on a watershed analysis. Since detention only controls the runoff rates and not volumes, other measures must be employed for storm water infiltration - for example, swales, infiltration trenches, vegetative filter strips, and permeable paving blocks.

5. Drainage System Maintenance

Ongoing maintenance of channel and detention basins is necessary if these facilities are to function effectively and efficiently over time. A maintenance program should include regulations that prevent dumping in or altering water courses or storage basins; regrading and filling should also be regulated. Any maintenance program should include a public education component, so that the public becomes aware of the reasons for the regulations. Many people do not realize the consequences of filling in a ditch or wetland, or regrading.

B. Property Protection

Property protection measures are used to modify buildings subject to flood damage, rather than to keep floodwaters away. These may be less expensive to implement, as they are often carried out on a cost-sharing basis. In addition, many of these measures do not affect a building's appearance or use, which makes them particularly suitable for
historical sites and landmarks.

1. Relocation - Moving structures out of the floodplain is the surest and safest way to protect against damage. Relocation is expensive, however, so this approach will probably not be used except in extreme circumstances. Communities that have areas subject to severe storm surges, ice jams, etc. might want to consider establishing a relocation program, incorporating available assistance.

2. Acquisition - Acquisition by a governmental entity of land in a floodplain serves two main purposes: 1) it ensures that the problem of structures in the floodplain will be addressed; and 2) it has the potential to convert problem areas into community assets, with accompanying environmental benefits. Acquisition is more cost effective than relocation in those areas that are subject to storm surges, ice jams, or flash flooding. Acquisition, followed by demolition, is the most appropriate strategy for those buildings that are simply too expensive to move, as well as for dilapidated structures that are not worth saving or protecting. Acquisition and subsequent relocation can be expensive, however, there are government grants and loans that can be applied toward such efforts.

3. Building Elevation - Elevating a building above the base flood elevation is the best on-site protection strategy. The building could be raised to allow water to run underneath it, or fill could be brought in to elevate the site on which the building sits. This approach is cheaper than relocation, and tends to be less disruptive to a neighborhood. Elevation is required by law for new and substantially improved residences in a floodplain, and is commonly practiced in flood hazard areas nationwide.

4. Floodproofing - If a building cannot be relocated or elevated, it may be floodproofed. This approach works well in areas of low flood threat. Floodproofing can be accomplished through barriers to flooding, or by treatment to the structure itself.

Barriers: Levees, floodwalls and berms can keep floodwaters from reaching a building. These are useful, however, only in areas subject to shallow flooding.

Dry Floodproofing: This method seals a building against the water by coating the walls with waterproofing compounds or plastic sheeting. Openings, such as doors, windows, etc. are closed either permanently with removable shields or with sandbags.

Wet Floodproofing: This technique is usually considered a last resort measure, since water is intentionally allowed into the building in order to minimize pressure on the structure. Approaches range from moving valuable items to higher floors to rebuilding the floodable area. An advantage over other approaches is that simply by moving household goods out of the range of floodwaters, thousands of dollars can be saved in damages.

5. Sewer Backup Protection - Storm water overloads can cause backup into basements through sanitary sewer lines. Houses that have any kind of connection to a sanitary sewer system - whether it is downspouts, footing drain tile, and/or sump pumps, can be flooded during a heavy rain event. To prevent this, there should be no such connections to the system, and all rain and ground water should be directed onto the ground, away from the building. Other protections include:

- Floor drain plugs and floor drain standpipe, which keep water from flowing out of the lowest opening in the house.
- Overhead sewer - keeps water in the sewer line during a backup.
- Backup valve - allows sewage to flow out while preventing backups from flowing into the house.

6. Insurance - Above and beyond standard homeowner insurance, there is other coverage a homeowner can purchase to protect against flood hazard. Two of the most common are National Flood Insurance and basement backup insurance.

