TOWN OF FREMONT, NH
HAZARD MITIGATION PLAN UPDATE 2022

Approved by the

FREMONT, NH
SELECT BOARD

JUNE 2, 2022

ROCKINGHAM PLANNING COMMISSION
theRPC.org

This project was partially funded by

NEW HAMPSHIRE HOMELAND SECURITY AND EMERGENCY MANAGEMENT

CERTIFICATE OF ADOPTION

WHEREAS, the Town of Fremont received funding from the NH Division of Homeland Security and Emergency Management under a Pre-Disaster Mitigation Grant and assistance from Rockingham Planning Commission in the preparation of the Fremont Hazard Mitigation Plan Update; and

WHEREAS, several public planning meetings were held between November 2021 and April 2022 regarding the development and review of the Fremont Hazard Mitigation Plan Update 2022; and

WHEREAS, the Fremont Hazard Mitigation Plan Update 2022 contains several potential future projects to mitigate hazard damage in the Town of Fremont; and

WHEREAS, a duly noticed public meeting was held by the Fremont Select Board on April 28, 2022 to formally approve and adopt the Fremont Hazard Mitigation Plan Update 2022.

RESOLVED by the Fremont Board of Selectmen:

- The Plan is hereby adopted as an official plan of the Town of Fremont;
- The respective individuals identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
- Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution;
- An annual report of the progress of the implementation elements of the Plan shall be presented to the Select Board by the Town's Emergency Management Director or Town Administrator.

NOW, THEREFORE BE IT RESOLVED that the Fremont Select Board adopts the Fremont Hazard Mitigation Plan Update.

IN WITNESS THEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Fremont on this 2nd day of June, 2022.

_____ Select Board

_____ Select Board

_____ Select Board

ATTEST

Heidi L Carlson

Notary Public

HEIDI L. CARLSON
Notary Public - New Hampshire
My Commission Expires August 4, 2026

TABLE OF CONTENTS

LIST OF MAPS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The Fremont Hazard Mitigation Plan Update 2022 (herein after, the *Plan*) was compiled to assist the Town of Fremont in reducing and mitigating future losses from natural hazard events. The *Plan* was developed by the Rockingham Planning Commission and participants from the Town of Fremont and contains the tools necessary to identify specific hazards and aspects of existing and future mitigation efforts.

The following hazards are addressed:

- Flooding
- Hurricane
- Tornado/Downburst
- Severe Winter Weather
- Wildfire
- Earthquake
- Drought
- Extreme Temperatures
- Infectious Disease

The Critical Facilities include but are not limited to:

- Public Safety Complex
- Town Hall
- Highway Shed

The *Plan* is considered a work in progress and should be revisited frequently to assess whether the existing and suggested mitigation strategies are successful. Copies have been distributed to the Town of Fremont, and a copy will remain on file at the Rockingham Planning Commission. A copy of this Plan will be on file at New Hampshire Homeland Security and Emergency Management (NHHSEM) and the Federal Emergency Management Agency (FEMA). Upon approval by both agencies the Town shall adopt the plan update.

CHAPTER I – INTRODUCTION

BACKGROUND

The New Hampshire Homeland Security and Emergency Management (NHHSEM) has a goal for all communities within the State of New Hampshire to establish local hazard mitigation plans as a means to reduce and mitigate future losses from natural hazard events. The NHHSEM outlined a process whereby communities throughout the State may be eligible for grants and other assistance upon completion of a local hazard mitigation plan. A handbook entitled *Hazard Mitigation Planning for New Hampshire Communities* was created by NHHSEM to assist communities in developing local plans. The State's Regional Planning Commissions are charged with providing assistance to selected communities to develop local plans.

The Fremont Hazard Mitigation Plan Update 2022 was prepared by participants from the Town of Fremont Hazard Mitigation Team with the assistance and professional services of the Rockingham Planning Commission (RPC) under contract with the New Hampshire Homeland Security and Emergency Management operating under the guidance of Section 44 CFR 201.6. The Plan serves as a strategic planning tool for use by the Town of Fremont in its efforts to identify and mitigate the future impacts of natural and/or man-made hazard events.

METHODOLOGY

The Rockingham Planning Commission (RPC) organized the first meeting with emergency management officials from the Town of Fremont on November 3, 2021, to begin the initial planning stages of the Plan Update (primarily step 1). This meeting precipitated the development of the Natural Hazards Mitigation Committee (herein after, the Committee). RPC and participants from the Town developed the content of the Plan using the ten-step process set forth in the Hazard Mitigation Planning for New Hampshire Communities. The following is a summary of the ten-step process conducted to compile the Plan. Work session meetings were open to the public and held November 3, 2021, December 15, 2021, March 30, 2022, April 28, 2022. Agendas for the work sessions and a list of meeting participants are included in Appendix O., Documentation of the Planning Process. The Town Administrator and staff from the Rockingham Planning Commission solicited input on the Plan from local officials, abutting communities, and residents throughout the Plan development process.

The Town's 2016 Plan Update served as the starting point for discussion on hazards impacting the Town, as well as discussions on mitigation strategies. The 2016 Plan Update served as a reference for local land use regulations and policies, emergency management training, development of the Town's Capital Improvement Plan and department budgets, and has been referenced in several reports, including the RPC's 2015 Regional Master Plan.

Step 1 – Form Committee

The Emergency Management Director invited Department Heads from all the Town's departments to participate in the Plan Update process. As a result, the Plan Update Committee included Heidi Carlson, Town Administrator; Jon Twiss, Chief of Police; Neal Janvrin, Select Board Member; Leanne Miner, Land Use Administrator; Leon Holmes Jr, Road Agent; Paul Normandin, Facility Director, Ellis School; Mark DeVeber, Emergency Management Director; and Richard Butler, Fire Chief. Information about the Plan Update process was shared with elected officials and Town staff via Department Head reports to the Select Board and Town Staff meetings. All meetings were open to the public via posted meeting notices.

The Town Administrator invited stakeholders and community officials to participate in the Plan Update via email and in person, resulting in participation by the Facilities Manager of the Ellis School. No members of the public attended the Select Board's public hearing held on April 28th, 2022 on the draft Plan Update and no comments were received on the draft Plan Update. RPC staff kept municipalities in the region informed of the Plan Update via monthly RPC Commissioner meetings. In addition, RPC staff working in abutting towns kept local officials in these communities informed of the update to Raymond's Plan Update and the opportunity to comment on regional mitigation strategies.
RPC staff kept municipalities in the region informed of the Plan Update via monthly RPC Commissioner meetings. In addition, RPC staff working in abutting towns kept local officials in these communities informed of the update to Fremont's Plan Update and the opportunity to comment on regional mitigation strategies.

Step 2 – Map the Hazards
The Committee identified areas where damage from historic natural disasters have occurred and areas where critical man-made facilities and other features may be at risk in the future for loss of life, property damage, environmental pollution, and other risk factors. RPC generated a set of base maps with GIS (Geographic Information Systems) that were used in the process of identifying past and future hazards.

Step 3 – Identify Critical Facilities and Areas of Concern
Participants in the Committee identified facilities and areas that were important to the Town for emergency management purposes, for provision of utilities and community services, evacuation routes, and for recreational, historical, cultural, and social value. These facilities and areas are identified on the Critical Facilities Map.

Step 4 – Identify Existing Mitigation Strategies
After collecting detailed information on each critical facility in Fremont, the Committee and RPC staff identified existing Town mitigation strategies relative to flooding, hurricane and wind events, tornado, severe winter weather, wildfire, earthquake, drought, extreme temperatures, climate change, and infectious disease. This process involved reviewing the Town's 2016 Hazard Mitigation Plan Update, the Town's Master Plan and Capital Improvements Program, Zoning Ordinance, Subdivision Regulations, Site Plan Review Regulations, Emergency Operations Plan, and the Town's participation in the National Flood Insurance Program (NFIP) and incorporating relevant information into this Plan Update.

Step 5 – Identify the Gaps in Existing Mitigation Strategies
The existing strategies were then reviewed by the RPC and the Committee for coverage and effectiveness, as well as the need for improvement.

Step 6 – Identify Potential Mitigation Strategies
A list was developed of additional hazard mitigation actions and strategies for the Town of Fremont. The recently updated Hazard Mitigation Plan for the Town of Fremont was utilized to identify new mitigation strategies as well as the Town's Master Plan and Emergency Operations Plan.

Step 7 – Prioritize and Develop the Action Plan
The proposed hazard mitigation actions and strategies were reviewed, and each strategy was rated (good, average, or poor) for its effectiveness according to several factors (*e.g.*, technical and administrative applicability, political and social acceptability, legal authority, environmental impact, financial feasibility). Each factor was then scored, and all scores were totaled for each strategy. Strategies were ranked by overall score for preliminary prioritization then reviewed again under Step 8.

Step 8 - Determine Priorities
The preliminary prioritization list was reviewed to make changes and determine a final prioritization for new hazard mitigation actions and existing protection strategy improvements identified in previous steps. RPC also presented recommendations to be reviewed and prioritized by the Plan Update Committee.

Step 9 - Develop Implementation Strategy
Using the chart provided under Step 9 in the handbook, an implementation strategy was created which included person(s) responsible for implementation (who), a timeline for completion (when), and a funding source and/or technical assistance source (how) for each identified hazard mitigation actions. Also, when the Master Plan or Capital Improvement Plan (CIP) is updated the Fremont Hazard Mitigation Plan Update 2022 shall be consulted to determine if strategies or actions suggested in the Plan can be incorporated into the Town's future land use recommendations and or capital expenditures.

Step 10 - Adopt and Monitor the Plan
RPC staff compiled the results of Steps 1 to 9 in a draft document. This draft Plan was reviewed by members of the Committee and by staff members at the RPC. The draft Plan was also placed on the Town of Fremont website for review by the public, neighboring communities, agencies, businesses, and other interested parties to review and make comments via email. A duly noticed Public Hearing was held by the Fremont Select Board on April 28, 2022. The meeting allowed the community and neighboring towns to provide comments and suggestions for the Plan in person, prior to the document being finalized. A 30-day public comment period was established prior to the meeting to allow more time for public review and comment. The draft was revised to incorporate comments received from the Select Board and Town staff and then submitted to the NH HSEM and FEMA Region I for their review and comments

The Town, led by the Emergency Management Director, will continue to monitor the Plan, for effectiveness and accuracy, consulting with Town Departments, Boards, and Commissions, and with local officials in abutting communities, as well as soliciting comments from the public about the Plan. In addition, the approved Plan Update will be posted on the Town website to facilitate on-going review of hazard mitigation activities.

HAZARD MITIGATION GOALS AND OBJECTIVES OF THE STATE OF NEW HAMPSHIRE

The Town of Fremont sets forth the following hazard mitigation goals and objectives:

- Reduce or avoid long-term vulnerabilities posed by natural hazards impacting Fremont, including the impacts from flooding, tornadoes, downbursts, severe winter weather, wildfire, earthquakes and extreme heat.

- Improve upon the protection of the Town of Fremont's general population, the citizens of the State and guests, from all natural and man-made hazards.

- Reduce the potential impact of natural and man-made disasters on Fremont and the State's Critical Support Services.

- Reduce the potential impact of natural and man-made disasters on Fremont's Critical Facilities in the State.

- Reduce the potential impact of natural and man-made disaster on Fremont's and the State's infrastructure.
- Improve Fremont's Emergency Preparedness.
- Improve Fremont's Disaster Response and Recovery Capability.
- Reduce the potential impact of natural and man-made disasters on private property in Fremont.
- Reduce the potential impact of natural and man-made disasters on Fremont's and the State's economy.
- Reduce the potential impact of natural and man-made disasters on Fremont's and the State's natural environment.
- Reduce Fremont's and the State's liability with respect to natural and man-made hazards generally.
- Reduce the potential impact of natural and man-made disasters on Fremont's and the State's specific historic treasures and interests as well as other tangible and intangible characteristics that add to the quality of life to the citizens and guests of the State and the town.
- Identify, introduce, and implement cost effective Hazard Mitigation measures so as to accomplish Fremont's and the states goals and objectives in order to raise the awareness and acceptance of hazard mitigation planning.

Through the adoption of this Plan the Town of Fremont concurs and adopts these goals and objectives.

ACKNOWLEDGEMENTS

The Fremont Select Board extends special thanks to those that assisted in the development of this Plan update by serving as member of Natural Hazards Mitigation Committee:

Heidi Carlson - Town Administrator, Town of Fremont, NH
Mark DeVeber - Emergency Management Director, Town of Fremont, NH
Leanne Miner – Land Use Administrator, Town of Fremont, NH
Leon Holmes, Jr. – Road Agent, Highway Department, Town of Fremont, NH
Richard Butler - Fire Chief, Town of Fremont, NH
Jon Twiss – Police Chief, Town of Fremont, NH
Neal Janvrin – Select Board Member, Town of Fremont, NH
Paul Normandin – Facility Director, Ellis School, Town of Fremont, NH

The Fremont Select Board offers thanks to the NHHSEM (http://www.nh.gov/safety/divisions/hsem/index.html) which provided the model and funding for this Plan.

In addition, thanks are extended to the staff of the Rockingham Planning Commission for professional services, process facilitation and preparation of this document.

CHAPTER II – COMMUNITY PROFILE

DESCRIPTION OF FREMONT

Fremont is a rural community in southeastern New Hampshire. According to the US Census, the population in 2019 was 4,710. The town is characterized by winding roads, fields and forest, the Exeter River, and a pastoral landscape. Fremont is approximately 17 square miles (11,142 acres) with 0.2 square miles of surface water. The highest point is a hill on the western side of town with an elevation of 322 feet above sea level.

