

Town of Stratford, New Hampshire



Hazard Mitigation Plan 2021

Town Adoption Date: _____

FEMA Approval Date: _____

TABLE OF CONENTS

1. INTRODUCTION	
Authority	1-1
Funding Source	1-1
Purpose	1-1
Introduction	1-1
Scope of Plan	1-2
Methodology	1-2
Summary of Changes	1-4
Goals	1-4
Planning Committee	1-6
2. COMMUNITY PROFILE	
Community Description	2-1
National Flood Insurance Program	2-2
Disaster Risk	2-3
Hazard Risk Matrix	2-3
Calculating Potential Loss	2-4
Current & Future Development Trends	2-4
3. HAZARD IDENTIFICATION	
Flooding (Localized, Riverine, Ice Jam)	3-1
Winter Weather	3-3
Severe Wind	3-4
Flood (Dam Failure)	3-5
Infectious Disease	3-7
Lightning	3-8
Hurricane	3-9
Hail	3-10
Extreme Temperatures	3-11
Drought	3-12
Earthquake	3-14
Erosion/Landslide	3-15
Wildfire	3-16
Solar Storms	3-17
Avalanche	3-18
4. CRITICAL FACILITIES	
Estimating Potential Loss	4-1
Inventory of Critical Facilities & Assets	4-2
5. CAPABILITY ASSESSMENT	
Integration of Mitigation Priorities	5-1
Existing Protection Matrix	5-2

TABLE OF CONTENTS – CONTINUED

6.	HAZARD MITIGATION PROJECTS	
	Hazard Identification	6-1
	Problem Statements	6-1
	Goals Identified	6-1
	Project Identification	6-1
	Completed Projects Since 2016	6-2
	Prioritized Mitigation Projects	6-2
	Incorporating Mitigation into Local Planning	6-2
	Mitigation Action Plan	6-4
7.	ADOPTION, IMPLEMENTATION AND MONITORING	
	Adoption, Implementation and Monitoring	7-1
	Resolution	7-3
APPENDIX A	Hazard Mitigation Resources	
APPENDIX B	Documentation of Planning Process	
APPENDIX C	Approval Letter from FEMA	

Last Edition:

Updated Edition:

Chapter 1 INTRODUCTION

Authority

This Hazard Mitigation Plan was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA), Section 322, Mitigation Planning. Accordingly, this Hazard Mitigation Plan will be referred to as the “Plan”.

Funding Source

This Plan was funded by the NH Homeland Security and Emergency Management (HSEM) through a Pre Disaster Mitigation (PDM) Grant, with in-kind matching funds by the Town of Stratford.

Purpose

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

Introduction

On October 30, 2000 the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000). The ultimate purpose of DMA 2000 is to:

- Establish a national disaster hazard mitigation program that will reduce loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from disasters, and
- Provide a source of pre-disaster hazard mitigation funding that will assist State and local governments in accomplishing that purpose.

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322 – Mitigation Planning. This places new emphasis on local mitigation planning. **It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Assistance (HMA) grants.** Local governments must review and if necessary, update the mitigation plan every five years to continue program eligibility. However, it is recommended that this Plan be reviewed/updated annually or after a hazard event to be consistent with Chapter 7.

Why Develop a Mitigation Plan?

The full cost of the damage resulting from natural hazards – personal suffering, loss of lives, disruption of the economy, loss of tax base – is difficult to measure. Our State is subject to many types of natural hazards: floods, hurricanes, severe winter weather, earthquakes, tornadoes, downbursts, and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and strike in predictable locations. Others, such as floods, can occur anytime of the year and almost anywhere in the State.

Scope of the Plan

The scope of this Plan includes the identification of natural hazards affecting the town, as identified by the Hazard Mitigation Planning Committee. The hazards reviewed under the scope of this plan include those that are outlined in the State of New Hampshire's Multi-Hazard Mitigation Plan Update 2018. With one exception; due to no history or risk of avalanche in the Town, the Committee chose not to recognize the risk of this hazard in this Plan.

Dam Failure

Drought

Earthquake

Erosion

Extreme Temps

Flood

Hail

Human Caused

Hurricane

Infectious Disease

Lightning

Severe Wind

Solar Storms

Wildfire

Winter Weather

Methodology

In the 2021, the Hazard Mitigation Planning Committee, with the assistance of Hubbard Consulting LLC, met to review and update the Plan. A total of three meetings on June 16, 2021, August 25, 2021 and September 22, 2021.. Public notices were posted at the Town Office, Town Website, post office, hollow store, email and newspaper, inviting members of all town departments and boards, surrounding communities, businesses, academia, State agencies and non-profit agencies. In addition, email notifications were sent to adjacent communities, the North Country Council Regional Planning Commission, and the NH HSEM. There were no members of the general public that attended the planning meetings. The Emergency Management Directors from surrounding towns were notified of the Plan Update and asked to comment on the Plan (see Appendix B).

The committee analyzed and revised all Chapters of the Plan and provided input to update them. Noteworthy updates from the 2016 Plan include:

- After review of the updated State Hazard Mitigation Plan 2018, the committee included public education on disaster preparedness and climate change to the Goals in Chapter 1;
- Added Solar Storms as new hazards, and revised Extreme Heat to be Extreme Temperatures in Chapters 2 and 3.

After acceptance by the committee, the Plan was submitted to the NH HSEM and FEMA Region 1 for formal Approval. The Board of Selectmen formally adopted the Plan on [REDACTED]. FEMA formally approved the Plan on [REDACTED].

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

Step 1: Form a Hazard Mitigation Planning Committee

Prior to the first public information meeting the Town contacted town department heads and posted public notices to residents, business owners and neighboring towns, requesting that they consider serving on the Committee (See Appendix B). The Committee Members consisted of town department staff, and water and sewer representatives. A press release was published in the local newspaper and town office and town website inviting residents, businesses, neighboring communities, academia and other private non-profit interests to participate in the planning process.

Step 2: Set Hazard Mitigation Goals and Objectives

At the first working meeting the committee reviewed and made minor revisions to the town's Hazard Mitigation Goals. The Hazard Mitigation Goals were adapted from the State of New Hampshire's Natural Hazards Mitigation Plan. This first step is extremely important in helping the committee understand the purpose of the Plan and the direction it should go. (See the end of this chapter for the "Hazard Mitigation Goals of the Town of Stratford, NH".)

Step 3: Hazard Identification

The Committee members identified natural hazards and human-caused hazards that have or could potentially affect the Town of Stratford. The results of this step can be found in Chapters 2 and 3.

Step 4: Critical Facilities Analysis

The committee members updated the Critical Facilities List for the town. The Critical Facilities List is divided into 3 sections: Facilities needed for Emergency Response; Facilities not necessary for emergency response; and places and populations to protect in the event of a disaster. The results of this step can be found in Chapter 4.

Step 5: Capability Assessment

The committee members identified what plans and policies are already in place to reduce the effects of hazards. The results of this step can be found in Chapter 5. Many of these plans and technical reports were reviewed and incorporated during the planning process, including the Stratford Emergency Operations Plan and Stratford Master Plan.

Step 6: Develop Objectives

The Committee identified "Problem Statements" for each of the hazards identified earlier in the planning process. All of the hazards have at least one problem statement associated with them (See Problem Statement in Appendix B). These problem statements were then utilized as objectives in developing mitigation projects, as described in the next step.

Step 7: Develop Specific Mitigation Measures

As a result of the problem statements identified in step 6, the committee brainstormed specific projects or mitigation measures to address each hazard.

The Committee Members used the “*Mitigation Project Identification Worksheet*”, as shown in Appendix B, to identify mitigation projects that directly address the hazards affecting the community. Finally, the committee prioritized the top priority projects and listed them in the Mitigation Action Plan found at the end of Chapter 6.

Step 8: Adopt and Implement the Plan

After acceptance by the committee the Plan was submitted to the NH Homeland Security and Emergency Management and FEMA Region 1 for formal Approval. The Board of Selectmen formally adopted the Plan on [REDACTED]. The letter of approval from FEMA Region 1 can be found in Appendix C.

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

Step 9: Monitor and Update the Plan

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

Summary of Changes

For the most part, the overall content of the Plan has not changed since the last edition in 2016. However, there are a few notable additions in this 2021 edition. Specifically, Solar Storms was added for consideration and Extreme Heat was modified to Extreme Temperatures to include severe cold. These hazards were added to be consistent with the 2018 State of NH Hazard Mitigation Plan.

Mitigation Goals

During the 2021 update, the Committee reviewed the 2016 Stratford Hazard Mitigation Plan goals and the NH Hazard Mitigation Plan Update 2018 and made minor revisions. The Goals were not modified for any substantial content, as there has not been any substantial change in development. The goals for the Town of Stratford are as follows:

Community & Resource Protection

- To improve upon the protection of the general population, the citizens of Stratford and visitors, from all natural and human-caused hazards.
- To reduce Stratford's potential exposure to risk with respect to natural and human-caused hazards.
- To minimize the damage and public expense which might be caused to public and private buildings and infrastructure due to natural and human-caused hazards.

Coordination & Communication

- To improve the Town of Stratford's:
 - Emergency preparedness and communication network.
 - Disaster response and recovery capability.
- To identify, introduce and implement improvements to establish and maintain a reliable communication system.
- To improve communication capabilities so that the citizens of Stratford can be notified in the most efficient manner as possible.
- To ensure that regular communication occurs between various departments and with local, regional and state officials and to have up-to-date plans in place to address various emergency situations and ensure that those involved are aware of their responsibilities.

Outreach & Education

- To build an awareness of public responsibility for hazard mitigation.
- To raise the awareness and acceptance of hazard mitigation opportunities through public education and outreach programs.
- To increase public awareness of the fire risk and the Town's potential liability with respect to wildfires.