National Flood Insurance: When a community participates in the National Flood Insurance Program, any local insurance agent is able to sell separate flood insurance policies under rules and rates set by FEMA. Rates do not change after claims are paid because they are set on a national basis.

Basement Backup Insurance: National Flood Insurance offers an additional deductible for seepage and sewer backup, provided there is a general condition of flooding in the area that was the proximate cause of the basement getting wet. Most exclude damage from surface flooding that would be covered by the NFIP.

C. Natural Resource Protection

Preserving or restoring natural areas or the natural functions of floodplain and watershed areas provide the benefits of eliminating or minimizing losses from floods, as well as improving water quality and wildlife habitats. Parks, recreation, or conservation agencies usually implement such activities. Protection can also be provided through various zoning measures that are specifically designed to protect natural resources.

1. Wetlands Protection - Wetlands are capable of storing large amounts of floodwaters, slowing and reducing downstream flows, and filtering the water. Any development that is proposed in a wetland is regulated by either federal and/or state agencies. Depending on the location, the project might fall under the jurisdiction of the U.S. Army Corps of Engineers, which in turn, calls upon several other agencies to review the proposal. In New Hampshire, the N.H. Wetlands Board must approve any project that impacts a wetland. Many communities in New Hampshire also have local wetland ordinances.

Generally, the goal is to protect wetlands by preventing development that would adversely affect them. Mitigation techniques are often employed, which might consist of creating a wetland on another site to replace what would be lost through the development. This is not an ideal practice since it takes many years for a new wetland to achieve the same level of quality as an existing one, if it can at all.

2. Erosion and Sedimentation Control - Controlling erosion and sediment runoff during construction and on farmland is important, since eroding soil will typically end up in downstream waterways. Because sediment tends to settle where the water flow is slower, it will gradually fill in channels and lakes, reducing their ability to carry or store floodwaters.

3. Best Management Practices - Best Management Practices (BMPs) are measures that reduce non-point source pollutants that enter waterways. Non-point source pollutants are carried by storm water to waterways, and include such things as lawn fertilizers, pesticides, farm chemicals, and oils from street surfaces and industrial sites. BMPs can be incorporated into many aspects of new developments and ongoing land use practices. In New Hampshire, the Department of Environmental Services has developed Best Management Practices for a range of activities, from farming to earth excavations.

D. Emergency Services

Emergency services protect people during and after a flood. Many communities in New Hampshire have emergency management programs in place, administered by an emergency management director (very often the local police or fire chief).

1. Flood Warning - On large rivers, the National Weather Service handles early recognition. Communities on smaller rivers must develop their own warning systems. Warnings may be disseminated in a variety of ways, such as sirens, radio, television, mobile public address systems, or door-to-door contact. It seems that multiple or redundant systems are the most effective, giving people more than one opportunity to bewarned.

2. Flood Response - Flood response refers to actions that are designed to prevent or reduce damage or injury, once a flood threat is recognized. Such actions and the appropriate parties include:

- Activating the emergency operations center (emergency director)
- Sandbagging designated areas (public works department)
- Closing streets and bridges (police department)
- Shutting off power to threatened areas (public service)

- Releasing children from school (school district)
- Ordering an evacuation (selectmen/city council/emergency director)
- Opening evacuation shelters (churches, schools, Red Cross, municipal facilities)

These actions should be part of a flood response plan, which should be developed in coordination with the persons and agencies that share the responsibilities. Drills and exercises should be conducted so that the key participants know what they are supposed to do.

3. Critical Facilities Protection - Protecting critical facilities is vital, since expending efforts on these facilities can draw workers and resources away from protecting other parts of town. Critical facilities fall into two categories:

Buildings or locations vital to the flood response effort:
- Emergency operations centers
- Police and fire stations
- Hospitals
- Highway garages
- Selected roads and bridges
- Evacuation routes

Buildings or locations that, if flooded, would create secondary disasters:
Hazardous materials facilities
Water/wastewater treatment plants
Schools
Nursing homes

All such facilities should have their own flood response plan that is coordinated with the community's plan. Nursing homes, other public health facilities, and schools will typically be required by the state to have emergency response plans in place.