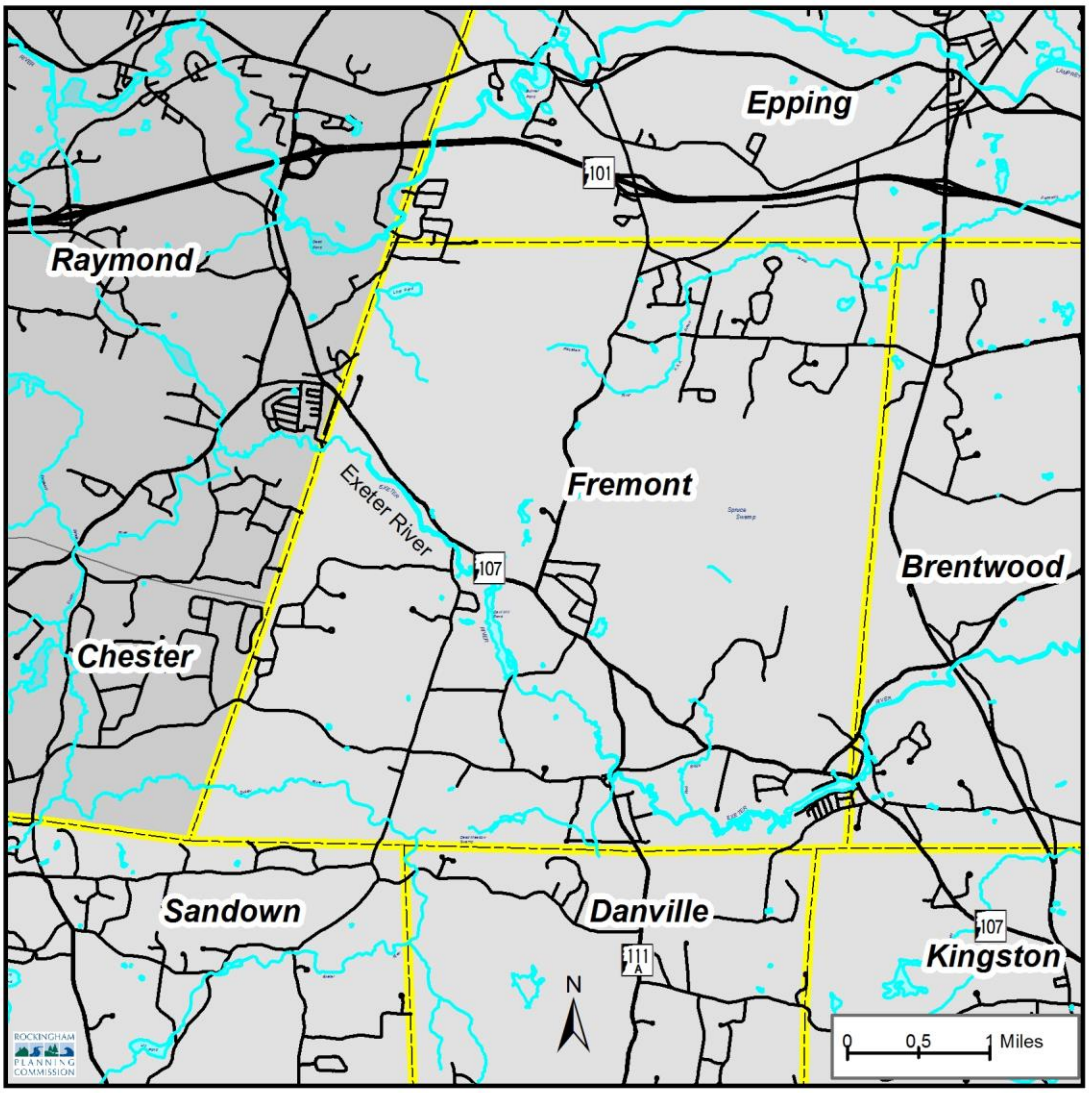

Figure 1: Location Map of Fremont, New Hampshire

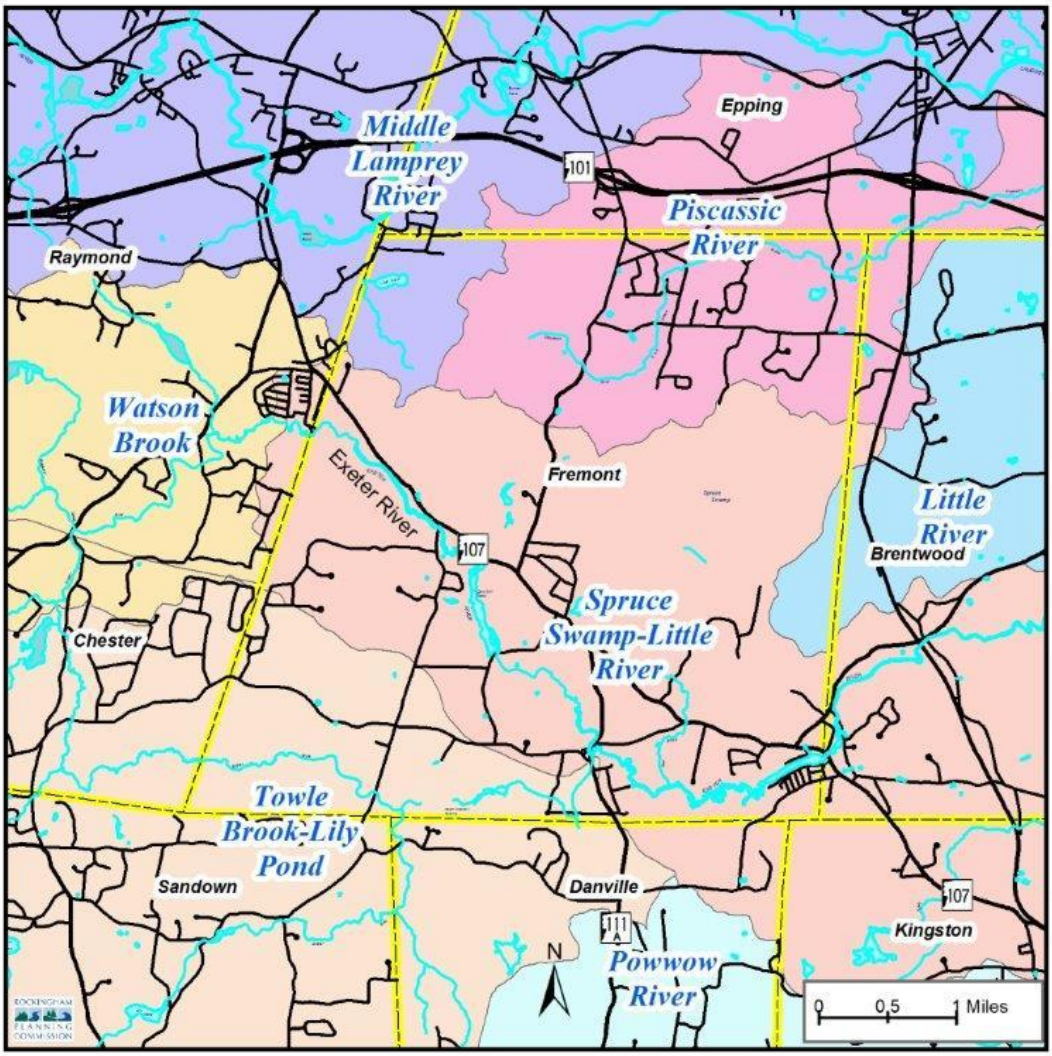

Figure 2: Watershed Map of Fremont, New Hampshire

Fremont lies within two watersheds, the Exeter River watershed and the Piscassic River watershed. Both rivers are part of the Great Bay Estuary watershed, which flows into the Atlantic Ocean. The Exeter River flows west to east across the southern portion of Fremont. The Exeter River watershed encompasses 8,155 acres in Fremont, or 73% of the town. The Piscassic River flows from west to east across the northern portion of Fremont. The Piscassic River watershed encompasses approximately 2,984 acres, or 27% of town.

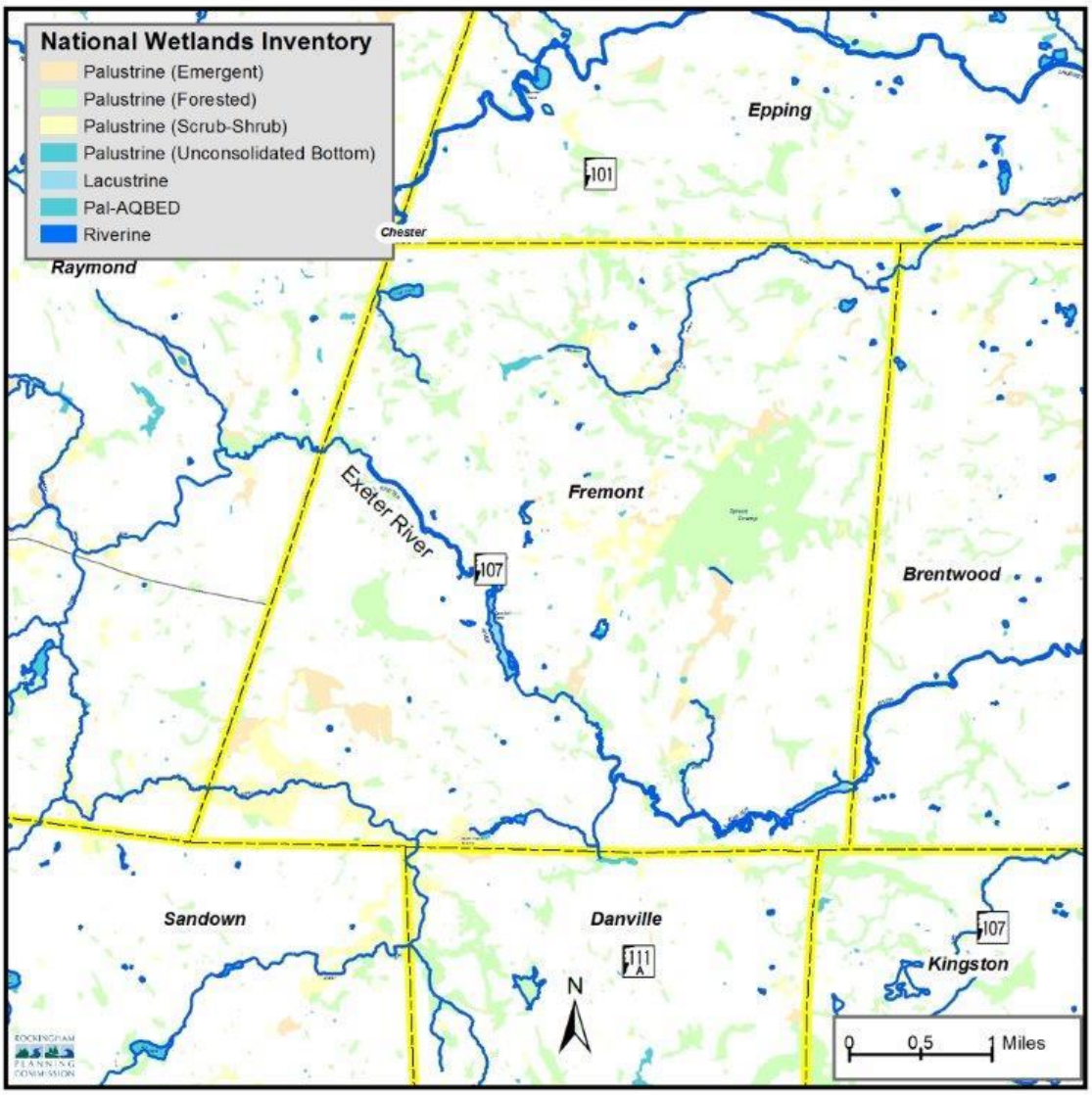

Figure 3: Wetland Map of Fremont, New Hampshire

The National Wetlands Inventory identifies approximately 2,033 acres of wetland in Fremont. The Town has worked with wetlands scientists to identify several prime wetland complexes, as designated under NH RSA 482-A:15. Fremont is home to Spruce Swamp, the largest wetland complex in Rockingham County, encompassing 827 acres. Spruce Swamp is drained by four streams, two flowing north towards the Piscassic River and one flowing east and one flowing north, both towards the Exeter River.

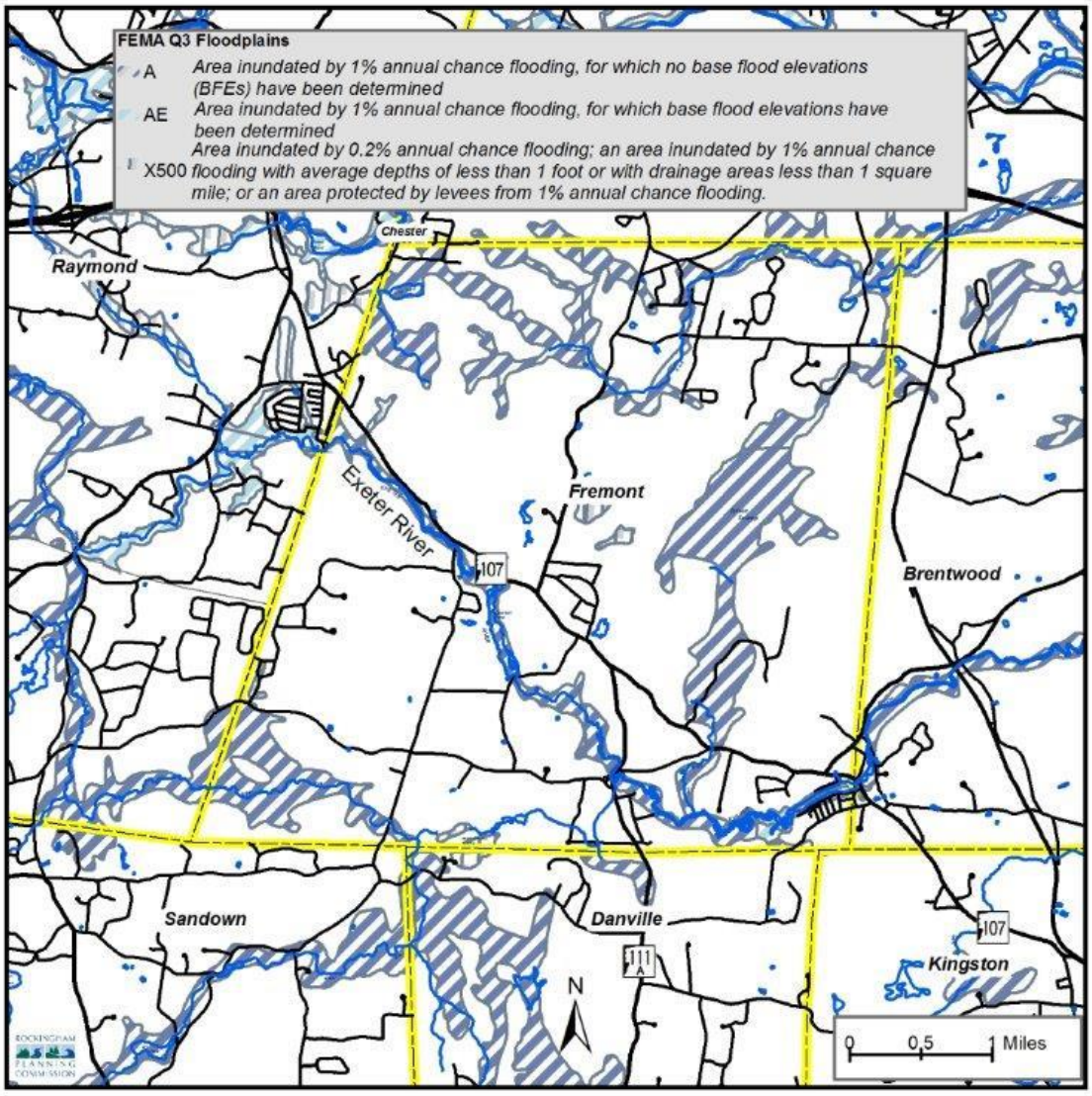

Figure 4: Floodplain Map of Fremont, New Hampshire

Approximately 2,176 acres in Fremont lie with the floodplain, 19.5% of the town's total land area of 11,142 acres.