Damage Prevention & Reduction

- To reduce the potential impact of natural and human-caused disasters on the Town of Stratford's:
 - Emergency Response Capability
 - Critical Infrastructure & Key Resources
 - Private property
 - Economy
 - Natural environment
 - Historic treasures and interests, as well as other tangible and intangible characteristics that add to the quality of life of the citizens and visitors to Stratford.
- To identify , introduce and implement cost effective hazard mitigation measures so as to accomplish the Town's Goals and Objectives.
- To reduce the occurrence of road closures and road erosion due to localized flooding within the Town of Stratford.
- Address the challenges posed by climate change as they pertain to increasing the risk and impacts of the hazards identified within this plan
- Strengthen Continuity of Operations and Continuity of Government across the State and local levels to ensure continuation of essential services

2021 Hazard Mitigation Planning Committee

Name	Title/Affiliation
Bona Ladd	Sec. to Admin. Assist.
Charles Goulet	Selectman/Recycle Manager/Cemetery Trustee
Charles Stinson III	Fire Chief
Chris Caron	Conservation Commission
Clayton Macdonald	Selectman/PB Secretary
Denis Corbeil	Planning Board Chair
Harry Juergens	Selectman/Recycle Attendant/Planning Board
Jim Lee	Fireman
Kitty Kerner	Town Clerk/Tax Collector
Mike Lynch	Winter Road Maint./Water-Sewer Contracted Service
Suzanne Goulet	Administrative Assistant
Vicki DeLalla	Former Selectmen, Planning Board

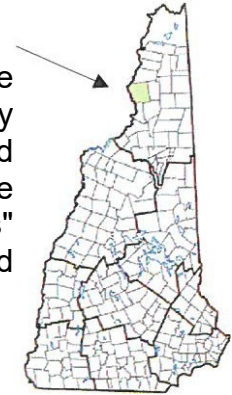
The committee members listed above participated in monthly committee meetings, provided departmental information, contributed in their field of expertise, reviewed and commented on committee meeting minutes, reviewed drafts of the Plan and worked together to identify and prioritize mitigation projects.

*Many thanks to all the hard work and effort from each and every one of you.
This plan would not exist without your knowledge and experience.
Thank you!*

Chapter 2 COMMUNITY PROFILE

Community Description

Stratford is a beautiful community located in Coos County in the northwest part of New Hampshire. Stratford is bordered to the east by Stark and Odell, an Unincorporated Place, to the south by Stark and Northumberland, to the north by Columbia and to the west by the Connecticut River and Vermont. Located in the "Great North Woods" tourist region of New Hampshire, Stratford is surrounded by forest and rivers and contains wonderful mountain vistas throughout.



Town Government

A three-member Board of Selectmen governs the Town of Stratford. The Town's departments include, but are not limited to, Fire, Officer in Charge (Police), Planning, Zoning, Library, Cemetery and trust funds. Stratford does not have a highway department, however does have a contracted Road Agent. The largest businesses in Stratford are the Stratford School, North Woods Trading Post and Hollow Village General Store.

Demographics & Housing

Over the last 30 years, the population of Stratford has decreased drastically. The population has change from 989 in 1980, 746 in 2010 and to 662 in 2020, according to US Census 2020. This represents a negative growth rate of approximately 34% over 20 years. Stratford's population in 2019 was estimated to be 684.

The American Community Survey also estimates a total of 571 housing units, most of which are single family (392). Multiple-family structures total 67 and mobile homes and other housing units number 112. The median household income is estimated to be \$28,929 (ACS 2010-2014) and the median age is 47.4 years. Census 2010 estimates that of the 229 vacant housing units, 188 are used for recreational, seasonal or occasional use thus confirming the presence of second home and seasonal residents.

Education & Child Care

Stratford students in grades K-8 attend school at Stratford Public School, SAU 58. Students in grades 9-12 are tuitioned to High School of choice. There are no colleges or universities in Stratford and no licensed childcare facilities are noted by the Economic & Labor Market Community Profile which was submitted by the Community in July of 2015.

Natural Features

The Town of Stratford covers approximately 79.9 square miles of land area and 0.1 square miles of inland water. The Community is dominated by mountains and hills; the tallest peak is Sugarloaf (3,700' above sea level). The lowest elevation in Town is 890 feet above sea level near the Town center; most of the Community is over 1,000 feet above sea level which leaves it vulnerable to ice storms.

Vegetation is typical of northern New England including both deciduous and conifer forests, open fields, swamp and riverine areas. The terrain lends itself to an abundance of small ponds, streams and rivers, most notably the Connecticut River which forms the natural border between New Hampshire and Vermont. In spite of the abundance of small rivers, the Town remains relatively dry and has only three floodplain areas.

Transportation

There is one major roadway which runs through Stratford. US Route 3 travels from Northumberland in the south to Columbia in the north. Other smaller and less travelled roadways include, but not limited to, Bog Road, Mt. View Road and Percy Road.

US Route 3 a major north-south route is very well-travelled by residents, tourist (both US and Canada) and commercial vehicles on a regular basis.

National Flood Insurance Program (NFIP)

Floodplains for this Plan are defined as the 100-year and 500-year flood hazard zones, as depicted on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). Stratford has participated in the National Flood Insurance Program (NFIP) since April 18, 1983. In order to enable landowners to qualify for federally insured flood insurance, the Town, in its administration of site plan review, subdivision regulations and zoning, must regulate development in the floodplain using federal standards.

The Town's existing ordinance meets the minimum requirements of the NFIP, according to the latest Community Assistance Visit. The Town will continue to maintain procedures and regulations that are in compliance with the NFIP by conducting Community Assistance Visits (CAVs) and Community Assistance Contacts (CAC) with the Office of Strategic Initiatives and updating the Floodplain Ordinance as federal requirements are updated. The last CAC was conducted on February 25, 2013 and the last CAV was conducted on March 22, 2004

The community has Digital Flood Insurance Rate Maps (DFIRM) and a Flood Insurance Study dated February 20, 2013. According to the NFIP Policy and Claims report by FEMA, there are currently 6 NFIP policies. There have been 13 claims, totaling \$58,154, since 1975. There are no repetitive loss properties.

NFIP Policies in Force	Total Insurance in Force	Number of Closed Paid Losses	\$ amount of Paid Losses
6	\$867,000	13	\$58,154

Disaster Risk

Stratford is prone to a variety of natural hazards, as identified in Chapter 3. During the 2021 Update, the Committee added Solar Storms to the hazard risk, to be consistent with the State of NH Hazard Mitigation Plan 2018. The Committee came to a consensus to not include Avalanche, as there is no real threat of these hazards. The following table summarize the impact and probability of natural and human caused hazards.

Hazards	Severity	Probability* In 25 years	Risk Severity x Probability
	Avg. of Human /Property /Business 0: n/a 1: Very Low 2: Low 3: Moderate 4: High 5: Very High	Likelihood this will occur 0: n/a 1: Very Low 2: Low 3: Moderate 4: High 5: Very High	0-9: Low 10-20: Moderate 21-25: High
Natural Hazards			
Flood: Localized	2	5	10
Severe Winter Weather	3	3	9
Flood: Riverine	2	4	8
Severe Wind (<i>Tornado/Downburst</i>)	2	4	8
Flood: Dam Failure	2	3	6
Infectious Diseases	3	2	6
Thunder/Lightning	1	5	5
Flood: Ice Jam	2	2	4
Hurricane	1	2	2
Hail	2	1	2
Extreme Temperatures	1	2	2
Drought	1	2	2
Earthquake	1	1	1
Erosion/Landslide	1	1	1
Wild/Forest Fire	1	1	1
Solar Storms	1	1	1
Avalanche	N/A	N/A	N/A
Human Caused Hazards			
Haz Mat (Transport)	3	3	9
Haz Mat (Fixed)	3	2	6
Mass Casualty Incident	2	2	4
Terrorism	3	1	3
Extended Power Failure	2	1	2
Cyber Event	3	1	3

*Probability Terms are defined as:

- Very Low: 0% - 20% likely to occur in any 25 year period.
- Low: 21% - 40% likely to occur in any 25 year period.
- Moderate: 41%-60% likely to occur in any 25 year period.
- High: 61%-80% likely to occur in any 25 year period.
- Very High: 81%-100% likely to occur in any 25 year period.

CALCULATING POTENTIAL LOSS

It is difficult to determine the amount of damage that could be caused by natural or human-caused hazards because the damage will depend on the hazard's extent and severity, making each hazard event somewhat unique. Therefore, to calculate potential economic loss, we have assumed that structures impacted by hazards could result in damage of either 1% or 5% of the assessed value.

Based on this assumption, the potential loss from any of the identified hazards would range from \$706,987(1%) or \$3,534,485(5%) based on the 2020 town valuations which lists the assessed value of all structures in Stratford to be \$70,689,700. (See table below). Human loss of life was not included in the potential loss estimates, but could be expected to occur, depending on the severity and type of the hazard.

ASSESSED VALUE OF ALL STRUCTURES			
Type	2020 Value	1% Damage	5% Damage
Residential	\$26,838,000	\$268,380	\$1,341,900
Manufactured Housing	\$2,233,900	\$22,339	\$111,695
Commercial	\$3,824,800	\$38,248	\$191,240
Tax Exempt	\$3,200,000	\$32,000	\$160,000
Utilities	\$34,593,000	\$345,930	\$1,729,650
Total	\$70,689,700	\$706,897	\$3,534,485
<i>Source: NH DRA 2020 MS-1</i>			

CURRENT AND FUTURE DEVELOPMENT

Stratford, and many of its neighboring communities, was significantly impacted by the closing of large paper mills in far-northern New Hampshire. The closing of the "mills" combined with the weakened economy of the late-2000s left behind vacant mills and unemployed citizens. As employment opportunities diminished, so did growth and development.

Although the likelihood of substantial development in Stratford is currently low, Town officials will continue to monitor any new growth and development, including new critical facilities, with regards to potentially hazardous events and locations. The Planning Board and the Board of Selectmen will closely monitor future building requests, especially those requested in the floodplain and other hazardous areas such as steep slopes within the Wildland Urban Interface. The Planning Board will follow town building and subdivision regulations to ensure that any building in hazardous areas will be built to minimize vulnerability to the hazards identified in this Plan.

The Hazard Mitigation Planning Committee utilized the current Plans to review and incorporate development changes. Due to no substantial changes in development, there were no changes in priorities made to the Plan. However, it is important to note the impact from Covid-19 on residential and commercial/industrial development due to the increase in building supply cost, supply chain backlogs and fewer new homes being built. With the exception of the Covid-19 impact, the Town's overall vulnerability to the identified hazards has remained the same.

Chapter 3 HAZARD IDENTIFICATION

This Chapter includes a description of the natural hazards that the Committee considered to be a risk to the Town. They are ranked in accordance with their overall risk, as identified in the Risk Matrix in Chapter 2 of this Plan.

FLOOD (Localized, Riverine & Ice Jam)

Probability: Localized=Very High; Riverine=High; Ice Jam=Low

Definition:

Flooding is the temporary overflow of water onto land that is not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/or inadequate local drainage. Flooding events considered in this Plan include 100-year and 500-year floodplain events, rapid snow pack melt and ice jams. Ice jams are an accumulation of ice in a river, stream or other flooding source that reduces the cross-sectional area available to carry the flow and increases the water-surface elevation.