4. Health and Safety Maintenance - The flood response plan should identify appropriate measures to prevent danger to health and safety. Such measures include:

- Patrolling evacuated areas to prevent looting
- Vaccinating residents for tetanus
- Clearing streets
- Cleaning up debris

The Plan should also identify which agencies will be responsible for carrying out the identified measures. A public information program can be helpful to educate residents on the benefits of taking health and safety precautions.

E. Structural Projects

Structural projects are used to prevent floodwaters from reaching properties. These are all man-made structures, and can be grouped into the six types discussed below. The shortcomings of structural approaches are:

- They can be very expensive
- They disturb the land, disrupt natural water flows, and destroy natural habitats.
- They are built to an anticipated flood event, and may be exceeded by a greater-than expected flood
- They can create a false sense of security.

1. Reservoirs - Reservoirs control flooding by holding water behind dams or in storage basins. After a flood peaks, water is released or pumped out slowly at a rate the river downstream can handle.

Reservoirs are suitable for protecting existing development, and they may be the only flood control measure that can protect development close to a watercourse. They are most efficient in deeper valleys or on smaller rivers where there is less water to store. Reservoirs might consist of man-made holes dug to hold the approximate amount of floodwaters, or even abandoned quarries. As with other structural projects, reservoirs:

- are expensive
- occupy a lot of land
- require periodic maintenance
- may fail to prevent damage from floods that exceed their design levels
- may eliminate the natural and beneficial functions of the floodplain.

Reservoirs should only be used after a thorough watershed analysis that identifies the most appropriate location, and ensures that they would not cause flooding somewhere else. Because they are so expensive and usually involve more than one community, they are typically implemented with the help of state or federal agencies, such as the Army Corps of Engineers.

2. Levees/Floodwalls - Probably the best known structural flood control measure is either a levee (a barrier of earth) or a floodwall made of steel or concrete erected between the watercourse and the land. If space is a consideration, floodwalls are typically used, since levees need more space. Levees and floodwalls should be set back out of the floodway, so that they will not divert floodwater onto other properties.

3. Diversions - A diversion is simply a new channel that sends floodwater to a different location, thereby reducing flooding along an existing

watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During flood flows, the stream spills over the diversion channel or tunnel, which carries the excess water to the receiving lake or river. Diversions are limited by topography; they won't work everywhere. Unless the receiving water body is relatively close to the flood prone stream and the land in between is low and vacant, the cost of creating a diversion can be prohibitive. Where topography and land use are not favorable, a more expensive tunnel is needed. In either case, care must be taken to ensure that the diversion does not create a flooding problem somewhere else.

4. Channel Modifications - Channel modifications include making a channel wider, deeper, smoother, or straighter. These techniques will result in more water being carried away, but, as with other techniques mentioned, it is important to ensure that the modifications do not create or increase a flooding problem downstream.

Dredging: Dredging is often cost-prohibitive because the dredged material must be disposed of in another location; the stream will usually fill back in with sediment. Dredging is usually undertaken only on larger rivers, and then only to maintain a navigation channel.
Drainage Modifications: These include man-made ditches and storm sewers that help drain areas where the surface drainage system is inadequate or where underground drainage ways may be safer or more attractive. These approaches are usually designed to carry the runoff from smaller, more frequent storms.

5. Storm Sewers - Mitigation techniques for storm sewers include installing new sewers, enlarging small pipes, street improvements, and preventing back flow. Because drainage ditches and storm sewers convey water faster to other locations, improvements are only recommended for small local problems where the receiving body of water can absorb the increased flows without increased flooding. In many developments, streets are used as part of the drainage system, to carry or hold water from larger, less frequent storms. The streets collect runoff and convey it to a receiving sewer, ditch, or stream. Allowing water to stand in the streets and then draining it slowly can be a more effective and less expensive measure than enlarging sewers and ditches.