LAND USE AND DEVELOPMENT

Future development in Fremont will continue to be primarily residential developments scattered throughout town and limited commercial and industrial development in areas zoned for such use, primarily along Route 107 and Shirkin Road. A commercial park has been established along Main Street at Spaulding Road on the site of the former Spaulding and Frost cooperage.

There has been little increase in development in hazard prone areas since the last Plan due to deliberate Town efforts to regulate development in these areas. The Town has adopted land use

regulations restricting development and construction in and immediately adjacent to wetlands and floodplains. In addition, the Town has worked with landowners and land conservation organizations to permanently conserve hundreds of acres of riparian land, farmland, and forestland from development, enabling this land to provide flood storage during extreme weather events. Despite these efforts, the Town's vulnerability to natural hazards will increase due to climate change and an increasing number of precipitation and other hazard events. Natural hazards identified in this Plan Update, as well as mitigation strategies discussed, will be considered during local review of development proposals, updates to the Master Plan, CIP and EOP, especially as they relate to development in flood prone areas of town.

MAP 1: **LAND USE MAP**

CHAPTER III – NATURAL HAZARDS IN THE TOWN OF FREMONT

WHAT ARE THE HAZARDS?

The first step in planning for natural hazard mitigation is to identify hazards that may affect the Town. Some communities are more susceptible to certain hazards (i.e., flooding near rivers, hurricanes on the seacoast, etc.). The Town of Fremont is prone to several types of natural hazards. These hazards include flooding, hurricanes, tornadoes/downbursts, severe winter weather, wildfires, earthquakes, extreme temperatures, drought, and infectious disease. Other natural hazards can and do affect the Town of Fremont, but these were the hazards prioritized by the Committee for mitigation planning.

Natural hazards that are included in the State's Hazard Mitigation Plan that are not included in this Plan Update include: landslide, subsidence, avalanche, solar storm, and space weather. Subsidence and avalanche are rated by the State as having Low and No risk in Rockingham County, respectively; due to this they were left out of the Plan. Fremont has no record of landslides and little chance of one occurring that could possibly damage property of cause injury and so landslides were not included in this Plan. Solar storms and space weather are rated as a low risk for all of New Hampshire. There are no significant past occurrences of impact from space weather or solar storms in the state per the State Plan, so the Committee did not include this hazard in the Plan Update.

The hazard profiles below include a description of the natural hazard, the geographic location of each natural hazard (if applicable), the extent of the natural hazard (e.g., magnitude or severity), probability, past occurrences, and community vulnerability. Past occurrences of natural hazards were mapped on Map 2: Past and Future Hazards. Community vulnerability identifies the specific areas, general type of structures, specific structures, or general vulnerability of the Town of Fremont to each natural hazard. Probability was defined as high, a roughly 66-100% chance of reoccurrence; medium, roughly a 33-66% chance of reoccurrence; and low, roughly a 0-33% of reoccurrence.

HAZARD DEFINITIONS

Flooding

Description - Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the extreme precipitation events, 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. Building within a floodplain area is regulated by the Town's Zoning Ordinance.

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.

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 be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Erosion and mudslides become significant threats to development during floods. Floods speed up the process of erosion and increase the risk of mudslides.

Rapid Snowpack Melt - Warm temperatures and heavy rains cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

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

Dam Breach and 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. Table 1 lists the two active dams in Fremont.

Table 1. Active Dams

Dam Hazard Class	Dam Name	Dam Height (Feet)	Impoundment Areas (Acres)	River/Water Source
Non-Menace	Exeter River	7	1.5	Exeter River
Low	Scribner Road/Turner's Dam	12	16	Exeter River

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.

Research shows the climate of New Hampshire, and the Seacoast region has changed over the past century and predicts the future climate of the region will be affected by human activities that are warming the planet. Overall, New England has been getting warmer and wetter over the last century, and the rate of change has increased over the last four decades. The challenges posed by climate change, such as more intense storms, frequent heavy precipitation, heat waves, drought, extreme flooding, and higher sea levels could significantly alter the types and magnitudes of hazards faced by Fremont.

Location – Fremont is vulnerable to flooding in several locations. Generally, the town is at risk within the Flood Zones identified by FEMA on Flood Insurance Rate Maps (FIRM). Major floods have occurred on the Exeter Rivers in the spring, fall, and winter seasons. The Town has undertaken extensive repair and improvements to roadways to mitigate road flooding. Improvements include raising Red Brook Road and replacing the catch basin; raising Beede Road, North Road and Sandown Road; enlarging overflow pipe on Levitt Road; and extensive repairs to Scribner Road at the Turner's Dam Bridge. The Committee identified many areas in town especially vulnerable to flooding. These areas are listed below under Past Occurrence and displayed on Map 2: Past and Future Hazards.

Extent - The extent of the flooding can be seen in Map 2: Past and Future Hazards. This area includes FIRM Zones, as well as areas of locally chronic flood problems listed above. The State of New Hampshire places every dam into one of four classifications, which are differentiated by the degree of potential damages that a failure of the dam is expected to cause, https://www.des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf. The classifications are as follows:

- Non-Menace structure – not a menace because it is in a location and of a size that failure or mis-operation of the dam would not result in probable loss of life or loss to property, less than six feet in height if it has a storage capacity greater than 50-acre feet, or less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.
- Low Hazard structure – has a low hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in no possible loss of life, low economic loss to structures or property, structural damage to local or private roads that could render roads impassable, the release of liquid industrial, agricultural or commercials wastes, septage or contaminated sediment if the storage capacity is less than two-acre feet and is located more than 250 feet from a water body, reversible environmental losses to environmentally sensitive areas.
- Significant Hazard structure – has a significant hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in no probable loss of lives, major economic loss to structures or property, structural damage to a Class I or II road that could render the road impassable, major environmental or public health losses.
- High Hazard structure – has a high hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in probable loss of human life, structural damage to an interstate highway which could rend the road impassable, the release of a quantity and concentration of hazardous waste, and any other circumstance that would more likely cause one or more deaths.

Probability – The probability of the flooding of roadways from rain and snow melt is high in Fremont, especially in the areas listed in Table 2 and identified on Map 2. The Town maintains an active culvert management program to mitigate inland flooding and monitors roads and shoreline prone to flooding. The Town has not experienced dam failure and maintains a pro-active dam management program.

Past Occurrence - Several locations were identified by the Committee as areas of chronic reoccurring flooding or high potential for future flooding, as identified on Map 2 and as follows:

Rt. 107 near Sandown Road, Sandown Road, Tibbetts Road, Riverside Drive, NH Rt. 111A at Red Brook Road, Shirkin Road, Squire Road, Beede Hill Road, Cavil Mill Road, Clough Crossing, Martin Road, Leavitt Road, Scribner Road and North Road.

Community Vulnerability - Flooding is most likely to occur in the area listed above and identified on Map 2.

National Flood Insurance Program (NFIP) - In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Federal Insurance and Mitigation Administration (FIMA) a component of the Federal Emergency Management Agency (FEMA) manages the NFIP and oversees the floodplain management and mapping components of the program.

Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce flood damage. In exchange, the NFIP makes federally subsidized flood insurance available to homeowners, renters, and business owners in these communities. Flood insurance, Federal Grants and loans, Federal disaster assistance and federal mortgage insurance is unavailable for the acquisition or construction of structures located in the floodplain shown on the NFIP maps for those communities that do not participate in the program.

To get secure financing to buy, build or improve structures in the Special Flood Hazard areas, it is legally required by federal law to purchase flood insurance. Lending institutions that are federally regulated or federally insured must determine if the structure is in the SFHA and must provide written notice requiring flood insurance. Flood insurance is available to any property owner located in a community participating in NFIP.

Repetitive Loss Properties - A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group includes every NFIP insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced four or more paid losses, two paid flood losses within a 10-year period that equal or exceed the current value of the insured property, or three or more paid losses that equal or exceed the current value of the insured property, regardless of any changes of ownership, since the buildings construction or back to 1978. Target group policies are afforded coverage, whether new or renewal, only through the SDF.

The FEMA Regional Office provides information about repetitive loss properties to State and local floodplain management officials. The FEMA Regional Office may also offer property owners building inspection and financial incentives for undertaking measures to mitigate future flood losses. These measures include elevating buildings from the flood area, and in some cases drainage improvement projects. If the property owners agree to mitigation measures, their property may be removed from the target list and would no longer be serviced by the SDF.

Table 2: Fremont NFIP Policy and Loss Statistics

Policies in force	Insurance in Force	Number of Paid Losses (since 1978)	Total Losses Paid (Since 1978)
26	$25,148,600	39	$1,098,576
Source: FEMA Policy and claims database, as of October 2021			

Fremont NFIP Repetitive Flooding Losses – Fremont joined the Regular Program of the NFIP on April 21, 1988. There are currently 26 NFIP policies in force, all on residential properties. As of October 2021, Fremont has had 20 repetitive loss claims on residential properties, according to New Hampshire Office of Planning and Development records. This is determined by any repetitive damage claims on those properties that hold flood insurance through the NFIP.

Floodplain Management Goals/Reducing Flood Risks - A major objective to floodplain management is to continue participation in the NFIP. Communities that agree to manage Special Flood hazard Areas shown on NFIP maps participate in the NFIP by adopting minimum standards. The minimum requirements are the adoption of the Floodplain Ordinances and Subdivision/Site Plan Review requirements for land designated as Special Flood hazard Areas. Under Federal Law, any structure located in the floodplain is required to have flood insurance. Federally subsidized flood insurance is available to any property owner located in a community participating in the NFIP. Communities that fail to comply with the NFIP will be put on probation and/or suspended. Probation is a first warning where all policy holders receive a letter notifying them of a $50 increase in their insurance. In the event of suspension, the policyholders lose their NFIP insurance and are left to purchase insurance in the private sector, which is of significantly higher cost. If a community is having difficulty complying with NFIP policies, FEMA is available to meet with staff and volunteers to work through the difficulties and clear up any confusion before placing the community on probation or suspension.

Potential Administrative Techniques to Minimize Flood Losses in Fremont- A potential step in mitigating flood damage is participating in NFIP. Fremont continues to consistently enforce NFIP compliant policies to continue its participation in this program and has effectively worked within the provisions of NFIP. Below is a list of actions Fremont should consider, or continue to perform, to comply with NFIP:

- Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management;
- Maintain Mutual Aid Agreements with neighboring communities to address administering the NFIP following a major storm event;
- Address NFIP monitoring and compliance activities;
- Revise/adopt subdivision regulations, erosion control regulations, board of health regulations to improve floodplain management in the community;
- Prepare, distribute, or make available NFIP insurance and building codes explanatory pamphlets or booklets;
- Identify and become knowledgeable of non-compliant structures in the community;

- Inspect foundations at time of completion before framing to determine if lowest floor is at or above Base Flood Elevation (BFE), if they are in the floodplain;
- Require the use of elevation certificates;
- Enhance local officials, builders, developers, local citizens, and other stakeholders' knowledge of how to read and interpret the FIRM;
- Work with elected officials, the state and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training, and education.

Hurricane-High Wind Events

Description - Significantly high winds occur especially during hurricanes, tornadoes, winter storms and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during high wind occurrences.

Hurricanes - 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 may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage. Hurricanes can also include coastal storm surge. The Saffir–Simpson hurricane wind scale (SSHWS), or the Saffir–Simpson hurricane scale (SSHS) for short, classifies hurricanes into five categories distinguished by the intensities of their sustained winds. To be classified as a hurricane, a tropical cyclone must have maximum sustained winds of at least 74 mph, Category 1. The highest classification in the scale, Category 5, is reserved for storms with winds exceeding 156 mph. The Saffir/Simpson Hurricane Scale is included in Appendix C.

Tornadoes - A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They 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 Enhanced 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 with a hurricane, a tornado covers a much smaller area but can be more violent and destructive.

Severe Thunderstorms - 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 - 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. Lightning strikes can cause death, injury, and property damage.

Hail - Hailstones are balls of ice that grow as they're held up by winds, known as updrafts, which blow upwards in thunderstorms. The updrafts carry droplets of supercooled water – water at a below freezing temperature – but not yet ice. The supercooled 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.

Location - Hurricane events are more potentially damaging with increasing proximity to the coast. Fremont's proximity to the Atlantic Coast makes hurricanes and high wind events severe threats. For this Plan, high-wind, hurricanes, thunderstorms, hail, and lightning events were considered to have an equal chance of affecting any part of Fremont.

Extent – Hurricane strength is measured using the Saffir-Simpson scale, located in the appendix of this Plan. Fremont is located within Zone II hurricane-susceptible region (indicating a design wind speed of 160 mph). From 1950 to 2018 Rockingham County was subject to 9 tornado events, these included 2 type F0 (Tornado, 40-72 mph), 2 type F1 (Moderate Tornado, 73-112 mph), 4 type F2 (Significant Tornado, 113-157 mph) and 1 type F3 (Severe Tornado, 158-206 mph). Type 3 tornados can cause severe damage including tearing the roofs and walls from well-constructed homes, trees can be uprooted, trains over-turned, and cars lifted off the ground and thrown. Between 1900 and 2018 2 hurricanes have made landfall in New Hampshire, a category 1 and a category 2. Measurement scales for high wind events, thunderstorms, lightning risk, and hail are in the appendix of this Plan.

Probability -The Committee concurs with the State of New Hampshire's Multi-Hazard Mitigation Plan Update 2018, which rates Rockingham County with high likelihood of hurricane, tornado and "Nor'-Easters" events, and the risk of downbursts, lightning, and hail events as moderate.

Past Occurrence – Between 1635 and 2018 14 hurricanes have impacted the State of New Hampshire. The worst of these occurred on September 21, 1938, with wind speeds of up to 186 mph in MA and 138 mph elsewhere. Thirteen of 494 people killed by this storm were residents of New Hampshire. The Storm caused $12,337,643 in damages (1938 dollars); timber not included. Hurricanes Sandy and Irene created areas of localized flooding in Fremont and power loss. High wind events in 2010, 2014 and 2016 resulted in extensive power outages, downed wires and trees. Neither lightning nor tornadoes have impacted Fremont in recent memory. Heavy rain associated with tropical storms impacted Fremont in 2017 and 2018, resulting in flooding along roads, low lying areas, and floodplains.