Location:

The Town of Stratford lies along the Connecticut River Watershed. Flooding occurs in the 100 year floodplain, primarily on as designated on the FEMA Flood Insurance Rate Map. The Connecticut River often floods its banks causing structure flooding in the lower mill houses, the sewer lagoons and the Village of North Stratford. Stratford Hollow is also affected by the flooding of Bog Brook. Kimball Brook and Smart's Mill Brook also have flooded in the past and are expected to again in the future.

Impact:

The extent of damage caused by any flood depends on the depth and duration of flooding, the topography of the area flooded, velocity of flow, rate of rise, and the amount and form of development in the floodplain. Sitting close to the Connecticut River in a high water table area, the lower mill houses are very prone to flooding; home owners must use sump pumps year-round to protect their properties. In Stratford Hollow, the bridge across the Connecticut River to Maidstone, VT usually remains above flood stage on the New Hampshire side but roads on the Vermont side get flooded. Fields along the Connecticut River experience some flooding almost every spring; although the flood waters are often good for crops, the debris that is also brought onto farmlands causes an economic strain for some farmers. Lastly, Bog Brook is known for overflowing its banks, primarily during summer snowmelt and heavy rains. In 2012, Bog Brook was reported to have gone "through a house".

Extent:

FEMA defines flood hazards by the 100-year and 500-year flood events. A 100-year flood event is defined as flood event having a 1% chance of being equaled or exceeded in any given year. The 500-year flood event is defined as flood event having a .2% chance of being equaled or exceeded in any given year. The Town of Stratford Flood Insurance Rate Maps (FIRM) identify both an A and AE zones. A zones are subject to the 100-year flood, however because there has been no detailed hydraulic studies, there is no Base Flood Elevation (BFE) determined for these zones. The AE zones are subject to the 100 year flood and have BFEs delineated on the FIRM.

Previous Occurrence:

1979: Ice Jam Flooding on Connecticut River. A significant ice jam happened in 1979 causing flood waters to destroy more than 20 homes; the State of New Hampshire bought the land and gave it to the Town for use as leach fields.

April 15-23, 2007(DR1695): Flood damages; FEMA & SBA obligated more than \$27.9 million in disaster aid following the April nor'easter. (Aka: Tax Day Storm); mostly wind and rain in Stratford.

May 26-30, 2011 (DR4006): May Flooding Event, May 26th-30th 2011 Coos & Coos County. (Aka: Memorial Day Weekend Storm); heavy rain and road flooding, some FEMA reimbursement for road repair, damage to museum in the Hollow (FEM A money); some roads impassable, one road had a 12' hole.

2012 Spring: Flood water from the overflow of Bog Brook in Stratford Hollow caused the river to flow through a house.

2014 Spring: Rapid snow melt combined with heavy rain and the impact of clear cutting (some locations) lead to the flooding of several roads in Stratford; Old Mill Road, US Route 3 and several roads in Stratford Hollow were affected.

July 1, 2017 (DR 4329): A very strong cold front approaching from the west on the morning of July 1st. Ahead of the front, a very warm and moist air mass was in place over New England with values of precipitable water around 2 inches. Strong directional and speed shear contributed to numerous super cells that produced damaging winds. In addition, very heavy rain associated with these cells produced extensive flash flooding to many area roads with damage totaling in the millions. Nothing major happened in town, just a few trees down. The Farmers Market tent on the common collapsed but no one was hurt.

January 13, 2018: Unusually warm weather combined with 1 to 3 inches of rainfall to produce ice jams on numerous rivers across New Hampshire. Snow melt and heavy rain produced ice jams and minor flooding on the Connecticut River at North Stratford (flood stage 13.0 ft), which crested at 14.84 ft. The town monitored the situation but there was no impact roads or structure.

February 21, 2018: Unseasonably warm temperatures caused rapid snowmelt and a ice jam on the Connecticut River at North Stratford. Only minor flooding occurred over the course of several days. Rapid snow melt caused an ice jam and minor flooding on the Connecticut River at North Stratford (flood stage 13 ft), which crested at 13.41 ft.

April 20, 2019: Melting snow combined with an inch of rainfall causing already swollen rivers in New Hampshire to rise above flood stage. Moderate flooding occurred along the Connecticut River at Dalton. Several roads were flooded including Lamoureux Road in Maidstone Vermont and Maidstone Bridge Road in Stratford New Hampshire. Melting snow combined with an inch of rainfall resulting in minor flooding on the Connecticut River at North Stratford (flood stage 13.0 ft), which crested at 13.36 ft. Lamoureux Road in Vermont and Maidstone Bridge Road in Stratford were flooded. Maidstone floods almost every year but was not impacted in this event.

WINTER WEATHER

Probability: Moderate

Definition:

Heavy Snow Storms: A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period. **Ice Storms:** An ice storm involves rain that freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires and similar objects.

Blizzard: A blizzard is a violent snowstorm with winds blowing at a minimum speed of 35 miles (56 kilometers) per hour and visibility of less than one-quarter mile (400 meters) for three hours. **Nor'Easter:** A Nor'easter is a large weather system traveling from south to north, passing along the coast. As the storm's intensity increases, the resulting counterclockwise winds impacted the coast and inland areas in a Northeasterly direction. Winds from a Nor'easter can meet or exceed hurricane force winds.

Location:

There is a town-wide vulnerability to severe winter weather. Nor'easters (wind), Ice Storms, Heavy Snow Accumulations and Severe Cold can occur at any place within the town and generally affect the entire town when it happens. The higher elevations are more likely to experience snow or ice before the lower terrain.

Impact:

Heavy snow accumulations (generally considered one that deposits six or more inches of snow in a 12-hour period) especially those associated with nor'easters can have a significant effect on the Town, including extended power outages, road closures, collapsed roofs and increased snow removal costs. During ice storms, ice forms on cold surfaces, such as trees and power lines, and may continue to form until the ice is quite deep, as much as several inches thick. Ice damage results in power outages, road closures and forest damage. Ice on the roads can be the most difficult for a rapid emergency response. Functional needs populations are at risk during prolonged power outages. Private roads are difficult for emergency response vehicles due to restricted access during winter.

Extent:

NOAA's National Climatic Data Center produced the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the U.S. The RSI ranks snowstorm

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

impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes. In addition, the National Weather Service developed and utilizes the Sperry-Piltz Ice Accumulation Index (SPIA) to forecast the impact of an ice storm. The index below ranges from an ice storm rated as "0" which has little impact, to an index rating of 5 that has catastrophic damage to exposed utility systems.

Previous Occurrence:

1968-69: Total accumulation for the 1968-69 winter was very heavy; the area saw several major snow storms, one which resulted in nearly 50" of snow in a single 24-hour period; the Town of Stratford was able to handle the heavy accumulation well.

February 16, 1978: Presidential Disaster Declaration DR-549: Blizzard of 1978; Stratford saw significant snow fall during this major New England blizzard, but the Town was able to handle the accumulation well.

January 7, 1998: Presidential Disaster Declaration DR-1199: Severe ice storm in Northern NH; although there was no significant impact to structures in the Town of Stratford, the higher elevations were impacted by this ice storm; slash still remains of the forest floor.

March 5-7, 2001: Presidential Emergency Declaration EM-3166: Declaration covers jurisdictions with record and near-record snowfall from the late winter storm that occurred March 2001; no impact

December 6-7, 2003: Presidential Emergency Declaration EM-3193: The declaration covers jurisdictions with record and near-record snowfall that occurred over the period of December 6-7, 2003; heavy snow fell in Stratford but the Town was able to handle the accumulation.

February 10-11, 2005: Presidential Emergency Declaration EM-3208; EM-3208-002: FEMA had obligated more than \$1 million by March 2005 to help pay for costs of the three heavy snowstorms; Total aid for the February storm was \$1,121,727.20 (Coos: \$11,6508.10); the Town of Stratford experienced heavy snow this entire winter, but the Town was able to handle the accumulation.

December 11-23, 2008: Presidential Disaster Declaration DR-1812 & Emergency Declaration EM-3297: Damaging ice storms to entire state including all 10 NH counties; fallen trees and large scale power outages; nearly \$15 million in federal aid had been obligated by May 2009; no significant impact in Stratford; this winter storm stayed primarily in southwest NH.

October 29-30, 2011: Presidential Emergency Declaration EM-3344: Severe storm all ten counties in the State of New Hampshire. (Aka: Snowtober;) the Town of Stratford only experienced a couple inches of snow during this storm; no significant impact.

February 8, 2013: Presidential Emergency Declaration DR-4105: Nemo; heavy snow; this snow storm did not significantly impact the Town of Stratford; stayed more to the southeast part of NH

There have been no other significant winter weather events since the last Plan update.

SEVERE WIND

Probability: High

Definition:

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. These events are spawned by thunderstorms and occasionally by hurricanes. They may also occur singularly or in multiples. A downburst is a severe, localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Downbursts fall into two categories: Microburst which covers an area less than 2.5 miles in diameter; and Macroburst which covers an area at least 2.5 miles in diameter.

Location:

Severe wind events (downburst, tornadoes or high winds associated with thunderstorms) can occur anywhere in Stratford. Generally the higher elevations are more susceptible as well as more vulnerable due to the fact that they are home to emergency response/mutual aid towers. Due to the sporadic nature of tornados and severe wind events, they could occur anywhere in the Town of Stratford.

Impact:

Depending on the size and location of these events, the destruction to property may be devastating. Several of the more significant and recent events within southern New Hampshire have caused several millions of dollars in damage and at least 5 fatalities. An F-2 Tornado, according to the Fujita scale, maintains wind speeds from 13-157 mph. A tornado occurring in Stratford would cause considerable damage. Roofs could be torn off frame houses; mobile homes demolished; large trees snapped or uprooted; and light object missiles would be generated as a result of an F-2 Tornado.

Extent:

According to the Enhanced Fujita scale, which rates tornado intensity, an EF-2 tornado maintains wind speeds from 111-135 mph and can cause considerable damage. Roofs could be torn off frame houses; mobile homes demolished; large trees snapped or uprooted; and light object missiles would be generated as a result of an EF-2 Tornado.

EF 0	65-85 mph
EF 1	86-110 mph
EF 2	111-135 mph
EF 3	136-165 mph
EF 4	166-200 mph
EF 5	Over 200 mph

Previous Occurrence:

September 11, 2016: A line of strong to severe thunderstorms formed ahead of a strong and fast-moving cold front on the morning of September 11th. Numerous reports of wind damage were associated with these storms as they raced through New Hampshire during the mid to late morning hours. A severe thunderstorm downed numerous trees and wires in Stratford. Nothing much

May 29, 2020: Hot and muggy conditions prevailed over the area as the region had been on the backside of an Atlantic Ridge in the warm sector of an unstable airmass. A surface cold front was approaching the area from Ontario province along with an upper level trough which was beginning to increase the mid-level shear over Northern New Hampshire. A line of thunderstorms developed across Northern Vermont and moved into Northern New Hampshire causing isolated damaging wind. Severe thunderstorm wind gusts downed trees in Stratford, NH.