F. Public Information

Public information activities are intended to advise property owners, potential property owners, and visitors about the parti cular hazards associated with a property, ways to protect people and property from these hazards, and the natural and beneficial functions of a floodplain.

1. Map Information - Flood maps developed by FEMA outline the boundaries of the flood hazard areas. These maps can be used by anyone interested in a particular property to determine if it is flood-prone. These maps are available from FEMA, the NH Homeland Security and Emergency Management (HSEM), the NH Office of Energy and Planning (OEP), or your regional planning commission.

2. Outreach Projects - Outreach projects are proactive; they give the public information even if they have not asked for it. Outreach projects are designed to encourage people to seek out more information and take steps to protect themselves and their properties. Examples of outreach activities include:

- Presentations at meetings of neighborhood groups
- Mass mailings or newsletters to all residents
- Notices directed to floodplain residents
- Displays in public buildings, malls, etc.
- Newspaper articles and special sections
- Radio and TV news releases and interview shows
- A local flood proofing video for cable TV programs and to loan to organizations
- A detailed property owner handbook tailored for local conditions. Research has shown that outreach programs work, although awareness is not enough. People need to know what they can do about the hazards, so projects should include information on protection measures. Research also shows that locally designed and run programs are much more effective than national advertising.

3. Real Estate Disclosure - Disclosure of information regarding flood-prone properties is important if potential buyers are to be in a position to mitigate damage. Federally regulated lending institutions are required to advise applicants that a property is in the floodplain. However, this requirement needs to be met only five days prior to closing, and by that time, the applicant is typically committed to the purchase. State laws and local real estate practice can help by making this information available to prospective buyers early in the process.

4. Library - Your local library can serve as a repository for pertinent information on flooding and flood protection. Some libraries also maintain their own public information campaigns, augmenting the activities of the various governmental agencies involved in flood mitigation.

5. Technical Assistance - Certain types of technical assistance are available from the NFIP Coordinator, FEMA, and the Natural Resources Conservation District. Community officials can also set up a service delivery program to provide one-on-one sessions with property owners.

An example of technical assistance is the *flood audit*, in which a specialist visits a property. Following the visit, the owner is provided with a written report detailing the past and potential flood depths and recommending alternative protection measures.

6. Environmental Education - Education can be a great mitigating tool if people can learn what not to do before damage occurs. The sooner the education begins the better. Environmental education programs for children can be taught in the schools, park and recreation departments, conservation associations, or youth organizations. An activity can be as involved as course curriculum development or as simple as an explanatory sign near a river.

Education programs do not have to be limited to children. Adults can benefit from knowledge of flooding and mitigation measures; decision makers, armed with this knowledge, can make a difference in their communities.

II. EARTHQUAKES

A. Preventive

1. Planning/zoning to keep critical facilities away from fault lines
2. Planning, zoning and building codes to avoid areas below steep slopes or soils subject to liquefaction
3. Building codes to prohibit loose masonry overhangs, etc.

B. Property Protection

1. Acquire and clear hazard areas
2. Retrofitting to add braces, remove overhangs
3. Apply Mylar to windows and glass surfaces to protect from shattering glass
4. Tie down major appliances, provide flexible utility connections
5. Earthquake insurance riders

C. Emergency Services

1. Earthquake response plans to account for secondary problems, such as fires and hazardous material spills

D. Structural Projects

1. Slope stabilization

III. DAM FAILURE

A. Preventive

1. Dam failure inundation maps
2. Planning/zoning/open space preservation to keep area clear
3. Building codes with flood elevation based on dam failure
4. Dam safety inspections
5. Draining the reservoir when conditions appear unsafe