Community Vulnerability – The Committee determined that lightning, hail, high wind, and heavy rain associated with hurricanes and thunderstorms can impact every neighborhood in Fremont before, during and after the storm, resulting in downed trees, flooding of ponds, rivers, streams, roads and basements, and damage to home, businesses, and infrastructure.

Severe Winter Weather

Description – Severe winter weather in the form of heavy snowstorms, ice storms and Nor'easters are a threat to the community with subzero temperatures from extreme wind chill and storms causing low visibility for commuters. Heavy snow loads from storms are known to collapse buildings. Ice storms disrupt power and communication services. Extreme cold affects vulnerable populations, including the elderly.

Heavy Snowstorms - A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts at least three hours. 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, which 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 also often produce widespread power outages.

Nor'easter - A Nor'easter is large weather system traveling from South to North passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas form a Northeasterly direction. The sustained winds may meet or exceed hurricane force, with larger bursts, and may exceed hurricane events by many hours (or days) in terms of duration.

Location - Severe winter weather events have an equal chance of affecting any part of Fremont.

Extent - Large snow events in Southeastern New Hampshire can produce 30 inches of snow. Portions of central New Hampshire recorded snowfalls of 98" during one slow moving storm in February of 1969. Ice storms occur with regularity in New England. The Sperry-Piltz ice accumulation scale is found in the Appendix of this Plan. Seven severe ice storms have been recorded that affected New Hampshire since 1929. These events caused disruption of transportation, loss of power and millions of dollars in damage.

Probability - High. The State of New Hampshire's Multi-Hazard Mitigation Plan Update 2018 rates Rockingham County with high likelihood of heavy snows and ice storms and the Committee agrees with this assessment as the Fremont has experienced severe winter weather since the last Plan Update.

Past Occurrence – Fremont has been impacted by six severe winter storms in the past five years. A storm on January 2, 2009, resulted in the removal of tree debris and wind-blown debris. A storm on March 29, 2010, caused flooding that damaged roads and culverts. The "Halloween storm" on October 31, 2011, resulted in widespread power outages, fallen trees, and closed roads. A severe winter storm struck the region on March 19, 2013, with heavy snow fall resulting in 48 hours of snow removal. A severe winter storm in 2015 and two Nor'easters in 2018 required extensive snow removal and removal of fallen trees.

Community Vulnerability - Severe winter weather has struck Fremont and every other community in the region on an annual basis in recent memory. The Committee determined that heavy snow, strong and gusty winds, and frigid temperatures can impact all parts of town equally, resulting in downed trees and power lines, extended power outages, and unsafe driving condition. Extended power outages and the resulting loss of heat in homes of elderly residents

are of concern. Rapid snow melt after severe winter weather can result in flooding of rivers and streams, posing risk to roads and structures. The Committee identified the elderly and vulnerable populations, utility lines and towers, and trees at greatest risk from severe winter weather.

Wildfire

Description - Wildfire is defined as an uncontrolled and rapidly spreading fire, including grass and forest fires. 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.

Location - The Committee identified an area in the southeast portion of town as being vulnerable to wildfire.

Extent - A wildfire in Fremont is unlikely, but if a crown fire were to occur it could be very damaging to residential neighborhoods. A large grass fire could damage structures and neighborhood buildings near large open areas. A Wildfire Size Classification, used to categorize wildfire based on the number of acres, and the Wildland-Urban Interface Scale, a tool to quantify the expected severity of wildfire events in developed areas, is included in Appendix J.

Probability - The Committee rates the probability of wildfire as low given the increase in periods of drought since the last Plan Update. The State of New Hampshire's Multi-Hazard Mitigation Plan Update 2018 rates Rockingham County with moderate risk to wildfires.

Past Occurrence - The majority of wildfires in Fremont are minor brush fires. No large fires have occurred within recent memory.

Community Vulnerability - The Committee determined that all forested and open areas in Fremont are prone to wildfires, with the threat increasing during periods of drought. The Committee identified the following areas in town vulnerable to wildfire: along the power lines in the southeast corner of town, along the Class VI Road that connects Meeting House Road and Tavern Road in the center of town, along Shirkin Road and Squire Road in the northwest corner of town, and the Town Forests.

Earthquakes

Description – Seismic activity including landslides and other geologic events. Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone. 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 using scales such as the Richter Magnitude Scale, located in the Appendix of this Plan.

Location – An earthquake has an equal chance of affecting all areas in Fremont.

Extent - New England is particularly vulnerable to the injury of its inhabitants and structural damage because of our built environment. Few New England States currently include seismic design in their building codes. Massachusetts introduced earthquake design requirements into their building code in 1975 and Connecticut very recently did so. However, these specifications are for new buildings, or very significantly modified existing buildings only. Existing buildings, bridges, water supply lines, electrical power lines and facilities, etc. have rarely been designed for earthquake forces and New Hampshire has no such code specifications.

Probability – The Committee rates the probability of earthquake impacting Fremont as low. The State of New Hampshire's Multi-Hazard Mitigation Plan 2018 which ranks Fremont at moderate risk to earthquakes.

Past Occurrence - Large earthquakes have not affected Fremont within recent memory.

Community Vulnerability - The Committee determined that earthquakes do not pose a frequent threat to Fremont, but if one were to occur the most vulnerable structures include roads, bridges, brick structures, infrastructure, and utility lines, as well as secondary hazards such as fire, power outages or a hazardous material leak or spill.

Drought

Description - Drought is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). Droughts are slow-onset hazards that can severely affect municipal water supplies, crops, recreation resources, and wildlife. If drought conditions extend over several years, the direct and indirect economic impacts can be significant. High temperatures, high winds, and low humidity can worsen drought conditions and make area more susceptible to wildfire. In addition, human actions and demands for water resources can accelerate drought-related impacts.

Location – The Committee determined that drought poses risks to water supplies throughout Fremont. Dug wells in the Riverside Drive neighborhood abutting the Exeter River are particularly vulnerable. Risks of wildfire associate with drought conditions are greatest in forested and open grassland areas.

Extent - Although New Hampshire is typically thought of as a water-rich state, there are times the demand for water can be difficult to meet. A combination of increased population and extended periods of low precipitation can cause reduced water supplies. Drought can impact wells and aquifers in Fremont after extended periods with limited rain and snowfall, often for several months, and is a town-wide hazard. The Town of Fremont monitors the information provided by NH DES Drought Management Program. The U.S. Drought Monitor Scale is in the appendix of this Plan.

Probability – The Committee ranked the probability of drought as Low.

Past Occurrence - The State of New Hampshire Multi-Hazard Mitigation Plan Update 2018 rates Rockingham County at low risk for drought. However, drought conditions persisted across southern New Hampshire in 2016, 2020, and into July 2021. The Town follows state recommended guidelines for water conservation during periods of drought.

Community Vulnerability - The Committee determined that water supply and fire flow are the most at risk due to drought conditions.

Extreme Temperatures

Description - Extreme temperatures are typically recognized as conditions where temperatures consistently stay ten degrees or more above a region's average high temperature for 24-72 hours (extreme heat) or stay ten degrees or more below a region's average low temperature for a 24-72-hour period (extreme cold). Fatalities can result from extreme temperatures, as they can push the human body beyond its limits.

Location – Extreme temperatures can affect all areas of Fremont.

Extent - Extreme heat events impact Fremont for 3-4 days each summer, and extreme cold events impact the Town 2-3 days each winter. Heat Index measures a number in degrees Farenheit that tells how hot it feels when relative humidity is added to the air temperature. The National Weather Service Heat Index is included in this Plan as Appendix K, and the Wind Chill Chart is included as Appendix L.

Probablility – The Committee ranked the probability of extreme temperatures as moderate.

Past Occurrence – Annually. Since the last Plan Update, Fremont has experienced an increase in days with a high heat index. Winter days with below average temperature have remained the same but do occur each year.

Community Vulnerability - The Committee determined that all parts of Fremont are at risk of impacts associated with extreme temperatures. The young, elderly and vulnerable populations are especially vulnerable to heat stroke. The EMD maintains a list of these populations, including addresses for homes, day care centers, and congregate care facilities.

Climate Change

Description - Climate is defined as the long-term, prevailing pattern of temperature, precipitation, and other weather variables at a given location as described by statistics, such as means and extremes. Climate differs from weather in that weather is the current state or short-term variation of these variables at a given location. Climate change is the observed change in atmospheric variables over time that are the result of natural and anthropogenic, or human-caused, influences. Climate change is directly related to the ongoing increase in global temperature, a rise that is influenced by the steady incre3ase in the concentration of atmospheric greenhouse gases that has been occurring and continues to occur across the globe.

Location – Climate change can affect all areas of Fremont, in the form of increased temperatures and extreme precipitation events.

Extent – Extreme heat events impact Fremont for 3-4days each summer and the number of days may increase as the result of climate change. The average annual temperature in New Hampshire has increase three degrees since the early 20th century. Winter warming has been larger than any other season. Future winter warming will have large effects on snowfall and

snow cover. Flooding from extreme precipitation events increasingly impacts Fremont. Mean precipitation and precipitation extremes are projected to increase in the future, with associated increases in flooding.

Probability – The Committee determined the probability of climate change impacting Fremont as moderate and dependent on the type of hazard.

Past Occurrence – Annually

Community Vulnerability - The Committee determined that all parts of Fremont are at risk of impacts associated with climate change and the effects of climate change pose real and significant threats to community safety, resilience, and quality of life.

Infectious Disease

Description – Infectious diseases are illnesses caused by organisms – such as bacteria, viruses, fungi, or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person, some are transmitted by bites from insects or animals, and others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections get better on their own without treatment, while some life-threatening infections may require hospitalization. A definition of infectious diseases by the Mayo Clinic is in the Appendix.

According to the Unites States Centers for Disease Control and Prevention (CDC), the number of people with a disease that is usually present in a community is referred to as the baseline or endemic level of the disease. This number of infections is not necessarily the desired level, which may be in fact be zero, but rather is the typical or normal number of people infected. In the absence of intervention and if the number of infections is not high enough to deplete the pool of susceptible persons, the disease may continue to occur at this level indefinitely. Thus, the baseline level is often regarded as the expected level of the disease. While some diseases are so rare in each population that a single case warrants an epidemiologic investigation (e.g., rabies, plague, polio), there are other diseases that occur more commonly so that only deviations from the norm (i.3. seeing more cases than expected) warrants investigation.

Epidemics occur when an agent (the organism) and susceptible hosts are present in adequate numbers, and the agent can be effectively conveyed from a source to the susceptible people. More specifically, an epidemic may result from a recent increase in amount or virulence of the agent, the recent introduction of the agent into a setting where it has not been before, an enhanced mode of transmission so that more susceptible persons are exposed, a change in the susceptibility of people's response to the agent, and/or factors that increase exposure or involve introduction through new portals of entry.

Epidemics may be caused by infectious diseases, which can be transmitted through food, water, the environment, or person-to-person or animal-to-person, and noninfectious diseases, such as chemical exposure, that causes increased rates of illness. Infectious diseases that may cause an

epidemic can be broadly categorized into the following groups: foodborne (E. Coli), water (Giardiasis), vaccine preventable (Measles), sexually transmitted (HIV), person-to -person (TB), arthropod borne (Lyme), zoonotic (Rabies), and opportunistic fungal and fungal infections (Candidiasis). An epidemic may also result from a bioterrorist event in which an infectious agent is released into a susceptible population, often through an enhanced mode of transmission, such as aerosolizing.

Location – Infectious disease can affect all areas of Fremont.

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

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

Probability – The Committee determined the probability of infectious disease is moderate.

Past Occurrence – Infectious disease, such as COVID-19, seasonal influenza, and gastrointestinal illness occur annually in Fremont. The 2020 COVID-19 Pandemic is ongoing as of this Plan Update, with the State of NH reporting a total of 870 cumulative cases in the community. Fremont continues to experience cases of COVID-19 and community transmission.

Community Vulnerability – The Committee determined that all parts of Fremont are at risk of impacts associated with infectious disease. Rates of illeness, duration of disease, and the ability to treat or prevent illness once the causative agent is ideintified are just a few factors that will further determine the vulnerability of the population. In response to the COVID-19 pandemic, Fremont designated a public pandemic official to oversee information sharing and coordination of the town's response.