FLOOD (Dam Failure)

Probability: Moderate

Definition:

According to the NH Department of Environmental Services (DES), a dam is any artificial barrier which impounds or diverts water which: has a height of 6 feet or more; or is located at the outlet of a great pond, regardless of height or storage; or is an artificial barrier which impounds liquid Industrial or liquid commercial wastes, or septage or sewage, regardless of height or storage.

Location:

Bog Dam is a significant hazard dam located along Bog Brook in Stratford Hollow. This earthen dam with a concrete top has recently been repaired; however there remains a good chance of undermining. Failure of Bog Dam would send flood waters to Brook; Bog two private homes could be affected. Because flooding from the failure of Bog Dam would be localized, it was determined the estimated structure loss value is between 0% and 1% of the total assessed value of all structures in Stratford .

Murphy Dam in Pittsburg is also a threat to Stratford and is classified as a High Hazard Dam. Murphy Dam is discussed later in this chapter under Human Caused Hazards. It should be noted that if Murphy Dam would to have a complete failure, the estimate loss would likely be in the 1% to 5% range or possibly more.

Impact:

A dam failure or breach could occur due to extreme rainfall amounts and/or a human caused incident. A failure or breach would result in rapid loss of water that is normally held by the dam resulting in an inundation downstream. If Murphy Dam should breach, Stratford would have a minimum of 6 hrs to evacuate. Loss of life would be kept to a minimum. Approximately 79 structures are in the 500-year floodplain and would probably be destroyed as a result of a breach. In addition, town and state roads, 2 bridges, railroads, power lines, telephone lines, a natural gas pipeline, 2 wastewater treatment plants and loss of valuable crop land would be damaged. There is a warning system in place.

Extent:

NH Department of Environmental Services categorizes Dams into one of four classifications, which are differentiated by the degree of potential damages that a failure of the dam is expected to cause. The classifications are designated as non-menace, low hazard, significant hazard and high hazard. A **Significant Hazard Dam** is defined by the NH Department of Environmental Services as A dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in: No probable loss of lives; Major economic loss to structures or property; Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services; or Major environmental or public health losses. A **High Hazard Dam** is defined as a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of: Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions; Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot; Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services; The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII; or any other circumstance that would more likely than not cause one or more deaths.

Previous Occurrence: There are no recorded dam failures and there have been no occurrences of dam failure to the Town of Stratford since the last Plan update.

INFECTIOUS DISEASE

Probability: Low

Definition:

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

Location:

The entire State of New Hampshire, including the entire Town of Stratford, is at risk for Infectious Diseases, including Covid-19. The prevalent diseases can change based on the time of year, such as the influenza virus in the winter and foodborne disease in the summer.

Impact:

Public health incidents and infectious diseases may occur suddenly or with a slow onset. Incidents that occur suddenly may have extraordinary and/or overwhelming medical resource needs. Incidents may occur with a slow onset and/or with advance warning will allow for a more coordinated response. During sudden onset incidents, many victims may reach healthcare facilities on their own without the use of Emergency Medical Services (EMS), which means that victims may arrive to find unprepared or inadequate facilities. According to NH DHHS's 2007 Influenza Pandemic Public Health Preparedness and Response Plan, it is estimated that an influenza pandemic will cause nearly 16,000 hospitalizations and nearly 4,000 deaths. The direct and indirect impacts of Covid-19 will continue for months and years to come.

Extent:

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

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

Previous Occurrence:

March 13, 2020 to present (DR-4516): The State of New Hampshire declared a State of Emergency on March 13, 2020 due to Covid-19. From March 1 through November 1, 2020, the State had 11,290 cases of Covid and by March 1, 2021 there were 75,504 cases of Covid-19. The Town of Stratford has had 43 cases to date. Town Offices have been

closed to public and available by appointment from March 2020 through mid-July 2020 and is encouraging residents to file any paperwork online or to make an appointment. The Board of Selectmen and Planning board held meetings person. The Elementary School shut down in the spring of 2020 resumed normal operations in the fall of 2020 and 2021.

LIGHTNING

Probability: Very High

Definition:

By definition, all thunderstorms contain lightning. Lightning is a giant spark of electricity that occurs within the atmosphere, or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of 50,000 F, considerably hotter than the surface of the Sun.

Location:

The entire town. Including critical facilities, are at moderate risk to lightning hazard. The higher elevation areas have an increased probability; however lightning strikes can occur anywhere in the Town.

Impact:

Residents and visitors to the New Hampshire area are more vulnerable to being struck by lightning because of the activities with which they are involved, particularly on those warm summer days when lightning is most likely to occur. Often, many people are outside enjoying the variety of recreational activities that attract people to New England during the summer when the vulnerability to lightning strike is highest. More likely to be affected are structures and utilities, often resulting in structure fires and power outages.

Extent:

The National Oceanographic Atmospheric Administration (NOAA) defines the extent of lightning activity with a LAL scale as shown in the table below.

LAL 1	No Thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent. 1 to 5 cloud ground strikes in a 5 minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Previous Occurrence:

There have been no significant lightning strikes in the Town of Stratford since the last Plan update.

HURRICANE

Probability: Low

Definition:

A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. The eye of the storm is usually 20-30 miles wide and the storm may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage. The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures.

Location:

When hurricane events occur in Stratford they affect the entire town. Certainly, the heavy rainfall associated with hurricanes will impact the 100-year floodplain but the high winds can have an impact on the whole town.

Impact:

New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, as compared to other states in the region. That being said, the probability of hurricanes occurring in Stratford is possible. The largest impact is on the floodplain areas due to heavy rains. High winds cause trees to fall down thereby causing power outages, structural damage to buildings, road closures and debris management issues.

Extent:

Wind speeds within hurricanes may reach 250 miles per hour in a Category 5 hurricane, as measured on the Saffir-Simpson Hurricane Scale. Tropical depressions are considered to be of hurricane force when winds reach 74 miles per hour. Damage resulting from winds of this force can be substantial, especially considering the duration of the event, which may last for many hours.

Category	Wind Speed (mph)	Damage at Landfall
1	74-95	Minimal
2	96-110	Moderate
3	111-130	Extensive
4	131-155	Extreme
5	> 155	Catastrophic

Previous Occurrence:

August 18, 1991: Presidential Disaster Declaration DR-917. Hurricane Bob. Stratford experienced heavy rain and wind but no significant damage.

August 29, 2005: Presidential Emergency Declaration EM-3258: Assistance to evacuees from the area struck by Hurricane Katrina and to provide emergency assistance to those areas beginning on August 29, 2005, and continuing; The President's action made federal funding available to the State and all 10 counties of the State of New Hampshire; no significant impact in Stratford.

August 26, 2011: Presidential Disaster Declaration DR-4026 and Emergency Declaration EM-3333: Tropical Storm Irene Aug 26th- Sept 6, 2011 Carroll, Coos, Coos, Merrimack, Belknap, Strafford, & Sullivan Counties; Stratford experience heavy rain, but no damage.

October 26, 2012: Presidential Disaster Declaration DR-4095 & Emergency Declaration EM-3360: Hurricane Sandy came ashore in NJ and brought high winds, power outages

and heavy rain to NH; all ten counties in the State of New Hampshire; the declaration covers damage to property from the storm that spawned heavy rains, high winds, high tides and flooding over the period of October 26-November 8, 2012; there was no impact in Stratford.

October 30, 2017 (DR-4355): An area of low pressure over the southeastern United States on the morning of Sunday, October 29th, intensified rapidly Sunday night and Monday, October 30, as it moved northward and moisture and energy from the remnants of Tropical Storm Philippe merged with the storm. The combined system brought high winds to much of New Hampshire Sunday night into Monday morning, with the highest winds in southern and central sections of the State. In addition, heavy rain accompanied the high winds over New Hampshire leading to both flash flooding and main-stem river flooding. Dalton was affected but nothing much happened in Stratford. There were no power outages in Town.

August 4, 2020: Tropical Storm Isaias: Tropical Storm Isaias was the first tropical storm to impact New Hampshire since 2011. The center of the storm tracked west of the state, keeping the flooding rain associated with the storm across New York. The primary impacts the storm brought to New Hampshire were gusty winds with widespread reports of wind gusts in the mid to upper 40s. Numerous trees and branches were brought down with scattered power outages across the state. Overall storm impacts were brief with a period of gusty winds from the south to southeast on the evening of August 4th causing most of the damage. The Tropical Storm brought limited impacts to Coos County with isolated reports of snapped and uprooted trees along with broken branches due to wind gusts in the 40 mph range. Coos County reported scattered power outages with the majority of power being restored within 24 hours. No flooding was reported. No impact

HAIL

Probability: Very Low

Definition: Hail is defined as a showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.

Location:

Due to its widespread nature a hail event could affect any part of Town.

Impact:

Hail can damage communications and IT functions and can damage property and agricultural crops. Due to the complexities and various factors involved in the formation of hail particle size and weight, the impact can vary tremendously.

Extent:

The bigger the diameter of the hailstone, the bigger the impact on agriculture, infrastructure and other objects.

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

Previous Occurrence:

June 1,2011: Stratford has not experienced any significant hailstorm events, although a small amount of hail fell over Memorial Day Weekend of 2011 when a series of thunderstorms laden with hail traveled roughly south to north following the Connecticut River in western New Hampshire. Other towns in Coos County experienced significant roof and car damage as well as road flooding during this storm. In Stratford, no damage was reported.

There have been no significant hail events in the Town of Stratford since the last Plan update.

EXTREME TEMPERATURES

Probability: Low

Definition:

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

Extreme Cold: Low temperatures and wind chill can reduce the body’s core temperature. Cold disorders can include frostbite and hypothermia.. Extreme cold can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy.

Location:

Extreme temperature events are difficult to define geographically. Due to their widespread nature, periods of extreme heat or cold would affect the entire town.

Impact:

Extreme heat conditions may impact the health of residents and visitors. Facilities without generators and air-conditioners that house the elderly and disabled are very susceptible to human health issues. Transportation infrastructure and utilities are also vulnerable as the demand for air-conditioning rises. Extreme cold conditions may also impact the health of residents and visitors. Facilities without generators and back-up sources of heat are very susceptible to human health issues. Transportation infrastructure and energy utilities are also vulnerable.