B. Property Protection

1. Acquisition of buildings in the path of a dam breach flood
2. Flood insurance

C. Emergency Services

1. Dam condition monitoring
2. Warning and evacuation plans based on dam failure

D. Structural Projects

1. Dam improvements, spillway enlargements
2. Remove unsafe dams

IV. WILDFIRES

A. Preventive

1. Zoning districts to reflect fire risk zones
2. Planning and zoning to restrict development in areas near fire protection and water resources
3. Requiring new subdivisions to space buildings, provide firebreaks, on-site water storage, wide roads, multiple accesses
4. Building code standards for roof materials and spark arrestors
5. Maintenance programs to clear dead and dry brush, trees
6. Regulation on open fires

B. Property Protection

1. Retrofitting of roofs and adding spark arrestors
2. Landscaping to keep bushes and trees away from structures
3. Insurance rates based on distance from fire protection

C. Natural Resource Protection

1. Prohibit development in high-risk areas

D. Emergency Services

1. Fire Fighting

V. WINTER STORMS

A. Prevention

1. Building code standards for light frame construction, especially for wind-resistant roofs

B. Property Protection

1. Storm shutters and windows
2. Hurricane straps on roofs and overhangs
3. Seal outside and inside of storm windows and check seals in spring and fall
4. Family and/or company severe weather action plan & drills:
    - include a **NOAA** Weather Radio
    - designate a shelter area or location
    - keep a disaster supply kit, including stored food and water
    - keep snow removal equipment in good repair; have extra shovels, sand, rock, salt and gas
    - know how to turn off water, gas, and electricity at home or work

C. Natural Resource Protection

1. Maintenance program for trimming trees and shrubs

D. Emergency Services

1. Early warning systems/NOAA Weather Radio
2. Evacuation plans

Appendix D: List of Contacts

NH Homeland Security & Emergency Management
Hazard Mitigation Section..... 271-2231

Federal Emergency Management Agency (Boston) 877-336-2734

NH Regional Planning Commissions:
Central NH Regional Planning Commission..... 226-6020
Lakes Region Planning Commission..... 279-8171
Nashua Regional Planning Commission 424-2240
North Country Council RPC 444-6303
Rockingham Planning Commission 778-0885
Southern New Hampshire Planning Commission 669-4664
Southwest Region Planning Commission 357-0557
Strafford Regional Planning Commission..... 742-2523
Upper Valley Lake Sunapee RPC 448-1680

NH Executive Department:
New Hampshire Office Energy & Planning 271-2155

NH Department of Cultural Affairs 271-2540
Division of Historical Resources..... 271-3483

NH Department of Environmental Services..... 271-3503
Air Resources 271-1370
Waste Management 271-2900
Water Resources..... 271-3406
Water Supply and Pollution Control 271-3434
Rivers Management and Protection Program 271-8801
Bureau of Dams..... 271-3503

NH Fish and Game Department 271-3421

NH DRED..... 271-2411
Natural Heritage Inventory..... 271-3623
Division of Forests and Lands..... 271-2214
Division of Parks and Recreation 271-3556

NH Department of Transportation..... 271-3734

US Department of Commerce:
National Oceanic and Atmospheric Administration:
National Weather Service; Gray, Maine ……207-688-3216

US Department of Interior:
US Fish and Wildlife Service..... 223-2541

US Geological Survey..... 225-4681

US Department of Agriculture:
Natural Resource Conservation Service 868-7581

New Hampshire State Police..... 846-3333

Additional Websites of Interest

Natural Hazards
Research Center, U. of Colorado
http://www.colorado.edu/hazards/

National Emergency Management Association
http://nemaweb.org

NASA-Earth Observatory
http://earthobservatory.nasa.gov/NaturalHazards/category.php?cat_id=12

NASA Natural Disaster Reference
Reference of worldwide natural disasters
http://gcmd.nasa.gov/records/NASA-NDRD.html