Table 3: State of New Hampshire
Presidentially Declared Disasters (DR) and Emergency Declarations (EM) 1982-2015
Source: *State of NH Multi-Hazard Mitigation Plan, 2013 Update*

Date Declared	Event	FEMA DR	Program	Amount	Counties Declared
08/27/86	Severe storms/flooding	FEMA-771-DR	PA	$1,005,000	Cheshire and Hillsborough
04/16/87	Severe storms/flooding	FEMA-789-DR	PA/IA	$4,888,889	Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, and Sullivan
08/29/90	Severe storms/winds	FEMA-876-DR	PA	$2,297,777	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, and Sullivan
09/09/91	Hurricane	FEMA-917-DR	PA	$2,293,449	Statewide
11/13/91	Coastal storm/flooding	FEMA-923-DR	PA/IA	$1,500,000	Rockingham
03/16/93	Heavy snow	FEMA-3101-DR	PA	$832,396	Statewide
01/03/96	Storms/floods	FEMA-1077-DR	PA	$2,220,384	Carroll, Cheshire, Coos, Grafton, Merrimack, and Sullivan
10/29/96	Severe storms/flooding	FEMA-1144-DR	PA	$2,341,273	Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
01/15/98	Ice storm	FEMA-1199-DR	PA/IA	$12,446,202	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Strafford, and Sullivan
07/02/98	Severe storms	FEMA-1231-DR	PA/IA	$3,420,120	Belknap, Carroll, Grafton, Merrimack, Rockingham, and Sullivan
10/18/99	Hurricane/tropical storm Floyd	FEMA-1305-DR	PA	$750,133	Belknap, Cheshire, and Grafton
March 2001	Snow emergency	FEMA-3166-EM	PA	$4,500,000	Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, and Strafford
2/17/2003 - 2/18/2003	Snow emergency	FEMA-3177-EM	PA	$3,000,000	Cheshire, Hillsborough, Merrimack, Rockingham, and Strafford
09/12/03	Severe storms/flooding	FEMA-1489-DR	PA	$1,300,000	Cheshire and Sullivan
03/11/03	Snow emergency	FEMA-3177-EM	PA	$3,000,000	Cheshire, Hillsborough, Merrimack, Rockingham, and Strafford

01/15/04	Snow emergency	FEMA-3193-EM	PA	$3,200,000	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, and Sullivan
03/30/05	Snow emergency	FEMA-3207-EM	PA	$4,654,738	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
03/30/05	Snow emergency	FEMA-3208-EM	PA	$1,417,129	Carroll, Cheshire, Coos, Grafton, and Sullivan
04/28/05	Snow emergency	FEMA-3211-EM	PA	$2,677,536	Carroll, Cheshire, Hillsborough, Rockingham, and Sullivan
10/26/05	Severe storm/flooding	FEMA-1610-DR	PA/IA	$14,996,626	Belknap, Cheshire, Grafton, Hillsborough, Merrimack, and Sullivan
05/31/06	Severe storm/flooding	FEMA-1643-DR	PA/IA	$17,691,586	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, and Strafford
4/15/2007 - 4/23/2007	Severe storm/flooding	FEMA-1695-DR	PA/IA	$27,000,000	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
08/11/08	Severe storms/tornado/flooding	FEMA-1782-DR	PA	$1,691,240	Belknap, Carroll, Merrimack, Rockingham, and Strafford
09/05/08	Severe storms/flooding	FEMA-1787-DR	PA	$4,967,595	Belknap, Coos, and Grafton
10/03/08	Severe storms/flooding	FEMA-1799-DR	PA	$1,050,147	Hillsborough and Merrimack
12/11/08	Severe winter storm	FEMA-3297-EM	DF A/P A	$900,000	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
01/02/09	Severe winter storm	FEMA-1812-DR	DF A/P A	$19,789,657	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
03/29/10	Severe winter storm	FEMA-1892-DR	PA	$9,103,138	Merrimack, Rockingham, Strafford, and Sullivan
05/12/10	Severe winter storm	FEMA-1913-DR	PA	$3,057,473	Hillsborough and Rockingham

07/22/11	Severe storms/flooding	FEMA-4006-DR	PA	$1,664,140	Coos and Grafton
09/03/11	Tropical storm Irene	FEMA-4026-DR	PA/IA	$11,101,752	Belknap, Carroll, Coos, Grafton, Merrimack, Strafford, and Sullivan
12/07/11	October Nor'easter	FEMA-4049-DR	PA	$4,411,457	Hillsborough and Rockingham
06/18/12	Severe storms/flooding	FEMA-4065-DR	PA	$3,046,189	Cheshire
10/30/12	Hurricane Sandy	DR-4095 EM-3360	PA DFA	$2,132,376	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
2/8/2013 - 2/10/2013	Severe storm/blizzard	DR-4105	PA	$6,127,598	Belknap, Carroll, Cheshire, Hillsborough, Merrimack, Strafford, and Rockingham
6/26/2013 – 7/3/2013	Severe storms/flooding	DR-4139	PA	$6,389,705	Cheshire, Sullivan, and Grafton
1/26/2015 – 1/29/2015	Severe winter storm/snowstorm	DR-4209	PA	$4,607,527	Strafford, Rockingham, and Hillsborough
3/14/2017-3/15/2017	Severe winter storm/snowstorm	DR-4316	PA	$80,306,55	Belknap and Carroll
1/1/2017-1/2/2017	Severe storm/flooding	DR-4329	PA	$6,218,291	Grafton and Coos
10/29/2017 - 11/1/2017	Severe storm/flooding	DR-4355	PA	$4,710,744	Sullivan, Merrimack, Belknap, Carroll, Grafton Coos
3/2/2018-3/8/2018	Severe storm/flooding	DR-4370	PA, IA	$3,344,036	Rockingham
3/13/2018-3/14/2018	Severe winter storm/snowstorm	DR-4371	PA, IA	$1,981,453	Carroll, Strafford, Rockingham
7/11/2019-7/12/2019	Severe storm/flooding	DR-4457	PA	$675,907,700	Grafton
3/13/2020-ongoing	COVID-19 pandemic	EM-3445	PA, IA	NA	New Hampshire
1/20/2020	COVID-19 pandemic	DR-4516	PA, IA	NA	New Hampshire
Program Key: PA: Public Assistance IA: Individual Assistance DFA: Direct Federal Assistance					

MAP 2: PAST AND FUTURE HAZARDS

CHAPTER IV – CRITICAL FACILITIES

The Critical Facilities List for the Town of Fremont has been identified by Fremont's Hazard Mitigation Committee. The Critical Facilities List has been broken up into four categories. The *first category* contains facilities needed for Emergency Response in the event of a disaster. The *second category* contains Non-Emergency Response Facilities that have been identified by the committee as non-essential. These are not required in an emergency response event but are considered essential for the everyday operation of Fremont. The *third category* contains Facilities/Populations that the committee wishes to protect in the event of a disaster. The *fourth category* contains Potential Resources, which can provide services or supplies in the event of a disaster. Map 3: Critical Facilities at the end of this Chapter identifies the location of the facilities and the evacuation routes. A list of the critical facilities can be found in Table 4.

Table 4: Category 1 - Emergency Response Services and Facilities:

The first category contains facilities needed for Emergency Response in the event of a disaster.

Critical Facility	Address	Facility Type
Fremont Public Safety Complex (EOC, Police Dept., Fire Dept.)	425 Main Street	Public building
Fremont Town Hall	295 Main Street	Public building
Fremont Highway Shed	113 Danville Road	Public building

Table 4: Category 2 - Non-Emergency Response Facilities:

The Town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Fremont.

Critical Facility	Address	Facility Type
Ellis Elementary School	432 Main Street	Public Building
Fremont Public Library	7 Jackie Bernier Drive	Public Building
1820 Country Market & Deli	281 Main Street	Retail Market
Village Market	6 Danville Road	Retail Market
AT&T cell tower AT&T cell tower	789 Main Street 326 Main Street	Cell Tower Cell Tower
NH Routes 107 & 111A		Evacuation Routes
Phillips Dam in Brentwood	Mill Road	Dam
Scribner Dam	130 Scribner Road	Dam
Martin Road Bridge	Martin Road	Bridge
Scribner Road Bridge	130 Scribner Road	Bridge
Sandown Road Bridge	Sandown Road at Main Street	Bridge

Table 4: Category 3 - Facilities/Populations to Protect:

The third category contains people and facilities that need to be protected in event of a disaster.

Critical Facility	Address	Facility Type
Ellis Elementary School	432 Main Street	Public Education
Historic Museum	282 Main Street	Public Building
Colonial Poplin and Poplin Way	442 Main Street	Senior Citizen Residential & Nursing
Country Side Estates	Christopher Lane at Main Street	Senior Citizen Residential
Governor's Forest	Tarah Way at Main Street	Senior Citizen Residential
Black Rocks Village	Hall Road at Main Street	Senior Citizen Residential
Rislove's Way	Rislove's Way at Tavern Road or North Road	Senior Citizen Residential
Barnyard Buddies	77 Chester Road	Child Day Care
Country Club for Kids	48-50 Main Street	Child Day Care

Table 4: Category 4 - Potential Resources:

This category contains facilities that provide potential resources for services or supplies in the event of a natural disaster.

Critical Facility	Address	Facility Type
Hannaford's – Raymond	2 Freetown Road, Raymond	Grocery Store
Market Basket – Epping	27 Calef Highway, Epping	Grocery Store
Lowe's – Epping	36 Fresh River Road, Epping	Retail Hardware
Ben Franklin	15 Freetown Road, Raymond	Retail Hardware
Brookvale Pines Farm	154 Martin Road, Fremont	Equipment and Supplies
LCB Transport	154 Martin Road, Fremont	Equipment and Supplies
LeClair Logging	789 Main Street, Fremont	Equipment and Supplies
Best Machine	79 Beede Hill Road, Fremont	Equipment and Supplies
American Steel and Aluminum	828 Main Street, Fremont	Equipment and Supplies
Fremont Animal Hospital	125 South Road, Fremont	Veterinary
Village Market	6 Danville Road, Fremont	Gas, Food and Beverages
1820 Market & Deli	281 Main Street, Fremont	Food and Beverages
NH DOT Shed – Kingston	Mill Road, Kingston	Fuel, Equipment and Supplies
NH DOT Shed – Epping	Coffin Road, Epping	Fuel, Equipment and Supplies
Fremont Pizzeria	431 Main Street, Fremont	Food and Beverages
Walmart – Epping	35 Fresh River Road, Epping	Retail Hardware, Food, Beverages, supplies

MAP 3: CRITICAL FACILITIES MAP

CHAPTER V – POTENTIAL HAZARD AFFECTS

IDENTIFYING VULNERABLE FACILITIES

It is important to determine which critical facilities are the most vulnerable and to estimate their potential loss. The first step is to identify the facilities most likely to be damaged in a hazard event. To do this, the location of critical facilities illustrated on Map 3 was compared to the location of various topographical elements, floodplains, roads, and water bodies using GIS (Geographic Information Systems). Vulnerable facilities were identified by comparing their location to possible hazard events. For example, all the structures within the 100-year and 500-year floodplains were identified and used in conducting the potential loss analysis for flooding.

CALCULATING THE POTENTIAL LOSS

The next step in completing the loss estimation involved assessing the level of damage from a hazard event on structures in Fremont. For the purpose of estimating general losses, the total assessed value for all structures, not including land, in Fremont in 2021 was used, a total of $352,607,950.

The damage estimates are divided into two categories based on hazard types: hazards that are location specific (e.g., flooding), and hazards that could affect all areas of Fremont equally, such as extreme temperatures. Damage estimates from hazards that could affect all of Fremont equally are much rougher estimates, based on percentages of the total assessed value of all structures in the community. Damage estimates from hazards with a specific location are derived from the assessed values of the parcels within the hazard area. Assessing and tax map data were used to determine buildings at risk. After identifying the parcels and buildings that are at risk, the next step was to calculate a damage estimate for each potential hazard area. The following discussion summarizes the potential loss estimates due to natural hazard events.

Flooding – Special Flood Hazard Zones - The average replacement value was calculated by adding up the assessed values of all structures in the 100 and 500-year floodplains. Because of the scale and resolution of the FIRM maps and imagery this is only an approximation of the total structures located within the 100 and 500-year floodplains. The Federal Emergency Management Agency (FEMA) has developed a process to calculate potential loss for structures during flood. The potential loss was calculated by multiplying the replacement value by the percent of damage expected from the hazard event. Residential and non-residential structures were combined.

The costs for repairing or replacing bridges, railroads, power lines, telephone lines, and contents of structures are not included in this estimate. In addition, the figures used were based on buildings which are one or two stories high with basements. The following calculation is based on eight-foot flooding and assumes that, on average, one or two-story buildings with basements receive 49% damage (Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13). For this exercise, the average assessed value of a residential building in Fremont, without land, was estimated to be $180,825.

- Potential Structure Damage: 49%
  Approximately 175 structures, with an approximate total assessment of $31,644,375. = $15,505,744 potential damage.

The following calculation is based on four-foot flooding and assumes that, on average, one or two-story buildings with basements receive 28% damage (Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13):

- Potential Structure Damage: 28%
  Approximately 175 structures, with an approximate total assessment of $31,644,375 = $8,860,425 potential damage.

The following calculation is based on two-foot flooding and assumes that, on average, one or two-story buildings with basements receive 20% damage (Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13):

- Potential Structure Damage: 20%
  Approximately 175 structures, with an approximate total assessment of $31,644,375 = $6,328,875 potential damage.

Several areas of Raymond were identified as having high risk of flooding. These areas are identified in Map 2: Past and Future Hazards. Potential losses were also calculated for these at-risk areas in the same manner as those structures in the 100 and 500-year floodplains. These assessments are only based on the potential damages to building within the identified at-risk areas.

Table 5: Percentages of structural and content damage estimated, based on the assessed value of a flooded parcel. Also shows the functional downtime and displacement time for each flood event.

Flood Depth	One foot	Two-foot	Four-foot
% Structural Damage: Buildings	15%	20%	28%
% Structural Damage: Mobile Homes	44%	63%	78%
% Contents Damage: Buildings	22.5%	30%	42%
% Contents Damage: Mobile Homes	30%	90%	90%
Flood Functional Downtime: Buildings	15 days	20 days	28 days
Flood Functional Downtime: Mobile Homes	30 days	30 days	30 days
Flood Displacement Time: Buildings	70 days	110 days	174 days
Flood Displacement Time: Mobile Homes	302 days	365 days	365 days

Hurricane/ High Wind Events

Hurricane - Hurricanes do affect the Northeast coast periodically. Since 1900, 2 hurricanes have made landfall in the State of New Hampshire. Due to Fremont's proximity to the Atlantic coast,

hurricanes present a real hazard to the community. Even degraded hurricanes or tropical storms could still cause significant damage to the structures and infrastructure of the Town of Fremont. The assessed value of all residential structures in Fremont in 2021 was $352,607,950. Assuming 1% to 5% damage, a hurricane could result in $3,526,080 to $17,630,398 of structure damage.

Tornado - Tornadoes are relatively uncommon natural hazards in New Hampshire. On average, about six tornadoes touch down each year. Damage largely depends on where the tornado strikes. If is strikes an inhabited area, the impact could be severe. The assessed value of all residential structures in Fremont in 2021 was $352,607,950. Assuming 1% to 5% damage, a tornado could result in $3,526,080 to $17,630,398 of structure damage.

Severe Lightning - The amount of damage caused by lightning will vary according to the type of structure hit and the type of contents inside. There is no record of monetary damages inflicted in the Town of Fremont from lightning strikes.

Severe Winter Weather

Heavy Snowstorms - Heavy snowstorms typically occur during January and February. New England usually experiences at least one or two heavy snowstorms with varying degrees of severity each year. Power outages, extreme cold and impacts to infrastructure are all effects of winter storms that have been felt in Fremont in the past. All these impacts are a risk to the community, including isolation, especially of the elderly, and increased traffic accidents. Damage caused because of this type of hazard varies according to wind velocity, snow accumulation and duration. The assessed value of all residential structures in Fremont in 2021 was $352,607,950. Assuming 1% to 5% damage, a heavy snowstorm could result in $3,526,080 to $17,630,398 of structure damage.

Ice Storms - Ice storms often cause widespread power outages by downing power lines, making power lines at risk in Fremont. They can also cause severe damage to trees. Ice storms in Fremont could be expected to cause damage ranging from a few thousand dollars to millions of dollars, depending on the severity of the storm.

Wildfire

The risk of fire is difficult to predict based on location. Forest fires are more likely to occur during years of drought. The area identified as at risk to wildfire (Map 2: Past and Future Hazards) by the Hazard Mitigation Committee. The assessed value of all residential structures in Fremont in 2021 was $352,607,950. Assuming 1% to 5% damage, a wildfire could result in $3,526,080 to $17,630,398 of structure damage.