Extent:

According to OSHA, The risk of heat-related illness becomes greater as the weather gets hotter and more humid. This situation is particularly serious when hot weather arrives suddenly early in the season, before workers have had a chance to adapt to warm weather. This table provides guidelines for the risk related to extreme heat.

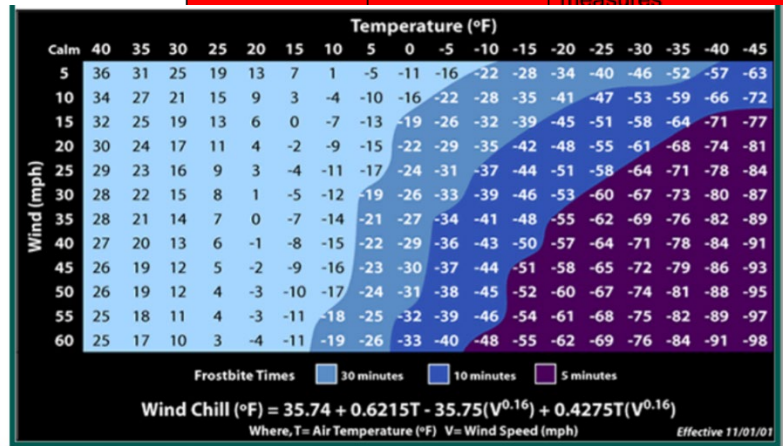
Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning
91° to 103°F	Moderate	Implement precautions and heighten awareness
103° to 115°F	High	Additional precautions to protect workers
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures

Previous Occurrence:

February 2, 1962: All-time record low in neighboring Town of Colebrook hit -42 degrees.

August 3, 1975: All-time record high in neighboring Town of Colebrook reached 95 degrees.

There have been no significant extreme temperature events in the Town of Stratford since the last Plan update.



There have been no significant extreme temperature events in the Town of Stratford since the last Plan update.

DROUGHT

Probability: Low

Definition:

Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people.

Location:

Droughts are difficult to define geographically. Due to their widespread nature a drought would affect the entire Town. However, a drought can affect fire suppression in those areas that do not have access to water.

Impact:

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are not as damaging to the Town as floods or winter weather. However a severe drought can affect public water supply, increase the probability of fires, and impede fire suppression. Those areas with minimal fire protection are at a higher risk as a result of a prolonged drought.

Extent:

The Palmer Drought Severity Index (PDSI) was devised in 1965, and was the first drought indicator to assess moisture status comprehensively. It uses temperature and precipitation data to calculate water supply and demand, incorporates soil moisture, and is considered most effective for un-irrigated cropland. The U.S. Drought Monitor provides a consistent big-picture look at drought conditions in the United States. The Drought Monitor map identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense.

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Previous Occurrence:

According to the U.S. Drought Monitor, Coos County has experienced droughts in 1904, 1909, 1915, 1931, 1941, 1957, 1964-65, 1980-81 and 2001-02. The 2001/02 drought was not as severe but resulted in some private wells going dry. This table shows the periods of Drought for Coos County since the last edition of this Plan.

Year	Month	Drought Category
2016/17	June '16 – March '17	D0
2018	June - Sept	D0
2020	May - Dec	D0/D1
2021	Feb - Sept	D0/D1

2020-21: Dry conditions developed rapidly across New Hampshire starting in the middle of May 2020. The period May 16 to June 25 was exceedingly dry. By the middle of August,

dry conditions set in again with September being exceedingly dry with some locations reporting their driest September on record. The drought peaked in intensity during the first week of October before beneficial widespread rains impacted the state towards the middle of October. Conditions became dry once again during the beginning of November before three soaking rain events impacted the region. Even with the October through November rainfall, deficits since Jan 1st remained at -9.44 at Concord, -9.72 at Durham and -11.14 at Manchester. As of the writing of this Plan, 98% of Coos County was at D) drought level.

EARTHQUAKE

Probability: Very Low

Definition:

An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. 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 magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale and Mercalli scale.

Location:

According to the State of New Hampshire Multi-Hazard Mitigation Plan Update 2013, New Hampshire is considered to lie in an area of "Moderate" seismic activity with respect to other areas of the United States and is bordered to the North and Southwest by areas of "Major" activity. Generally, the entire Town is at risk to earthquakes.

Impact:

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, and avalanches. It is assumed that all of the buildings in the Town have not been designed to withstand seismic activity. More specifically, the older historic buildings that are constructed of non-reinforced masonry are especially vulnerable to any moderate sized earthquake. In addition, utilities (water, gas, etc) are susceptible to earthquake damage. . For a more detailed review of the impact of earthquakes refer to the Stratford Essential Facilities Report, published in 2002 by Klotz Consultants Group. The report identifies, locates, collects and records the structural and general building data of the Essential Facilities and analyzes the functionality of these facilities based on various sized earthquakes. Stratford has experienced the effects of small to moderate earthquakes that had no effect on the town's infrastructure.

Extent:

Earthquakes with a magnitude of 2.0 to 4.9 on the Richter scale are considered minor to light, and those 5.0 to 6.9 are considered moderate to strong. However, if a large (6+ on the Richter Scale) occurred in or around the town, it is assumed that structural damage would be moderate to severe.

Richter Scale	Magnitude Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph.
2.5 to 5.4	Often felt, but only causes minor damage.
5.5 to 6.0	Slight damage to buildings and other structures.
6.1 to 6.9	May cause a lot of damage in very populated areas.
7.0 to 7.9	Major earthquake. Serious damage.
8.0 or greater	Great earthquake. Can totally destroy communities near the epicenter.

Previous Occurrence:

There have been no occurrences of earthquake impact to the Town of Stratford since the last Plan update. However, NH and New England have experienced earthquakes of 2.5 magnitude or greater:

<u>Location</u>	<u>Date</u>	<u>Magnitude</u>
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Ontario-Quebec Border	June 23, 2010	5.0
Boscawen, NH	September 26, 2010	3.1
Virginia	August 23, 2011	5.8
Southern Maine	October 16, 2012	4.0
Contoocook, NH	March 21, 2016	2.9
East Kingston, NH	February 15, 2018	2.7

EROSION/LANDSLIDE

Probability: Remote

Definition:

A Landslide is the downward or outward movement of slope forming materials reacting under the force of gravity. These include mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. Landslides may be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock.

Erosion is the process of the gradual wearing away of land masses. In general, erosion involves the detachment and movement of soil and rock fragments, during a flood or storm or over a period of years. Episodic erosion is induced by a single storm event while fluvial erosion is erosion caused by rivers and streams.

Location:

Areas of concern are Route 3 south of the village an areas of steep slopes greater than 15%.

Impact:

The most likely impact is to road infrastructure, especially along Nh Route 3. In addition, the steep sandy banks along the Connecticut River are susceptible to erosion and landslide.

Extent:

As acknowledged in the State NH Hazard Mitigation Plan 2018, there is no universally accepted standard for measuring the severity of landslides. "Severity can be measured several other ways:

- Steepness/grade of the Slope (measured as a percent)
- Geographical Area: Measured in square feet, square yards, etc; More accurately measured using LiDAR/GIS systems
- Earthquake, either causing the event or caused by the event
There are also multiple types of landslides:
- Falls: A mass detaches from a steep slope or cliff and descends by free-fall, bounding, or rolling
- Topples: A mass tilts or rotates forward as a unit
- Slides: A mass displaces on one or more recognizable surfaces, which may be curved or planar
- Flows: A mass moves downslope with a fluid motion. A significant amount of water may or may not be part of the mass

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

The magnitude of erosion varies depending upon the cause of the erosion. It can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. Large amounts of rain in a short period of time can cause the episodic erosion to roads, while longer term flooding can erode stream banks.

Previous Occurrence:

There are 2 recorded landslides in Stratford. Both were on U.S. Route 3, one in 2001 and the other in 2002, just south of the village. Both partially block U.S. Route 3. There have been no significant Erosion/Landslide events in the Town of Stratford since the last Plan update.

WILDFIRE

Probability: Very Low

Definition:

Any free burning uncontrollable wild land fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment.

Location:

New Hampshire is heavily forested and is therefore vulnerable to wildfire, particularly during periods of drought. The proximity of many populated areas to the State's forested land exposes these areas to the potential impact of wildfire. Many houses and camps are located in forested areas are not easily accessible.

Impact:

Fires in New Hampshire are predominantly human-caused, and roughly half of the total fire activity is in the most populous three southern counties. The proximity of many populated areas to the forested lands exposes these areas and their populations to the

potential impact of wildfire. The estimated impact to structures could be derived from the information included in the critical facilities in Chapter 4.

Extent:

The extent of damage to structures and the general populations will vary depending on climate, warning, and the time of year. Even the time of day could affect the extent, as there is an increase of recreational hikers and tourists during the daytime. The National Wildfire Coordinating Group (NWCG) classifies a wildfire into one of several ranges of fire, based upon the number of acres burned. The following list provides NWCG's scale for wildfire values:

Value	Description
A	Up to .25 acres
B	0.26 to 9.9 Acres
C	10.0 to 99.9 Acres
D	100 to 299 Acres
E	300 to 999 Acres
F	1000 to 4999 Acres
G	5000 to 9999 Acres
H	10000 to 49999 Acres
I	50000 to 99999 Acres
J	100000 to 499999 Acres
K	500000 to 999999 Acres
L	1000000 + Acres

Previous Occurrence:

No significant wildfires have occurred in Stratford in the last 15 years.

SOLAR STORMS

Probability: Remote

Definition:

Solar activity (solar storms) refers to solar flares, coronal mass ejections, high-speed solar wind, and energetic solar particles. Any of these events may occur for a few minutes to several hours, have the ability to affect Earth for days to weeks. All solar activity is driven by the solar magnetic field. A solar flare is an intense burst of radiation resulting from the release of sunspot magnetic energy, which can occur for minutes to hours. Solar prominence is a large, bright feature that extends outward from the sun's surfaces. Solar wind travels at 800,000 to 5 million miles per hour and carries mass the size of Utah's Great Salt Lake into space every second; however, solar wind is 1000 million times weaker than the winds that we experience on Earth.

Location:

The entire State, including the entire Town of Stratford, is at risk for solar storms.

Impact:

As society becomes increasingly reliant on electronics and technology, the hazards presented by space weather are not to be underestimated. The magnetic disturbances that solar storms can bring can disrupt communications, dispatch centers, damage or destroy electronic components, corrode gas and oil pipelines, and cause significant damage to spacecraft and satellites outside the Earth's protective atmosphere.