National Weather Service
Weather Warnings, 60 Second Updates
http://nws.noaa.gov

FEMA, National Flood Insurance
Program, Community Status Books
http://fema.gov/business/nfip/

Florida State & NWS University Atlantic
Hurricane Site
http://www.met.fsu.edu/orgs/explores/

National Lightning Safety Institute
List of Lightning Safety Publications
http://lightningsafety.com

NASA Optical Transient Detector
Space-based sensor of lightning strikes
http://www.gr.ssr.upm.es/~jambrina/rayos/thunder.msfc.nasa.gov/otd.html

LLNL Geologic & Atmospheric Hazards
General Hazard Information
https://www.llnl.gov/

The Tornado Project Online
Recent tornado information & details
http://www.tornadoproject.com/

National Severe Storms Laboratory
Information & tracking of severe storms
Http://www.nssl.noaa.gov/

USDA Forest Service
Forest Fire & Land Management Information
http://www.fs.fed.us/fire

Appendix E: Technical and Financial Assistance for Multi-Hazard Mitigation

FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. Currently, FEMA administers the following HMA grant programs[25]:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Repetitive Flood Claims (RFC)
- Severe Repetitive Loss (SRL)

FEMA's HMA grants are provided to eligible Applicants (States/Tribes/Territories) that, in turn, provide sub-grants to local governments and communities. The Applicant selects and prioritizes subapplications developed and submitted to them by subapplicants. These subapplications are submitted to FEMA for consideration of funding. Prospective subapplicants should consult the office designated as their Applicant for further information regarding specific program and application requirements. Contact information for the FEMA Regional Offices and State Hazard Mitigation Officers is available on the FEMA website, www.fema.gov.

Table 2: Eligible Subapplicants

	HMGP	PDM	FMA	RFC	SRL
State agencies	√	√	√	√	√
Tribal governments	√	√	√	√	√
Local governments/communities	√	√	√	√	√
Private non-profit organizations (PNPs)	√				

Eligibility Chart taken from the FY 2010 Hazard Mitigation Assistance (HMA) Unified Guidance[26]

HMA Grant Programs

The HMA grant programs provide funding opportunities for pre- and post-disaster mitigation. While the statutory origins of the programs differ, all share the common goal of reducing the risk of loss of life and property due to Natural Hazards. Brief descriptions of the HMA grant programs can be found below. For more information on the individual programs, or to see information related to a specific Fiscal Year, please click on one of the program links.

A. Hazard Mitigation Grant Program (HMGP)

HMGP assists in implementing long-term hazard mitigation measures following Presidential disaster declarations. Funding is available to implement projects in accordance with State, Tribal, and local priorities.

What is the Hazard Mitigation Grant Program?

The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Authorized under Section 404 of the Stafford Act and administered by FEMA, HMGP was created to reduce the loss of life and property due to natural disasters. The program enables mitigation measures to be implemented during immediate recovery from a disaster.

…25 Information in Appendix E is taken from the following website and links to specific programs unless otherwise noted; http://www.fema.gov/government/grant/hma/index.shtm

26 FY 2010 Hazard

Who is eligible to apply?

Hazard Mitigation Grant Program funding is only available to applicants that reside within a presidentially declared disaster area. Eligible applicants are

- State and local governments
- Indian tribes or other tribal organizations
- Certain non-profit organizations

Individual homeowners and businesses may not apply directly to the program; however a community may apply on their behalf.

How are potential projects selected and identified?

The State's administrative plan governs how projects are selected for funding. However, proposed projects must meet certain minimum criteria. These criteria are designed to ensure that the most cost-effective and appropriate projects are selected for funding. Both the law and the regulations require that the projects are part of an overall mitigation strategy for the disaster area.

The State prioritizes and selects project applications developed and submitted by local jurisdictions. The State forwards applications consistent with State mitigation planning objectives to FEMA for eligibility review. Funding for this grant program is limited and States and local communities must make difficult decisions as to the most effective use of grant funds.