Earthquakes

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and are often associated with landslides and flash floods. Four earthquakes in New Hampshire between 1924-1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. If an earthquake were to impact Fremont, underground utilities would also be susceptible. In addition, buildings that are not built to a high seismic design level would be susceptible to structural damage. The assessed value of all residential structures in Fremont in 2021 was $352,607,950. Assuming 1% to 5% damage, an earthquake could result in $3,526,080 to $17,630,398 of structure damage.

Drought

Extended drought can impact municipal water supplies, private drinking wells, and make vegetated areas more susceptible to wildfire (see above). The Town has no record of monetary damage in related to drought but has assisted residents in the Riverside Drive area that have had their dug wells dry up due to drought.

Extreme Temperatures

The Committee determined that all parts of town are at risk of impacts associated with extreme heat and cold. Young and elderly populations are particularly vulnerable and the EMD can direct vulnerable residents to a heating and cooling center at the regional high school.

Climate Change

The potential hazard damages from climate change are described above under flooding and extreme temperatures.

Infectious Disease

Epidemics have the potential to cause a significant loss of life and/or widespread illness throughout Fremont. The threat of a pandemic influenza, such as COVID-19, exemplifies a devastating situation where there may be an extreme shortage of essential service workers, a rapid transmission of disease from person-to-person, and no effective vaccination to prevent the illness.

CHAPTER VI – EXISTING HAZARD MITIGATION ACTIONS

The next step involves identifying existing mitigation strategies for the hazards likely to affect the town and evaluate their effectiveness. This section outlines those programs and recommends improvements and changes to these programs to ensure the highest quality emergency service possible. Poor is defined as an action in need of improvement; Average is defined as an action that is fair but could use some improvement in order to be effective; and Good is defined as an action that does not need further improvements and is effective.

Table 6: Existing Hazard Mitigation Actions

Existing Protection	Area Covered	Responsible Local Agent	Effectiveness (Poor, Average, Good)	Recommended Changes-Actions-Comments
2021 Zoning Ordinance	Town-wide	Code Enforcement Officer	Good	Contains shoreland, wetland and floodplain provisions that are effective at mitigating negative impacts from development such as but not limited to stormwater runoff. The zoning ordinance is reviewed annually to ensure consistency with the Master Plan.
2021 Subdivision Regulations	Town-wide	Planning Board	Good	Evaluated annually updated as needed. Regulations are effective at mitigating the stormwwater and fire impacts of subdivision development.
2021 Site Plan Review Regulations	Town-wide	Planning Board	Good	Regulation meets effective targets for mitigating impacts from snow and rain events.
2021 Road Design Standards	Town-wide	Planning Board/Board of Selectmen/Road Agent/Town Engineer	Good	Evaluated annually and updated as needed to ensure an effective strategy for safe road access and design.
Culvert Inspection and Maintenance Program	Town-wide	Road Agent	Good	Culverts are inspected annually, and problems are addressed quickly.
2021 Master Plan	Town-wide	Planning Board	Good	Updated on a regular basis. Includes directives for future land use changes in town.

Existing Protection	Area Covered	Responsible Local Agent	Effectiveness (Poor, Average, Good)	Recommended Changes-Actions-Comments
Capital Improvements Plan	Town-wide	Planning Board	Good	Committee formed in 2021 to update CIP
2015 Building Codes	Town-wide	Building Inspector	Good	The code is in line with the most recent state and federal standards and is effective at ensuring meeting safety standards to hazard events. It will continue to be reviewed annually.
2016 Emergency Operations Plan	Town-wide	EMD	Good	Plan is reviewed annually and updated as needed.
HazMat Training	Town-wide	EMD	Good	Training is done annually to ensure proper emergency response.
2021 School Emergency Response Plan	Ellis School	SAU Superintendent	Good	Plan is reviewed by SAU annually.
Emergency Service: Police Department	Town-wide	Police Chief	Good	Staff levels are reviewed annually based on town needs. Police Department uses Facebook to communicate with residents.
Emergency Services: Fire Department	Town-wide	Fire Chief	Good	Staff levels are reviewed annually based on town needs. Fire Department uses Facebook to communicate with residents.
Highway Department	Town-wide	Road Agent	Good	Storm drain, catch basin and culvert maintenance, snow removal, road-side mowing, Tree maintenance within Town Right-of-Way. The highway department is effective at ensuring the above maintenance is done annually to mitigate hazard events in town.
Wetlands and Watershed Protection District Regulations	Wetland setbacks required	Planning Board/ Select Board /NH DES	Good	The Town has an effective setback and buffer requirement (100') between development and defined wetlands.

Existing Protection	Area Covered	Responsible Local Agent	Effectiveness (Poor, Average, Good)	Recommended Changes-Actions-Comments
Stormwater Management Regulations	Town-wide	Planning Board/Road Agent/Town Engineer	Good	Continue to monitor effectiveness of regulations as climate patterns change
Shoreland Protection Program	River corridors	Code Enforcement Officer/Planning Board/NH DES	Good	Continue to monitor effectiveness of regulations as climate patterns change
Floodplain Development Ordinance	Town-wide	Code Enforcement Officer/Planning Board	Good	The Town has adopted floodplain development standards
Police and Fire Mutual Agreements Mutual Aid	Town-wide/Region	Police Chief and Fire Chief	Good	The town and regional partners continue to evaluate and uphold effective regional emergency response. Mutual aid agreements are reviewed annually.
Regional Association of Road Agents	Town-wide/Region	Road Agent	Good	Town participates in meetings of Road Agents in region to address issues of common concern.
State and Regional Public Health Networks	Town-wide/Region	Health Officer	Good	Town participates in Seacoast Public Health Network
Road-side tree trimming program	Town-wide	Road Agent	Good	Fremont works with EverSource annually to review and ensure trees are cleared away from power lines on municipal roadways. This program is effective at eliminating damage and power outage from ice storms and severe windstorms.

Existing Protection	Area Covered	Responsible Local Agent	Effectiveness (Poor, Average, Good)	Recommended Changes-Actions-Comments
NFIP	Town-wide	Building Inspector/Code Enforcement Officer	Good	Fremont maintains status as a participating NFIP community and has an effective history of compliance with FEMA and NFIP building standards. Compliance requirements are reviewed annually by the Code Enforcement Officer to ensure continue compliance with program directives.
Land Conservation Program	Town-wide	Conservation Commission/Open Space Committee/Select Board	Good	The Town works regularly with landowners and land conservation organizations to permanently protect land from development. This has resulted in hundreds of acres of land that can be used for flood storage.
Dam Management	Scribner Road Dam	NH Dam Bureau/Private Landowners	Good	Scribner Road Dam is privately owned and managed. The Road Agent maintains good communication with the dam manager.
Participation on Exeter-Squamscott River Local Advisory Committee	Exeter River corridor	Volunteer Committee	Good	Town residents participate on this watershed committee to advocate for land conservation and climate change resiliency planning in the river corridor
Reverse 911	Town-wide	NH system	Good	The Reverse 911 system is operated by SAU 83. The Town uses the system on an as-needed basis.
Code Red	Town-wide	Rockingham County Dispatch	Good	The Town participates in the Code Red system
Public Safety Education	Town-wide	Select Board/Fremont Cable TV Committee	Good	Town cable access channel, website and monthly Town newsletter are used to educate residents about pre-disaster preparedness and hazard mitigation

Existing Protection	Area Covered	Responsible Local Agent	Effectiveness (Poor, Average, Good)	Recommended Changes-Actions-Comments
Drought Awareness	Town-wide	Select Board	Good	Town monitors information from the State regarding drought status and guidance and distributes information to residents via social media, Town newsletter, and Town cable access channel
Infectious Disease	Town-wide	Health Officer/Town Administrator	Good	Town monitors guidance from the State and Federal governments and distributes information to residents via social media, Town newsletter, and Town cable access channel

CHAPTER VII – POTENTIAL MITIGATION ACTIONS

POTENTIAL MITIGATION STRATEGIES

The Action Plan was developed by the Committee by analyzing the existing Town programs and identifying proposed improvements and changes to these programs. Additional programs and actions were also identified as potential mitigation strategies. The hazards that were defined in this Plan Update were analyzed for potential mitigation opportunities using the New Hampshire's Hazard Mitigation Plan, other abutting community's hazard mitigation plans, and FEMA's Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards. The Committee updated the Action Plan to include actions that the community will attempt to implement in a timely manner with available resources. These potential mitigation strategies (Table 7) were ranked in five categories according to how they accomplished each item:

- Prevention
- Property Protection
- Structural Protection
- Emergency Services
- Public Information and Involvement

Table 7: Potential Mitigation Actions

Mitigation Strategies or Action	Mitigation Category	Hazard(s) Mitigated	Description	Status 2022: New/Completed/ Deferred/ Removed
Purchase and install two backup generators for Ellis Elementary School	Prevention	All Hazards	Purchase and install two backup generators for the school so it may be used as an emergency shelter	Deferred due to lack of funds
Develop an evacuation plan for the instance of a major disaster	Emergency Services	All Hazards	Develop an evacuation plan with town and regional emergency services personnel	Removed due to lack of resources
Refine the early warning system to be incorporated within the cable access channel, town website and town newsletter	Public Information and Involvement Emergency Services	All Hazards	Develop and early warning system to inform residents about threats from natural hazards and ways to mitigate hazards	Completed – information is available on town website, cable access channel and town newsletter
Elevating North Road	Prevention	Flooding	Elevate and re-center North Road to reduce flooding	Completed
Place river level gauge in Exeter River at Sandown Road bridge	Emergency Services/Prevention	Flooding	A river gauge could serve as a warning system during periods of heavy rain and snowmelt	Removed due to lack of resources
Lightning safety mitigation plan	Public Information and Involvement/Prevention/Property Protection	Wildfire/Fire	Compile a lightning safety brochure that address how to prevent lightning strikes and take precautions during a lightning storm	Removed due to lack of resources
Establish cooling and heating centers at the Safety Complex and Library	Emergency Services	Extreme Heat	Operate and publicize the availability of cooling and heating centers at the Safety Complex and Library during periods of extreme heat or power outages	Completed
Renovate Town Hall HVAC system so building can operate as a heating and cooling center	Emergency Services	Extreme Heat	Renovations of the HVAC system in the Town Hall would enable the building to be used as a heating and cooling center during period of extreme heat or power	Completed

Mitigation Strategies or Action	Mitigation Category	Hazard(s) Mitigated	Description	Status 2022: New/Completed/ Deferred/ Removed
			outages	
Conduct an inventory of buildings, dams and bridges vulnerable to damage from earthquakes	Prevention	Earthquakes	Conduct and maintain an inventory of buildings and infrastructure that may be particularly vulnerable to earthquake damage, including historic structures	Removed due to lack of resources
Survey roadways and remove hazardous trees and work with utility companies to remove trees	Prevention	Hurricane/Severe Winter Weather/Tornado	Road agent work survey trees along roadways to identify hazard trees and work with utility companies to remove trees	Completed
Reduce risk of wildfires by incorporating wildfire mitigation actions such as vegetation management and water availability into municipal fire prevention programs	Prevention	Wildfire	Work with landowners to enable vegetation management and water availability in areas of town prone to wildfires	Deferred due to lack of resources
Provide residents with information on storm preparedness	Prevention Public Information/ Involvement	All Hazards	Use the town website, town newsletter and cable access channel to educate residents on storm and hazard related mitigation and preparedness, including safe operation of home generators	Completed
Prevent and reduce flooding by improving culvert performance using the information collected on culverts in Fremont as part of the Regional Stream Crossing Assessment developed by the Rockingham Planning Commission	Prevention	Flooding	The Rockingham Planning Commission completed an assessment of culverts in Fremont in August 2015	Completed

Mitigation Strategies or Action	Mitigation Category	Hazard(s) Mitigated	Description	Status 2022: New/Completed/ Deferred/ Removed
Develop a contingency plan for using Ellis School as an emergency shelter and disaster response staging area	Emergency Services	All Hazards	Ellis school could serve as an emergency shelter and disaster response staging area	New
Replace Scribner Road Bridge	Emergency Services	All Hazards	Scribner Road Bridge is on the State's Red List	New

CHAPTER VIII – PRIORITIZATION OF MITIGATION ACTIONS

The goal of each strategy or action is reduction or prevention of damage from a hazard event. In order to determine their effectiveness in accomplishing this goal, a set of criteria was applied to each proposed strategy. A set of questions developed by the Committee that included the STAPLEE method was developed to rank the proposed mitigation actions. 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 identified in Table 8:

- Does it reduce disaster damage?
- Does it contribute to other goals?
- Does it benefit the environment?
- Does it meet regulations?
- Will historic structures be saved or protected?
- Could it be implemented quickly?

STAPLEE criteria:

- **Social**: Is the proposed strategy socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is 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 the strategy need environmental regulatory approvals?

Each proposed mitigation strategy was evaluated using the above criteria and assigned a score (Good = 3, Average = 2, Poor = 1) based on the above criteria. An evaluation chart with total scores for each strategy can be found in the collection of individual tables under Tables 8.1 to 8.3.

Table 8.1: Purchase and install two generators at Ellis School

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	1
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	1
E: Are other Environmental approvals required?	1
Score	**27**

Table 8.2 Develop a contingency plan for using Ellis School as an emergency shelter and disaster response staging area

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	1
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	1
E: Are other Environmental approvals required?	3
Score	**31**

Table 8.3: Replace Scribner Road Bridge

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	1
Score	**31**

CHAPTER IX – ACTION PLAN

This step involves developing an action plan that outlines who is responsible for implementing each of the prioritized strategies determined in the previous step, as well as when and how the actions will be implemented. The following questions were asked 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?

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

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

Table 9 is the Action Plan. In addition to the prioritized mitigation projects, the Action Plan includes the responsible party (WHO), how the project will be supported (HOW), and what the timeframe is for implementation of the project (WHEN).

Table 9: Action Plan for proposed mitigation actions

Score	Project	Responsibility/ Oversight	Funding/ Support	Estimated Cost	Timeframe
31	Develop a contingency plan for using Ellis School as an emergency shelter and disaster response staging area	EMD/School Board/Select Board	Grant	$5,000	Short-term 1 year
31	Replace Scribner Road Bridge	Select Board/ Highway/ NH DOT	Grant/Town	$1,500,000	Long-term 5 years
27	Purchase and install two generators at Ellis School	School Board/Facilities Director	Grant	$250,000	Medium-term 2-3 years

CHAPTER X – INCORPORATING, MONITORING, EVALUATING AND UPDATING THE PLAN

Incorporating the Plan into Existing Planning Mechanisms

Upon review by FEMA and the State of New Hampshire, the Plan will be adopted by the Town and become an appendix to the Town's Emergency Operations Plan (EOP) when that plan is completed.