Extent:

Scale	Description	Effect	Avg Frequency (1 cycle = 11 yrs)
S 5	Extreme	<p>Biological: Unavoidable high radiation hazard to astronauts on Extra Vehicular Activity; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star trackers may be unable to locate sources; permanent damage to solar panels possible.</p> <p>Other systems: Complete blackout of High Frequency (HF) communications possible through the polar regions, and position errors make navigation operations extremely difficult.</p>	Fewer than 1 per cycle
S 4	Severe	<p>Biological: Unavoidable radiation to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: May experience memory device problems and noise on imaging systems, star tracker problems may cause orientation problems and solar panel efficiency can be degraded..</p> <p>Other systems: Blackout of HF radio communications through the polar regions and increase navigation errors over several days are likely.</p>	3 per cycle
S 3	Strong	<p>Biological: Radiation avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: Single-event upsets, noise in imaging systems and slight reduction of efficiency in solar panel are likely.</p> <p>Other systems: Degraded HF radio propagation through the polar regions and navigation position errors likely.</p>	10 per cycle
S 2	Moderate	<p>Biological: Passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p>Satellite operations: Infrequent single event upsets possible.</p> <p>Other systems: Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.</p>	25 per cycle
S 1	None	<p>Biological: None</p> <p>Satellite operations: None</p> <p>Other systems: Minor impacts on HF radio in the polar regions.</p>	50 per cycle

Previous Occurrence:

While no significant, damaging solar storms or space weather have impacted the State of New Hampshire, or the Town of Stratford, in recent years, HF radio communications routinely experience minor impacts or disruptions. Occasionally, when there is a particular large storm where the aurora borealis is visible in areas of New Hampshire. Nearby events include Quebec, Canada, which experienced a 9-hour blackout in March of 1989 when solar winds caused a fluctuation in the Earth’s magnetic field and caused Hydro-Quebec’s transmission to go down. There have been no occurrences of solar storm impact to the Town of Stratford since the last Plan update.

AVALANCHE

Due to no history or risk of avalanche within the Town of Stratford, the Committee chose not to recognize the risk of this hazard in this Plan.

Chapter 4 CRITICAL FACILITIES

The Critical Facilities List for the Town of Stratford has been identified for the Town by the Stratford Hazard Mitigation Planning Committee. The list is divided up into three sections: Facilities needed for Emergency Response, Facilities Not Necessary for Emergency response, populations and facilities to protect in the event of a disaster. In addition, the Inventory of Critical Facilities table assesses the value of these structures.

ESTIMATING POTENTIAL LOSSES TO CRITICAL FACILITIES

The Category 1 Critical Facilities identified in Stratford are estimated to be worth over \$-----. The Table below provides an estimate of the current monetary value for each of the Critical facilities in Stratford. These values can also be used to determine potential loss estimates in the event a natural or manmade hazard damages a portion of, or the entire facility. The estimates were generated by the town assessor and are based on property tax documentation.

Inventory of Critical Facilities and Assets Stratford, NH							
Facility	Expected Use of Facility	Owner	Category 1	Category 2	Category 3	Assessed Value	Hazards Addressed
			✓	✓	✓		
Fuller Town Hall (generator)	Primary EOC, Town Government & Records, Secondary Shelter		✓				All Hazards & Murphy Dam Breach
Stratford School (generator)	Primary Shelter		✓				All Hazards
Town Shed	Salt/Sand and Heavy Equipment (contracted)		✓				All Hazards
Hollow Fire Station	Secondary EOC, Fire Suppression		✓				All Hazards & Wildfire
Stratford School Ballfield	Helicopter Landing Zone		✓				All Hazards
Ballfield on Main Street	Helicopter Landing Zone		✓				All Hazards & Flooding
US Rt. 3 on Kimball Brook	Bridge on Evacuation Route		✓				All Hazards
US Rt. 3 on Bog Brook	Bridge on Evacuation Route		✓				All Hazards
Vt 105 West on Connecticut River	Bridge on Evacuation Route		✓				All Hazards & Flooding
Bordeau Rd on Bog Brook	Bridge on Evacuation Route		✓				All Hazards & Flooding
Spur Rd on Bog Brook	Bridge on Evacuation Route		✓				All Hazards & Flooding
Bog Road on Bog Brook	Bridge on Evacuation Route		✓				All Hazards & Flooding
Maidstone on Connecticut	Bridge on Evacuation Route		✓				All Hazards & Flooding
Egan Bridge on Bog Brook	Bridge on Evacuation Route		✓				All Hazards & Flooding
Christie Road on Bog Brook	Bridge on Evacuation Route		✓				All Hazards & Flooding
Potato Hill Road on Bog Brook	Bridge on Evacuation Route		✓				All Hazards & Flooding
US Rt. 3	Primary Evacuation Route		✓				All Hazards & Flooding
VT 105 West to VT 102	Primary Evacuation Route		✓				All Hazards
Maidstone Bridge	Primary Evacuation Route		✓				All Hazards & Flooding

Inventory of Critical Facilities and Assets Stratford, NH							
Facility	Expected Use of Facility	Owner	Category 1	Category 2	Category 3	Assessed Value	Hazards Addressed
			✓	✓	✓		
Bog Road	Secondary Evacuation Route		✓				All Hazards & Flooding
Percy Road	Secondary Evacuation Route		✓				All Hazards
NH Central	Railroad		✓				All Hazards & Flooding
St. Lawrence & Atlantic	Railroad		✓				All Hazards
Sacred Heart Catholic Church	Possible Shelter			✓			All Hazards & Flooding
First Baptist Church	Possible Shelter			✓			All Hazards & Flooding
Consolidated Communications Switching Station	Communications			✓			All Hazards & Flooding
Wells (2) & Pump House	Water Supply			✓			All Hazards & Flooding
Water Holding Tank	Water Supply			✓			All Hazards
Town Well (Hollow Fire)	Water Supply			✓			All Hazards & Flooding
Village Wastewater System	Wastewater			✓			All Hazards & Flooding
Mill Wastewater System	Wastewater			✓			All Hazards & Flooding
Town Garage /Fire Substation	Fire Suppression			✓			All Hazards
Stratford School	School				✓		All Hazards
Big Rock Campground	Campground				✓		All Hazards
Connelly Cabins & Campground	Campground				✓		All Hazards
Blueberry Hill B&B Campground	Campground				✓		All Hazards
Grange Hall	Historic (State)/Gathering of People				✓		All Hazards
Sacred Heart Church	Historic/Gathering of People				✓		All Hazards & Flooding
First Baptist Church	Historic/Gathering of People				✓		All Hazards & Flooding
Grand Trunk Railroad Station/Library	Historic				✓		All Hazards & Flooding
Fred Martins House	Historic (National)				✓		All Hazards & Flooding

Inventory of Critical Facilities and Assets Stratford, NH							
Facility	Expected Use of Facility	Owner	Category 1	Category 2	Category 3	Assessed Value	Hazards Addressed
			✓	✓	✓		
Cohos Historical Society	Historic (State)				✓		All Hazards & Flooding
Kimball Hall	Possible Food Prep				✓		All Hazards & Flooding
Fuller Town Hall	Possible Food Prep				✓		
Bears Paw Tank Farm	Emergency Fuel				✓		All Hazards & Hazmat
Northwoods Trading Post	Emergency Fuel (gas), Food & Water				✓		All Hazards & Hazmat
Stratford Hollow General Store	Emergency Fuel (gas only)				✓		All Hazards & Hazmat
Claudette & Dean's Restaurant	Food & Water				✓		All Hazards & Hazmat
Blueberry Hill B&B/Campground	Food & Water				✓		All Hazards & Hazmat
NH DOT Sheds	Out of Town Source for diesel for town vehicles				✓		All Hazards

Chapter 5 CAPABILITY ASSESSMENT

The following is a list of current policies and regulations adopted by the Town of Stratford that protect people and property from natural and man-made hazards. Below is a summary list of these policies and programs.

Summary of Existing Policies and Programs

911 Signage Compliance	Mutual Aid Agreements
Bridge Maintenance Program	Public Health Emergency Plan
Capital Reserve Funds	Road Design Standards
Emergency Backup Power	School Emergency Action Plan
Emergency Operations Plan	State Division of Forest and
Emergency Warning System	Lands/Fire
Flood Gauges	Permits
Floodplain	Storm Water
Regulations	Maintenance
Hazardous Materials Training	Subdivision Regulations
Master Plan	

Integration of Mitigation Priorities into Planning and Regulatory Tools

Many of the existing regulations as noted above can and should be regularly reviewed. This review process can lead to revisions that will incorporate mechanisms to assist in the implementation of the hazard mitigation priorities as defined in this *Plan*. This review should continue to be a priority of the Stratford Selectmen and Planning Board and will likely include yearly requests in the annual budget process. Moreover, as suggested in the onset of this document, this *Plan* is a planning tool to be used by the Town of Stratford, as well as other local, state, and federal governments, in their effort to reduce future losses from natural and/or man-made hazardous events before they occur. That being said, the Stratford Planning Board also has the authority, under RSA 674:2 to incorporate this *Plan* as a new section of the Stratford Master Plan. This integration would serve well for any future zoning updates that relate to hazard mitigation, and for the future implementation of the hazard mitigation priorities as defined in this *Plan*.

Under the Prioritized Mitigation Projects *Action Plan* (found in Chapter 6), all parties listed under the Responsibility/Oversight category shall also review this listing annually and consider the listed (and updated) mitigation projects within their annual budget requests.

CHECK TABLE FOR FORMATING/LINES

Existing Protection	Description	Responsible Agent	Effectiveness*	Recommended Changes
911 Signage Compliance	A system that complies with recommended signage size, location and visibility to ensure identification by emergency responders.	Board of Selectmen	Average	The Town is more than 50% compliant now; deferred to this Plan to consider ways to get this signage more compliant so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance development and/or public outreach.
Bridge Maintenance Program	Inspection and clean-up occur annually; the State inspects all bridges every other year and maintains their bridges.	NH DOT	Average	No Improvements Needed: Many bridges in Stratford are owned by the State of NH, but not all; there are currently no red list bridges and no town owned bridges that are in need of repair.
Capital Reserve Funds	Capital Reserve Funds are individual funds set up by the Town at budget time that allow departments to set aside money for future expenditures.	Planning Board & Department Heads	Good	No Improvements Needed: Stratford's Capital Reserve Funds work well to enable departments the ability to set aside money for future expenditures.
Emergency Backup Power	The Town owns one 60kw generator (diesel) with a trailer that is operated by the town water department; the Fire Department has three mobile generators; the Town waste water treatment plants (2) have generators; one generator at school which is the shelter; Town Office has a new generator (25K).	Department Heads	Excellent	Improvements Needed: evaluate the Water Department generator and upgrade as necessary.
Emergency Operations Plan	This plan identifies the response procedures and capabilities of the Town of Stratford in the event of a natural or man- made disaster.	EMD	Good	The Stratford Emergency Operations Plan was last updated in 2012 and will need to be updated again in 2022; although this is a preparedness strategy, it is deferred to this Plan for the 2022 update.