For more information on the **Hazard Mitigation Grant Program (HMGP),** go to:
https://www.fema.gov/grants/mitigation/hazard-mitigation

B. Pre-Disaster Mitigation (PDM)

PDM provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects prior to a disaster. The goal of the PDM program is to reduce overall risk to the population and structures, while at the same time, also reducing reliance on Federal funding from actual disaster declarations.

Program Overview

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

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

C. **Flood Mitigation Assistance (FEMA)** FMA provides funds on an annual basis so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program.

D. **Program Overview**

The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.

Types of FMA Grants

Three types of FMA grants are available to States and communities:

- **Planning Grants** to prepare Flood Mitigation Plans. Only NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project grants
- **Project Grants** to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures. States are encouraged to prioritize FMA funds for applications that include repetitive loss properties; these include structures with 2 or more losses each with a claim of at least $1,000 within any ten-year period since 1978.
- **Technical Assistance Grants** for the State to help administer the FMA program and activities. Up to ten percent (10%) of Project grants may be awarded to States for Technical Assistance Grants

D. Repetitive Flood Claims (RFC)

RFC provides funds on an annual basis to reduce the risk of flood damage to individual properties insured under the NFIP that have had one or more claim payments for flood damages. RFC provides up to 100% federal funding for projects in communities that meet the reduced capacity requirements.

Program Overview

The Repetitive Flood Claims (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al).

Up to $10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP).

Federal / Non-Federal Cost Share

FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the Applicant has demonstrated that the proposed activities cannot be funded under the Flood Mitigation Assistance (FMA) program.

E. Severe Repetitive Loss (SRL)

SRL provides funds on an annual basis to reduce the risk of flood damage to residential structures insured under the NFIP that are qualified as severe repetitive loss structures. SRL provides up to 90% federal funding for eligible projects.

Program Overview

The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP).

Definition

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a **residential property** that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

Purpose:

To reduce or eliminate claims under the NFIP through project activities that will result in the greatest savings to the National Flood Insurance Fund (NFIF).

Federal / Non-Federal cost share:

75 / 25 %; up to 90 % Federal cost-share funding for projects approved in States, Territories, and Federally-recognized Indian tribes with FEMA-approved Standard or Enhanced Mitigation Plans or Indian tribal plans that include a strategy for mitigating existing and future SRL properties.

Appendix F: Wildfire Planning

Wildfire Terminology

Aspect - Direction toward which a slope faces.

At-Risk Community - Group of homes or other improvements within or adjacent to federal land in which conditions are conducive to a large-scale wildland fire and pose a significant threat to human life or property.

Cistern - A tank that stores water.

Community Wildfire Protection Program - A plan developed by a community at risk from wildfire directed by a planning process outlined by the US Forest Service.

Defensible Space - A designated area around a home that is intentionally maintained to be free of features that would to increase the risk or damage from wildfire.

Dry Hydrant - A non-pressurized pipe system permanently installed in existing lakes, ponds, and streams that provides means of suction supply of water to a tank truck. The dry hydrant system gives the trucks access to water sources from a main road.

Fire Break - A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Fuel - Combustible material includes vegetation, such as grass, leaves, ground litter, plants, shrubs and trees that feed a fire.

Fuel Loading - The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

Mitigation - An effort to reduce or eliminate the impacts of injury or damage from a hazard or disaster.

Mutual Aid Agreement - Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

Prescribed Fire (RX Burn) - Any fire ignited by management actions under certain, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition on Federal land.

Red Flag Warning - Term used by fire weather forecasters to alert forecast users to an ongoing or eminent critical fire weather pattern.

Slash - The remnants of tree limbs, thinning, and ground fuel reduction.

Slope - The variation of terrain from the horizontal; the number of feet rise or fall per 100 feet measured horizontally, expressed as a percentage.

Suppression - The work of extinguishing or containing a fire, beginning with its discovery.