In the future, the Hazard Mitigation Plan Update 2022 will be consulted when the Town updates its Capital Improvement Program (CIP). The Capital Improvements Committee is responsible for updating the CIP annually, and will review the Action Plan, as it has done before, during each update. This committee in conjunction with Fremont Emergency Management will determine what items can and should be added to the CIP based on the Town's annual budget and possible sources of other funding. Portions of this plan should be referred to when updates to the towns Master Plan takes place. Considerations about future land use and proximity to current and potential hazard areas need to be inherently part of the planning process. NH RSA 674:2 III (e) gives towns the authority to include a natural hazards section, which documents the physical characteristics, severity, and extent of any potential natural hazards to the community, within the framework of a Master Plan.

Monitoring, Evaluating and Updating the Plan

Recognizing that many mitigation projects are continual, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail altogether, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the Plan where necessary.

In order to track progress and update the Mitigation Strategies identified in the Action Plan (Table 10), it is recommended that the Town revisit the Plan annually, or after a hazard event. If it is not realistic or appropriate to revise the Plan every year, then the Plan will be revisited no less than every five years per FEMA requirements. The Emergency Management Director is responsible for initiating this review with members of the Town that are appropriate including members of the public. In keeping with the process of adopting the 2014 Plan Update and per NH RSA 91-A:2 (II) and pursuant to CFR 201.6(b)(1) regarding notice requirements, a public meeting to receive public comment on Plan maintenance and updating will be held during any review of the Plan. This publicly noticed meeting (via town website, and postings in the town office, library, or local newspaper) will allow for members of the community not involved in developing the Plan to provide input and comments each time the Plan is revised. The final revised Plan will be adopted by the Board of Selectmen appropriately, at a second publicly noticed meeting.

Changes should be made to the Plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with STAPLEE, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this Plan to determine feasibility of future implementation.

APPENDIX A:

SUMMARY OF 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 officials 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. Sensitive and vulnerable lands can be designated for uses that would not be incompatible with occasional flood events - such as parks or wildlife refuges. A Capital Improvements Program 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 flood plain, 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, which either stand-alone or are contained within a zoning ordinance.

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 watercourses 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 their yard without concern for runoff patterns.

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

Wet Flood proofing: 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 improve 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. And 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, however, since it takes many years for a new wetland to achieve the same level of quality as an existing one.

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. And, 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. Practices to reduce erosion and sedimentation have two principal components: (1) minimize erosion with vegetation and; (2) capture sediment before it leaves the site. Slowing the runoff increases infiltration into the soil, thereby controlling the loss of topsoil from erosion and the resulting sedimentation. Runoff can be slowed by vegetation, terraces, contour strip farming, no-till farm practices, and impoundments (such as sediment basins, farm ponds, and wetlands).

3. Best Management Practices - Best Management Practices (BMPs) are measures that reduce nonpoint source pollutants that enter waterways. Nonpoint 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 be warned.

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. 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.
- providing safe drinking water.
- 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.

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 of discussed below. The shortcomings of structural approaches are that:

- 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.

Reservoirs - Reservoir's 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 number 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; and
- 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.

Levees/Floodwalls - Probably the best know 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.

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.

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 somewhere else, and 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.

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.

Public Information - Public information activities are intended to advise property owners, potential property owners, and visitors about the particular 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 Office of Emergency Management, the NH Office of State Planning, or your regional planning commission.

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:

- 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.
- Presentations at meetings of neighborhood groups.

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.

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.

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.

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.

Environmental Education - Education can be a great mitigating tool, if people can learn what not to do before damage occurs. And 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. And decision-makers, armed with this knowledge, can make a difference in their communities.

II. EARTHQUAKES

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

B. PROPERTY PROTECTION:
Acquire and clear hazard areas.
Retrofitting to add braces, remove overhangs.
Apply mylar to windows and glass surfaces to protect from shattering glass.
Tie down major appliances, provide flexible utility connections.
Earthquake insurance riders.

C. EMERGENCY SERVICES - Earthquake response plans to account for secondary problems, such as fires and hazardous materials spills.

D. EMERGENCY SERVICES - Slope stabilization.

III. DAM FAILURE

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

B. PROPERTY PROTECTION - Acquisition of buildings in the path of a dam breach flood. Flood insurance.

C. EMERGENCY SERVICES - Dam conditioning monitoring; warning and evacuation plans based on dam failure.

D. EMERGENCY SERVICES - Dam improvements, spillway enlargements. Remove unsafe dams.

IV. WILDFIRES

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

B. PROPERTY PROTECTION:
Retrofitting of roofs and adding spark arrestors.
Landscaping to keep bushes and trees away from structures.
Insurance rates based on distance from fire protection.

C. NATURAL RESOURCE PROTECTION - Prohibit development in high-risk areas.

D. EMERGENCY SERVICES - Fire Fighting

V. WINTER STORMS

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

B. PROPERTY PROTECTION:
Storm shutters and windows
Hurricane straps on roofs and overhangs
Seal outside and inside of storm windows and check steals in spring and fall.
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 - Maintenance program for trimming tree and shrubs

D. EMERGENCY SERVICES - Early warning systems/NOAA Weather Radio Evacuation Plans

APPENDIX B:
TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION

Local Municipalities must have a FEMA-approved Hazard Mitigation Plan in order to be eligible for Hazard Mitigation Assistance Grants. Information on these grants may be found at:

http://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf

HAZARDS MITIGATION GRANT PROGRAM (HGMP) - Authorized under Section 404 of the Stafford Act, 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. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

Hazard Mitigation Grant Program funding is only available in States following a Presidential disaster declaration. Eligible applicants are:

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

Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf. HMGP funds may be used to fund projects that will reduce or eliminate the losses from future disasters. Projects must provide a long-term solution to a problem, for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage.

PRE-DISASTER MITIGATION GRANTS PROGRAM - The Pre-Disaster Mitigation (PDM) program provides technical and financial assistance to States and local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property. FEMA provides grants to States and Federally recognized Indian tribal governments that, in turn, provide sub-grants to local governments (to include Indian Tribal governments) for mitigation activities such as planning, and the implementation of projects identified through the evaluation of natural hazards.

FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM - FEMA provides funding to assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses. Ten percent of the Project Grant is made available to States as a Technical Assistance Grant. These funds may be used by the State to help administer the program. Communities receiving FMA Planning, and Project Grants must be participating in the NFIP.

EMERGENCY MANAGEMENT PERFORMANCE GRANT
GUIDELINES - Emergency Management Performance Grant (EMPG Program) funding is available to local communities and eligible Agencies for projects that fall in FOUR general areas of Emergency

Management: Planning activities; Training activities; Drills and Exercises; and Emergency Management Administration. Contact HSEM Field Services Section at NHFS@dos.nh.gov, 603-223-3663 for guidance.

The following list of possible projects and activities is meant to guide you in selecting projects for an EMA Grant Submission. This list of suggested projects is not intended to be all-inclusive. Local communities or agencies may have other specific projects and activities that reflect local needs based on local capability assessments and local hazards.

Planning Activities may include:

- Develop a Hazard Mitigation Plan for your community.
- Prepare a hazard mitigation project proposal for submission to NHHSEM.
- Create, revise, or update Dam Emergency Action plans.
- Update your local Emergency Operations Plan (EOP). Consider updating a number of specific annexes each year to ensure that the entire plan is updated at least every four years.
- If applicable, develop or incorporate a regional HazMat Team Annex into your EOP.
- Develop an Anti-Terrorism Annex into your EOP.
- Develop a local/regional Debris Management Annex into your EOP.
- Develop and maintain pre-scripted requests for additional assistance (from local area public works, regional mutual aid, State resources, etc.) and local declarations of emergency.
- Develop and maintain written duties and responsibilities for EOC staff positions and agency representatives.
- Develop and maintain a list of private non-profit organizations within your local jurisdiction to ensure that these organizations are included in requests for public assistance funds.
- Prepare a submission for nomination as a "Project Impact" Community.

Training Activities may include:

- Staff members attend training courses at the Emergency Management Institute.
- Staff members attend a "field delivered" training course conducted by NHHSEM.
- Staff members attend other local, State, or nationally sponsored training event, which provides skills or knowledge relevant to emergency management.
- Staff members complete one or more FEMA Independent Study Courses.
- Identify and train a pre-identified local damage assessment team.

Drills and Exercises might include:

- Conduct multi-agency EOC Exercise (Tabletop or Functional) and forward an Exercise Evaluation Report, including after action reports, to NHHSEM (external evaluation of exercises is strongly encouraged). Drills or Exercises might involve any of the following scenarios:
    - Hurricane Exercise
    - Terrorism Exercise
    - Severe Storm Exercise
    - Communications Exercise
    - Mass Causality Exercise involving air, rail, or ship transportation accident
- Participate in multi-State or multi-Jurisdictional Exercise and forward Exercise Report to NHHSEM.
- HazMat Exercise with Regional HazMat Teams
- NHHSEM Communications Exercises
- Observe or evaluate State or local exercise outside your local jurisdiction.

- Assist local agencies and commercial enterprises (nursing homes, dams, prisons, schools, etc.) in developing, executing, and evaluating their exercise.
- Assist local hospitals in developing, executing and evaluating Mass Care, HazMat, Terrorism, and Special Events Exercises.
- Administrative Projects and Activities may include:
- Maintain an Emergency Operations Center (EOC) and alternate EOC capable of accommodating staff to respond to local emergencies.
- Establish and maintain a Call-Down List for EOC staff.
- Establish and maintain Emergency Response/Recovery Resource Lists.
- Develop or Update Emergency Management Mutual Aid Agreements with a focus on Damage Assessment, Debris Removal, and Resource Management.
- Develop and maintain written duties and responsibilities for EOC staff positions and agency representatives.
- Develop or Update Procedures for tracking of disaster-related expenses by local agencies.

FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM - FMA 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 (NFIP). FMA regulations can be found in 44 CFR Part 78. Funding for the program is provided through the National Flood Insurance Fund. FMA is funded at $20 million nationally. FMA provides funding to assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP).

There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses. Ten percent of the Project Grant is made available to States as a Technical Assistance Grant. These funds may be used by the State to help administer the program. Communities receiving FMA Planning, and Project Grants must be participating in the NFIP. A few examples of eligible FMA projects include: the elevation, acquisition, and relocation of NFIP-insured structures.

States are encouraged to prioritize FMA project grant applications that include repetitive loss properties. The FY 2001 FMA emphasis encourages States and communities to address target repetitive loss properties identified in the Agency's Repetitive Loss Strategy. These include structures with four or more losses, and structures with 2 or more losses where cumulative payments have exceeded the property value. State and communities are also encouraged to develop Plans that address the mitigation of these target repetitive loss properties.

APPENDIX C:
SAFFIR/SIMPSON HURRICANE SCALE

Courtesy of National Hurricane Center

This can be used to give an estimate of the potential property damage and flooding expected along the coast with a hurricane.

Category	Definition	Effects
One	Winds 74-95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage
Two	Winds 96-110 mph	Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
Three	Winds 111-130 mph	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet ASL may be flooded inland 8 miles or more.
Four	Winds 131-155 mph	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
Five	Winds greater than 155 mph	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

Above information can be found at: http://www.fema.gov/hazards/hurricanes/saffir.shtm

APPENDIX D:
ENHANCED FUJITA TORNADO DAMAGE SCALE

The Enhanced Fujita Scale			
F-Scale Number	Potential Damage	Wind Speed	Type of Damage
F0	Light	65 – 85 mph	Little to no damage to man-made structures. Breaks branches off trees; pushes over shallow-rooted trees; damages signs
F1	Moderate	86 – 110 mph	Beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; Moderate damage.
F2	Considerable	111 – 135 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars from trains pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe	136 – 165 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cards lifted and thrown.
F4	Devastating	166 – 200 mph	Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	Incredible	Over 200 mph	Strong frame houses leveled off foundations and carried considerable distances; automobile-sized missiles fly through the air in excess of 109 yards; trees debarked; steel reinforced concrete structures badly damaged. Complete devastation.

APPENDIX E:
THE RICHTER MAGNITUDE SCALE

Earthquake Severity

Magnitudes	Earthquake Effects
Less than 3.5	Generally, not felt but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0-7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Information above found at: http://www.seismo.unr.edu/ftp/pub/louie/class/100/magnitude.html

The Richter Magnitude Scale - Seismic waves are the vibrations from earthquakes that travel through the Earth; they are recorded on instruments called seismographs. Seismographs record a zig-zag trace that shows the varying amplitude of ground oscillations beneath the instrument. Sensitive seismographs, which greatly magnify these ground motions, can detect strong earthquakes from sources anywhere in the world. The time, locations, and magnitude of an earthquake can be determined from the data recorded by seismograph stations.

The Richter magnitude scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs. Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake, and a strong earthquake might be rated as magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

Earthquakes with magnitude of about 2.0 or less are usually call microearthquakes; they are not commonly felt by people and are generally recorded only on local seismographs. Events with magnitudes of about 4.5 or greater - there are several thousand such shocks annually - are strong enough to be recorded by sensitive seismographs all over the world. Great earthquakes, such as the 1964 Good Friday earthquake in Alaska, have magnitudes of 8.0 or higher. On the average, one earthquake of such size occurs somewhere in the world each year. The Richter Scale has no upper limit. Recently, another scale called the moment magnitude scale has been devised for more precise study of great earthquakes. The Richter Scale is not used to express damage. An earthquake in a densely populated area which results in many deaths and considerable damage may have the same magnitude as a shock in a remote area that does nothing more than frighten wildlife. Large-magnitude earthquakes that occur beneath the oceans may not even be felt by humans.