Existing Protection	Description	Responsible Agent	Effectiveness*	Recommended Changes
Emergency Warning System	The State of NH reverse 911 system is in place; two people (Administrative Assistant and the Fire Chief) are designated liaisons; door to door and public address systems can also be used; sirens at the old Fire Station and at the Hollow Fire Station work but there is no established "blast" system	EMD, Police and Fire Departments	Good	Although the reverse 911 system works well, it is deferred to this Plan to educate the public on the reverse 911 system; a "blast system for the sirens in Town is not possible as the sirens are air horns not blasts.
Flood Gauges	USGS has located a flood gauge on the edge of the Connecticut River off Cross Street. The river flow data can be found on the USGS website where information is updated approximately every two weeks.	Connecticut River	Excellent	No Improvements Needed
Floodplain Regulations	The minimum National Flood Insurance Program (NFIP) requirements have been adopted. This regulates all new and substantially improved structures located in the 100- year floodplain, as identified on the FEMA Flood Map.	Planning Board	Good	Stratford has been a member of the NFIP since April 18, 1983 and has an established flood ordinance which performs as it is meant to prevent building or substantial improvements in the floodplain.
Hazardous Materials Training	The Fire Department has received limited HazMat training; the Stratford Fire Department will respond to HazMat events but will coordinate in a Unified Command with Portland Natural Gas and/or the St Lawrence & Atlantic Railroad.	Fire Department	Average	No Improvements Needed: The Fire Department is trained at a Level 1 HazMat capability and will call mutual aid if needed for additional assistance during a HazMat event; Portland Natural Gas provides information and emergency planning assistance to the Town.

Existing Protection	Description	Responsible Agent	Effectiveness*	Recommended Changes
Master Plan	The Master Plan serves as a guiding document for future development in Stratford; second, it serves as the guiding document to assist the Planning Board as it updates the Town Zoning Subdivision Regulations	Planning Board	Excellent	Continue updates as needed. The Stratford Master Plan was last updated in 2014 and will be due for a recommended ten year update in 2018. The Planning Board will use elements from this Hazard Mitigation Plan as guidelines when updating the Master Plan.
CIP	Currently Developing a Capital Improvement Plan.	Planning Board	Good	Annual update process for the CIP
Mutual Aid Agreements	Mutual aid provides communications in case of fire and EMS and area towns cooperative assistance; offers access to resources appropriate to the scope of the emergency.	Fire , EMS and Public Works	Excellent	No Improvements Needed
Public Health Emergency Response Plan	the Town is part of the North Country Regional Public Health Network, who maintains a , Public Health Emergency Preparedness and Response Plan".	North Country Public Health Network	Good	No Improvements Needed
Road Design Standards	New roads in Stratford are built to state standards and will not be accepted as town-owned roads unless voted on at Town Meeting	Planning Board	Average	Improvements Needed: research adding regulations regarding new roads meeting state standards.
School Emergency Action Plan	A School Emergency Action Plan outlines guidelines for school personnel and local emergency responders to respond to a variety of incidents that can occur at the School.	Stratford Public School Principal	Good	No Improvements Needed

Existing Protection	Description	Responsible Agent	Effectiveness*	Recommended Changes
State Division of Forest and Lands/Fire Permits	State regulations for open burning and permits	Fire Chief, Fire Wardens	Good	No Improvements Needed: System that is in place with NH Forests & Lands and the local fire warden works well.
Storm Water Maintenance	Currently the town does not have a formally written storm water maintenance plan. A plan should include long range planning of drainage and ditching projects and culvert improvements.	Road Agent	Good	Suggest the Stratford Road Agent, prepare a written maintenance plan to ensure continuity of actions and efficient storm water management.
Subdivision Regulations	Provide for the orderly present and future development of the Town by promoting the public health (septic systems, town sewer and water), safety, convenience and welfare of the Town's residents.	Planning Board	Good	Updated in 2020. Stratford's subdivision regulations are in the process of being updated now; the emphasis of this update is on future development, fire suppression capabilities, building on steep slopes; continue to update the subdivision regulations.

***Effectiveness Terms:**

- Excellent: The existing program works as intended and is exceeding its goals.
- Good: The existing program works as intended and meets its goals.
- Average: The existing program does not work as intended and/or does not meet its goals.
- Poor: The existing program does not work as intended, often falls short of its goals and/or may present unintended consequences

Chapter 6 MITIGATION PROJECTS

Hazard Identification

The Committee utilized the *Hazard Identification Worksheet*, as shown in Appendix B, to identify potential hazards, the historical occurrence, locations, assets at risk and the probability of each hazard. The results of this process can be found in Chapter 3.

Problem Statements

From the Hazard Identification process the Committee developed a list of Problem Statements for each Hazard (see Appendix B). Based on the hazards and risks within the town, the Committee summarized the ‘problems’ associated for every hazard identified. These problem statements allowed the Committee to identify mitigation alternatives during the project identification step described below.

Goals Identified

During the 2021 update, the Committee reviewed the 2016 Stratford Hazard Mitigation Plan goals and made only minor revisions. The Goals were not modified for any substantial content, as there has not been any substantial change in development

Project Identification

Using the *Mitigation Project Identification Worksheet* (see Appendix B) as a guide, the Committee members identified mitigation projects for each problem Statement. Specific objectives included: Prevention, Property Protection, Public Education, Natural Resource Protection, Emergency Services and Structural Projects. In total, there were 16 projects identified.

This process resulted in the *Mitigation Project Identification Matrix*. For illustrative purposes the table below is an excerpt from the *Matrix* included in Appendix B. In this *Matrix*, the committee was able to determine a basic benefit/cost by using the STAPLEE method. For each project identified, the committee considered the STAPLEE Criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) to guide their decision in prioritizing the projects. One component of STAPLEE is the Economic criteria which aided the committee in determining whether the benefits outweigh the costs.

Mitigation Project Identification Matrix									
Hazard	Problem Statement	Projects <i>Prevention /Property Protection/ Public Educ./ Nat.Resources /Emerg.Serv / Structural</i>	Social	Technical	Administrative	Political	Legal	Economic	Environment
Flood	Heavy and prolonged rain events cause flood damage to roads and culverts and bridges and has the potential for residential flooding.	Continue enforcement of National Flood Insurance Program (NFIP) regulations and educate the public on the NFIP program.	+	+	+	+	+	+	+

Completed Projects since 2016

The Town of Stratford completed the earlier version of this plan in 2016. Since that time the town has completed the projects listed below. These completed projects are not included in the 2021 edition of the Hazard Mitigation plan. In addition, the Committee added new projects to the Mitigation Action Plan, all of which are included in the Action Plan. The 'Mitigation Project Status Crosswalk' Table in the Appendices describes what projects were completed, deleted, reworded or continued.

2021 Prioritized Mitigation Projects:

In 2021, each committee member reviewed the updated list of Mitigation Projects. After careful evaluation, the committee ranked the projects by voting for half of the projects. The projects that received the most votes was ranked as the highest priority and the projects receiving the least amount of votes received the lowest priority. (See Prioritized Mitigation Projects in Appendix B.) The committee was able to determine a basic benefit/cost by using the STAPLEE method. For each project identified, the committee considered the STAPLEE Criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) to guide their decision in prioritizing the projects. The prioritized projects are identified in the Mitigation Action Plan.

There have been no significant changes to mitigation priorities for the Town of Stratford. The Town has not experienced any changes in resources, new hazard impacts, or development patterns that merit changes to mitigation priorities. The Hazard Mitigation Committee identified new projects as described below and prioritized them as discussed above.

Incorporating Mitigation into Local Planning

In order for the requirements of this plan to be effective, it is essential that the Town of Stratford incorporate the strategies and actions into its planning process. Educating employees working within the Town Agencies along with members of the various Boards on the provisions of the plan is critical for ensuring that disaster preparedness and risk mitigation become part of their planning process when holding discussions, making decisions, and developing plans and Standard Operating Procedures (SOPs). As noted above, information outreach is a high priority action item that will impact more than just Town employees and Board members. Since interested citizens attend various Town meetings where decisions are made, having a community base that understands the importance of disaster mitigation planning will also assist in ensuring that future plans and actions integrate the requirements found in this plan.

The Board of Selectmen will instruct Town Department Heads to review their SOPs and ensure that where appropriate, the requirements of this plan are integrated into those procedures. They will also coordinate with both the Zoning Board and the Planning Board to ensure that risk mitigation planning continues to

be a part of their recommendation/decision process in order to fulfill the goals and objectives outlined in this plan.

Since the last update of this Plan in 2016, the Town incorporated Hazard Mitigation Planning into the following documents:

- Master Plan – The Master Plan is updated every 5 to 10 years in accordance with RSA 674. The most recent edition was adopted in 2014 and included review of the mitigation actions identified in the 2016 Mitigation Plan. The Master Plan also includes a discussion of capital improvements within the Town.
- Stratford Emergency Operations Plan (EOP) – The EOP is designed to allow the Town to respond more effectively to disasters as well as mitigate the risk to people and property. The EOP was updated in 2017 and was reviewed to ensure that where appropriate, specific mitigation actions outlined in the HMP were also addressed in the EOP.

Mitigation Action Plan

The mitigation projects are compiled in the Mitigation Action Plan found on the following page, which identifies Responsibility, Funding, Time frame, Hazards Addressed and the Priority for each mitigation project.

MITIGATION ACTION PLAN

The following is the completed list of projects, recommended by the Committee. The following action plan identifies Responsibility, Funding and a Time frame for the mitigation projects for each objective. The actions will begin as soon as the plan is approved and the community is eligible for funding, unless otherwise stated, and will be completed as noted in the implementation date column in the table below.