Surface Fuels - Lose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity.

Wildfire - An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

Wildland Fire - A wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities.

Wildland/Urban Interface (WUI) - The line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Wildfire Funding

This funding chart provides information about key grant programs and a number of sources that could be beneficial to implementation of the wildfire portion of the Benton Multi-Hazard Mitigation Plan. Funding sources from many federal, state and local sources may change periodically, be discontinued or new programs could be developed after the publication of this planning document. For the most up-to-date information, the Town should always consult the source itself before applying for funding. This chart attempts to identify, to best ability, the most local contact information, however, this information can also change over time. As a part of updating this plan in the future, this chart should be revised

Title	Department	Contact Information	Purpose	Grant Amount
Rural Fire Assistance	Dept. of the Interior	FWS Steve Hubner 757-986-3409x104 steve_hubner@fws.gov	The RFA program provides funds for RFDs that: -Protect rural, wildland-urban interface communities Play a substantial cooperative role in the protection of federal lands Are cooperators with Dept. of the Interior managed lands through cooperative agreements with the DOI or their respective state, tribe, or equivalent. Are less than 10,000 in population.	Maximum Award $20,000
Assistance to Firefighters Grant	Dept. of Homeland Security Office of Grants and Training	www.firegrantssupport.com	Awards one year grants directly to fire dept and nonaffiliated emergency medical service org. in order to enhance their ability with respect to fire and fire-related hazards.	Varies
Fire Prevention and Safety	Dept. of Homeland Security	1-866-274-0960 www.firegrantssupport.com	The purpose is to reduce losses due to fire related hazards through public education, arson prevention, code enforcement, wildfire prevention/awareness and education, data collection and analysis.	Federal share limited to $1M
Staffing for Adequate Fire and Emergency Response Grant	Dept. of Homeland Security	www.firegrantssupport.com	To provide funding directly to fire departments and volunteer firefighter interest organizations to help increase the number of firefighters. To enhance the ability of fire departments to attain staffing and to have adequate protection.	
Fire Management Grant	FEMA	Region 1, Boston, MA 877-336-2734	Disaster assistance grant program available to states, local governments, and Indian tribes with mitigation, management, and control fires burning on publicly or private forests that threaten such destruction as would constitute a major disaster.	

Appendix G: Acronyms

Multi-Hazard Mitigation Planning
List of Acronyms

EOC ..... Emergency Operations Center
EMD ..... Emergency Management Director
HSEM ..... Homeland Security & Emergency Management (NH)
FEMA ..... Federal Emergency Management Administration
NCC .....North Country Council
WUI ..... Wildland Urban Interface
NFS..... National Forest Service
USFS..... United States Forest Service
WMNF..... White Mountain National Forest
CI/KR ..... Critical Infrastructure & Key Resources
EMS..... Emergency Medical Services
ERF..... Emergency Response Facility
NERF ..... Non-Emergency Response Facility
FPP ..... Facilities & Populations to Protect
PR.....Potential Resources
LEOP ..... Local Emergency Operations Plan
CIP..... Capital Improvements Program
DRED ..... Department of Resources & Economic Development
NCRC & D ..... North Country Resource Conservation & Development District
NFIP ..... National Flood Insurance Program
GIS..... Geographic Information System
USGS..... United States Geological Society
NHDOT ..... NH Department of Transportation
MOU..... Memorandum of Understanding
SPNHF..... Society for the Protection of New Hampshire Forests
USDA ..... US Department of Agriculture
NIMS ..... National Incident Management System
ICS .....Incident Command System

Map Documents

The following 11” x 17” maps are included in hard copy plans:

Map 1 –Base Risk Analysis

Map 2 – Historic Wildfires & Wildland Urban Interface

Map 3 – Past & Potential Areas of Concern

Map 4 – Critical Infrastructure and Key Resource



The Oliverian in Benton Flats