Appendix F

Extreme Weather Madness
Thunderstorm Criteria

THUNDERSTORM TYPES	Rainfall Rate/hr	MAX WIND GUST	HAIL SIZE	PEAK TORNADO Possibility	LIGHTNING FREQUENCY (5 min Intervals)	Darkness Factor	STORM IMPACT
T-1 – Weak thunderstorms or Thundershowers	.03-.10	< 25 MPH	None	None	Only a few strikes during the storm.	Slightly Dark. Sunlight may be seen under the storm.	1. No damage. 2. Gusty winds at times.
T-2 – Moderate Thunderstorms.	.10"-.25"	25-40 MPH	None	None	Occasional 1-10	Moderately Dark. Heavy downpours may cause the need for car lights.	1. Heavy downpours. 2. Occasional lightning. 3. Gusty winds. 4. Very little damage. 5. Small tree branches may break 6. Lawn furniture moved around
T-3 – Heavy Thunderstorms 1. Singular or lines of storms.	.25"-.55"	40-57 MPH	1/4 " to ¾"	EF0	Occasional to Frequent 10-20	Dark. Car lights used. Visibility low in heavy rains. Cars may pull off the road.	1. Minor Damage. 2. Downpours that produce some flooding on streets. 3. Frequent lightning could cause house fires. 4. Hail occurs within the downpours. 5. Small branches are broken. 6. Shingles are blown off roofs.
T-4 – Intense Thunderstorms 1. Weaker supercells 2. Bow Echos or lines of Storms	.55" – 1.25"	58 to 70 MPH	1" to 1.5"	EF0 to EF2	Frequent 20-30	Very Dark. Car lights used. Some street lights come on..	1. Moderate Damage. 2. Heavy rains can cause flooding to streams and creeks. Roadway flooding. 3. Hail can cause dents on cars and cause crop damage. 3. Wind damage to trees and buildings. 4. Tornado damage. 5. Power outages
T-5 – Extreme Thunderstorms 1. Supercells with familty of tornadoes. 2. Derecho Windstorms	1.25" – 4"	Over 70 Mph	Over 1.5" to 4"	EF3 to EF5	Frequent to Continuous. > 30	Pitch Black, Street Lights come on. House lights maybe used	1. Severe Damage to Trees and Property. Damage is widespread. 2. Flooding rains. 3. Damaging hail. 4. Damaging wind gusts to trees and buildings. 5. Tornadoes F3-F5 or family of tornadoes can occur. Tornadoes can cause total devastation. 6. Widespread power outages.

Appendix G
Lightning Risk Definitions

Lightning Risk Definitions	
Low Risk	Thunderstorms are only expected to be isolated or widely scattered in coverage (20 Percent Chance). Atmospheric conditions do not support frequent cloud-to-ground lightning strikes.
Moderate Risk	Thunderstorms are forecast to be scattered in coverage (30-50 Percent Chance). Atmospheric conditions support frequent cloud-to-ground lightning strikes.
High Risk	Thunderstorms are forecast to be numerous or widespread in coverage (60-100 Percent Chance). Atmospheric conditions support continuous and intense cloud-to-ground lightning strikes.

Appendix H

Hail Size Description Chart

Hail Size Description Chart

Hailstone size	Measurement	
	in.	cm.
bb	< 1/4	< 0.64
pea	1/4	0.64
dime	7/10	1.8
penny	3/4	1.9
nickel	7/8	2.2
quarter	1	2.5
half dollar	1 1/4	3.2
golf ball	1 3/4	4.4
billiard ball	2 1/8	5.4
tennis ball	2 1/2	6.4
baseball	2 3/4	7.0
softball	3.8	9.7
Compact disc / DVD	4 3/4	12.1

Note: Hail size refers to the diameter of the hailstone.

Appendix I

Sperry-Pitz Ice Accumulation Index

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

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

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

Appendix J

Wildland Urban Interface (WUI) Exposure Zones – NIST Technical Note 1748, January 2013
Source: National Institute of Standards and Technology (NIST), US Dept. of Commerce

Table 4: E-Scale Building Construction Classes and Attributes

WUI scale	Building Construction Class	Ignition Vulnerabilities from Embers and Fire	Building Construction and Landscaping Attributes for Protection against Embers
E1 or F1	WUI 1	None	Normal Construction Requirements: - Maintained Landscaping - Local AHJ-Approved Access for firefighting equipment
E2 or F2	WUI 2	In this area, highly volatile fuels could be ignited by embers. Weathered, dry combustibles with large surface areas can become targets for ignition fro m embers.	Low Construction Hardening Requirements: - Treated combustibles allowed on structure - Attached treated combustibles allowed - Treated combustibles allowed around structure - Low flammability plants - Irrigated and well maintained Landscaping - Local AHJ-Approved Access for firefighting equipment
E3 or F3	WUI 3	Exposed combustibles are likely to ignite in this area from high ember flux or high heat flux	Intermediate Construction Hardening Requirements: - No exposed combustibles on structure - Combustibles placed well away from structure - Low flammability plants - Irrigated and well maintained landscaping - Local AHJ-Approved Access for firefighting equipment
E4 or F4	WUI 4	Ignition of combustibles from direct flame contact is likely.	High Construction Hardening Requirements: - No exposed combustibles - All vents, opening must be closed - Windows and doors must be covered with insulated non-combustible coverings. - Irrigated and well maintained low flammability landscaping - Local AHJ-Approved Access for firefighting equipment

National Wildfire Coordinating Group – Wildfire Classification

Size Class of Fire

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

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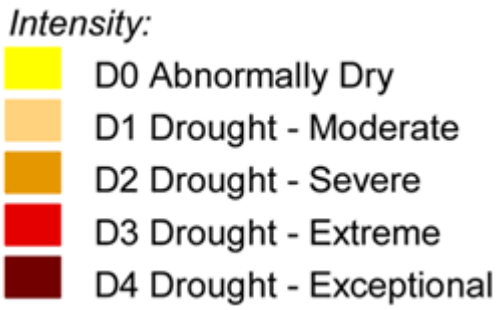
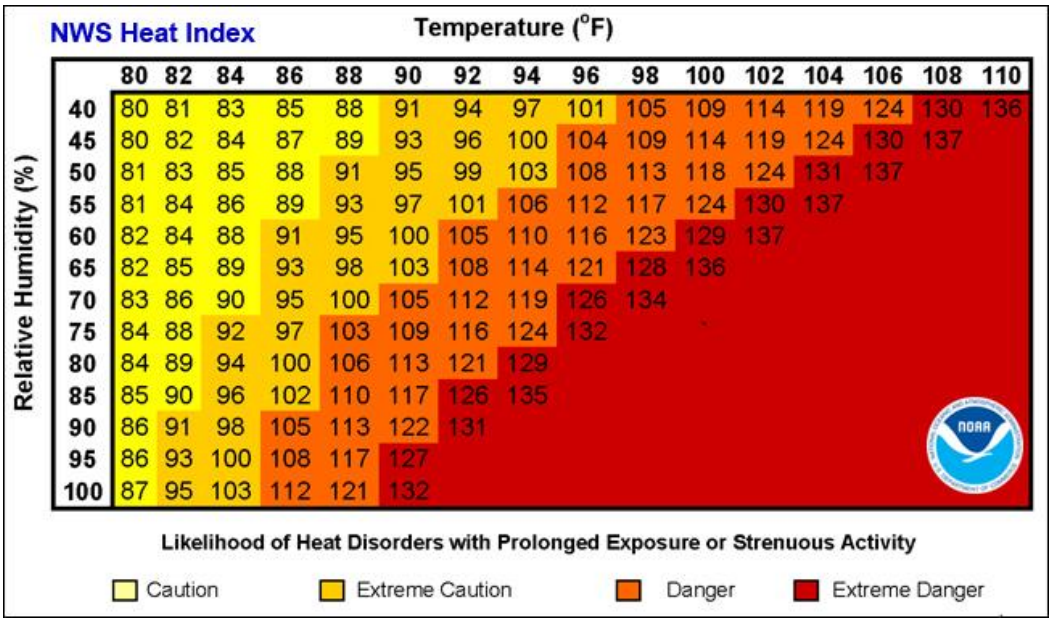
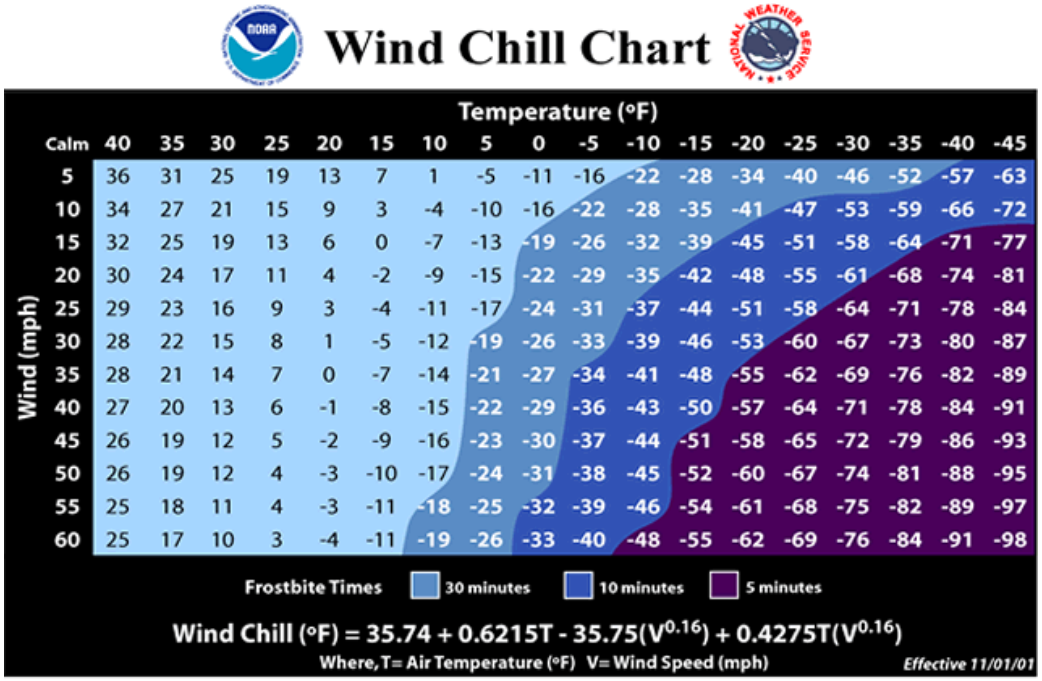
Appendix K
NOAA U.S. Drought Monitor Scale



Appendix L
National Weather Service Heat Index



Appendix M
National Wind Chill Chart



Appendix N
Definition of Infectious Diseases – Mayo Clinic

Infectious diseases are disorders caused by organisms — such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They're normally harmless or even helpful. But under certain conditions, some organisms may cause disease.

Some infectious diseases can be passed from person to person. Some are transmitted by insects or other animals. And you may get others by consuming contaminated food or water or being exposed to organisms in the environment.

Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections may respond to rest and home remedies, while some life-threatening infections may need hospitalization.

Many infectious diseases, such as measles and chickenpox, can be prevented by vaccines. Frequent and thorough hand-washing also helps protect you from most infectious diseases.

Appendix O
Documentation of Planning Process

2022 Plan Update Meeting #1
Meeting Date: 11/3/21
Meeting Agenda: Review Plan Update Process and Timeline; Review Hazard Types
Meeting Participants: Leon Holmes, Jr. Road Agent; Jon Twiss, Police Chief; Neal Janvrin, Selectman; Richard Butler, Fire Chief; Heidi Carlson, Town Administrator; Mark DeVeber, Emergency Management Director

2022 Plan Update Meeting #2
Meeting Date 12/15/2021
Meeting Agenda: Update Hazard Types and Locations; Update Critical Facilities; Review and Update Existing Mitigation Programs; Update Mitigation Actions; Review and Update Maps
Meeting Participants: Leon Holmes, Jr. Road Agent; Jon Twiss, Police Chief; Neal Janvrin, Selectman; Richard Butler, Fire Chief; Heidi Carlson, Town Administrator; Mark DeVeber, Emergency Management Director; Leanne Miner, Land Use Administrator; Paul Normandin, Facilities Director, Ellis School

2022 Plan Update Meeting #3
Meeting Date: 3/30/2022
Meeting Agenda: Review and Rank Mitigation Actions; Update Action Plan; Review Draft Plan; Finalize edits to draft Plan; Select date for Public Hearing on Draft Plan Update
Meeting Participants: Leon Holmes, Jr. Road Agent; Jon Twiss, Police Chief; Neal Janvrin, Selectman; Richard Butler, Fire Chief; Heidi Carlson, Town Administrator; Mark DeVeber, Emergency Management Director; Leanne Miner, Land Use Administrator; Paul Normandin, Facilities Director, Ellis School

PUBLIC HEARING NOTICE

The Fremont Select Board will hold a public hearing on April 28, 2022 at 7:30 pm in the basement meeting room at the Fremont Town Hall to review the Draft Natural Hazard Mitigation Plan Update 2022 and to receive comments on the Draft Plan. FEMA requires every municipality in the country to develop a Natural Hazard Mitigation Plan to and to update their Plan every five years.

The Draft Plan is posted on the Town's website and available at the Select Board Office at the Fremont Town Hall and at the Fremont Public Library. You can also send an email to hcarlson@fremont.nh.gov and request a copy of the plan be emailed to you.

Comments may be submitted to Heidi Carlson, Town Administrator, up through the date of the hearing. Comments may be submitted by email to: hcarlson@fremont.nh.gov; by hard copy to PO Box 120, Fremont NH 03044 or dropped off at the Select Board Office at the Town Hall.

Posted: 31 March 2022
Published: Union Leader 11 April 2022

Appendix P

Plan Approval Letter from FEMA

U.S. Department of Homeland Security
FEMA Region I
99 High Street, Sixth Floor
Boston, MA 02110-2132

FEMA

June 30, 2022

John Marcel, State Hazard Mitigation Planner
New Hampshire Department of Safety, Homeland Security and Emergency Management
33 Hazen Drive
Concord, New Hampshire 03303

Dear John Marcel:

As outlined in the FEMA-State Agreement for FEMA-DR-4457, your office has been delegated the authority to review and approve local mitigation plans under the Program Administration by States Pilot Program. Our Agency has been notified that your office completed its review of the Town of Fremont, NH Hazard Mitigation Plan Update 2022 and approved it effective **June 27, 2022** through **June 26, 2027** in accordance with the planning requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, the National Flood Insurance Act of 1968, as amended, and Title 44 Code of Federal Regulations (CFR) Part 201.

With this plan approval, the jurisdiction is eligible to apply to New Hampshire Homeland Security and Emergency Management for mitigation grants administered by FEMA. Requests for funding will be evaluated according to the eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in this community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

The plan must be updated and resubmitted to the FEMA Region I Mitigation Division for approval every five years to remain eligible for FEMA mitigation grant funding.

Thank you for your continued commitment and dedication to risk reduction demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please contact Jay Neiderbach at (617) 832-4926 or Josiah.Neiderbach@fema.dhs.gov.

Sincerely,

PAUL F FORD

Digitally signed by PAUL F FORD
Date: 2022.06.30 09:37:53 -04'00'

Paul F. Ford
Deputy Regional Administrator
DHS, FEMA Region I

PFF:jn

cc: Vanesa Urango, Chief of Mitigation and Planning Section, New Hampshire
Brian Eaton, Assistant Chief of Mitigation, New Hampshire