Mitigation Action Plan – Stratford, NH						
Mitigation Action	Responsibility/ Oversight	Funding/ Support	Timeframe*	Hazards Addressed	Estimated Cost	Priority
1. Develop Cyber Plan for Town Hall.	Board of Selectmen	Local Staff / Primex	Short Term	Cyber	\$0	High
2. Install a new generator at the water pumphouse and fire station.	Board of Selectmen	Town Budget	Medium	All Hazards	TBD	High
3. Update town website to include a section for educating the public on hazard mitigation and preparedness measures by adding a section on Emergency Preparedness to the Town webpage. Include information such as emergency contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.	Board of Selectmen	Local Staff	Short Term (ongoing)	All Hazards	\$0	High
4. Develop a written storm water maintenance plan that will include a complete list of bridges and culverts and a record of the maintenance of culverts and ditches with an eye towards improving storm water flow issues and flooding and to identify culverts that need improvements in the future; keeps projects on-task and use when seeking funding for improvements.	Board of Selectmen (Highway)	Local Staff	Long Term	Flood, Hurricane	\$0	High
5. Upgrade electrical, lighting and insulation telephone wiring at the Hollow Fire Station.	Board of Selectmen and Safety Committee	Town Budget	Medium	Lightning	\$10,000	High
6. Through public outreach, remind residents the importance of keeping their roads and driveways clear of obstacles that impede Emergency Response; advise residents on private roads of the importance of maintaining their roads for first responders.	Board of Selectmen	Local Staff	Short Term (Ongoing)	All Hazards	\$0	Medium

Mitigation Action Plan – Stratford, NH						
Mitigation Action	Responsibility/ Oversight	Funding/ Support	Timeframe*	Hazards Addressed	Estimated Cost	Priority
7. Bank stabilization on unnamed brook Baldwin cemetery (town owned).	Board of Selectmen	Town Budget	Long Term	Flood	TBD	Medium
8. Provide information to property owners about available grants to mitigate flood damage.	EMD	Local Staff/ NH HSEM	Short Term	Flood	\$0	Medium
9. Continue a public outreach campaign to educate the public on the impact that clear cutting has on the natural environment and storm water flow issues; offer alternative suggestions such as select cutting and/or planting water absorbing shrubbery; use Town's website.	Board of Selectmen	Local Staff	Short Term (Ongoing)	Flooding, Erosion	\$0	Medium
10. Through Public Outreach and the Town's website, educate homeowners regarding local flood hazards, flood insurance and flood protection measures , as well as ways to reduce the impact of flooding (i.e. securing propane tanks, structural mitigation, etc.)	Board of Selectmen	Local Staff	Short Term (ongoing)	All Hazards	\$0	Medium
11. Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance development and/or public outreach.	Board of Selectmen, Emergency Management Director & Planning Board	Local Staff	Short Term (Ongoing)	All Hazards	\$0	Low
12. Review, revise and complete the Stratford Subdivision Regulations to include specific language regarding: fire suppression mechanisms (fire ponds, fire breaks, cisterns) to protect property from wildfires; and driveway specifications for steep slopes.	Planning Board	Local Staff	Short Term	Wildfire, Drought	\$0	Low
13. During emergencies, notify the public of temporary use of the Town Hall as a warming/cooling center.	Board of Selectmen	Local Staff	Short Term (ongoing)	All Hazards	\$0	Low

Mitigation Action Plan – Stratford, NH						
Mitigation Action	Responsibility/ Oversight	Funding/ Support	Timeframe*	Hazards Addressed	Estimated Cost	Priority
14. Utilizing "Firewise" brochures, educate homeowners on methods to reduce fire risk around their homes. (See www.nfpa.org for more information.)	Board of Selectmen & Fire Department	Local Staff / NFPA	Short Term (Ongoing)	Wildfire, Drought	\$0	Low
15. EMD will encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200.	EMD	Local Staff / NH HSEM	Short Term (Ongoing)	All Hazards	\$0	Low
16. Update the Stratford Emergency Operations Plan.	EMD	Local Staff / NH HSEM	Short Term	All Hazards	\$0	Low

*Timeframe: Short Term=1 year or less Medium Term=2-3 years Long Term=4-5 years

Chapter 7 ADOPTION, IMPLEMENTATION, MONITORING

Adoption

The Stratford Selectmen by majority vote officially adopted the *Stratford Hazard Mitigation Plan 2021 Update* on [REDACTED]. This plan identified Mitigation Actions to be implemented as outlined in Chapter 6.

Implementation

There were 18 mitigation projects that were prioritized by the Committee. For each project the Committee identified who, when and how they would be implemented. Please refer to the “Action Plan” in Chapter 6 for a description of the timeframe and persons or departments responsible for implementation of the Prioritized Projects.

It will be the future responsibility of the Emergency Management Director to ensure implementation of these Prioritized Projects.

Monitoring & Updates

The *Stratford Hazard Mitigation Plan 2021 Update* must be reviewed, evaluated and updated at least once every five years. The Emergency Management Director is responsible for initiating this review and needs to consult with members of the Stratford Emergency Management Committee, in order to track progress and update the Prioritized List in Chapter 6. The EMD will ensure the following:

- The Hazard Analysis will be evaluated for accuracy.
- Projects completed will be evaluated to determine if they met their objective.
- Projects not completed since the last updated will be reviewed to determine feasibility of future implementation.
- New projects will be identified and included in future updates as needed.
- The public, members of the Committee and State and non-profit agencies, will continue to be invited and involved during this process.
- In keeping with the process of adopting the 2021 Stratford Hazard Mitigation Plan, a public hearing to receive public comment will be held. This will require the posting of two public notices, and where appropriate by posting a notice on the town’s Web Site.
- Updates to the *Plan* may be adopted subsequent to a public meeting or hearing by the Stratford Board of Selectmen.
- Once every five years, the EMD will submit an updated plan to HSEM for approval.

Annual Hazard Mitigation Plan Update, Monitor & Evaluate Schedule and Public Involvement			
Meeting Schedule	Task	Town of Stratford Responsibilities	Public Involvement (neighboring communities)
Annually or as needed	Assess current status of funding for mitigation projects. Discuss any new projects/plans that should be obtained for your community.	Dept. heads and Board of Selectmen to locate and apply for sources of funding and implement the proposed strategies and plans.	Residents, businesses, and neighboring / watershed communities.
Annually or as needed	Meet to discuss the Hazard Mitigation Plan content and any updates needed for the plan	Department Heads or other agencies.	Residents, businesses, and neighboring / watershed communities.
Annually or as needed	Discussion and evaluation of Training Programs and public outreach efforts. New public outreach methods discussed.	Department Heads or other agencies.	Residents, businesses, and neighboring / watershed communities.

CERTIFICATION OF ADOPTION

**TOWN OF STRATFORD, NH
Board of Selectmen**

Date: _____

A RESOLUTION ADOPTING THE TOWN OF STRATFORD, NH HAZARD MITIGATION PLAN UPDATE 2021

WHEREAS, the Town of Stratford, NH has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of - only those natural hazards profiled in the plan (i.e. *flooding, thunderstorm, severe wind, winter storms, earthquakes, and dam failure*), resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Stratford, NH, has developed and received conditional approval from the NH Homeland Security and Emergency Management for its Hazard Mitigation Plan Update 2021 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between May 2021 and September 2021 regarding the development and review of the Hazard Mitigation Plan Update 2021; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedure for the Town of Stratford, NH; and

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

WHEREAS, adoption of this Plan will make the Town of Stratford, NH eligible for funding to alleviate the impacts of future hazards; now therefore be it RESOLVED by the Board of Selectmen: The Plan is hereby adopted as an official plan of the Town of Stratford, NH

1. The respective official identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
2. Future revisions and Plan maintenance required by 44 CFR 201.6, FEMA and NH HSEM are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution.
3. An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by April 1st of each year.

Adopted, this _____ day of _____, 2021

Board of Selectmen, Chair

Select Board Member

Select Board Member

ACRONYMNS

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

BIBLIOGRAPHY

2018 NH State Hazard Mitigation Plan

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

Federal Emergency Management Agency (FEMA)

<http://www.fema.gov>

Stratford, NH Hazard Mitigation Plan 2016

National Flood Insurance Program (NFIP)

<http://www.fema.gov/national-flood-insurance-program>

NH DES

<http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf>
lakes Region Planning Commission

NH Homeland Security and Emergency Management (HSEM)

<http://www.nh.gov/safety>

NOAA National Weather Service

<http://www.websites.noaa.gov>

NOAA National Climactic Data Center

<http://lwf.ncdc.noaa.gov/oa/ncdc.html>

APPENDICES

Appendix A
Appendix B
Appendix C

Hazard Mitigation Resources
Documentation of Planning Process
Approval Letter from FEMA

APPENDIX A

Hazard Mitigation Resources

Type	Resource	Link
Hazard Assessment	FEMA Disaster Declarations	https://www.fema.gov/disasters
	National Oceanic and Atmospheric Administration Storm Events Database	https://www.ncdc.noaa.gov/stormevents/
	United States Geological Survey (USGS) Earthquake Archives	http://earthquake.usgs.gov/earthquakes/search
	National Geophysical Data Center / World Data Service (NGDC/WDS): Significant Earthquake Database	https://www.ngdc.noaa.gov/nndc/struts/form?t=101650&s=1&d=1
NESEC	The Northeast States Emergency Consortium (NESEC) to provides free assistance to help local, state, regional and other organizations	http://nesec.org/mapyourrisk/
Funding Possibilities	Hazard Mitigation Grant Program (HMGP)	http://www.fema.gov/hazard-mitigation-grant-program
	Flood Mitigation Assistance Grant Program (FMA)	https://www.fema.gov/flood-mitigation-assistance-grant-program
	Pre-Disaster Mitigation Grant Program (PDM)	http://www.fema.gov/pre-disaster-mitigation-grant-program
	HMA grant programs – eligible activities by grant program	https://www.fema.gov/hazard-mitigation-assistance-mitigation-activity-chart
	Flood Mitigation Assistance (FMA) Grant Program	https://www.fema.gov/flood-mitigation-assistance-grant-program
	U.S. Economic Development Administration: Road and water infrastructure upgrades and potential projects.	http://www.eda.gov/funding-opportunities/
	FEMA; USGS National Earthquake Hazards Reduction: Technical program assistance under grants to states and local jurisdictions	http://www.fema.gov/national-earthquake-hazards-reduction-program
Technical Assistance	State Hazard Mitigation Officers	http://www.fema.gov/state-hazard-mitigation-officers
	USDA, Natural Resources Conservation Service (NRCS) Conservation Technical Assistance	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/cta
Publications	FEMA Region I Webliography	http://www.fema.gov/about-region-i/about-region-i/hazard-mitigation-planning-webliography
	Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards	http://www.fema.gov/media-library/assets/documents/30627?id=6938
	FEMA B-797, Hazard Mitigation Field Book – Roadways	http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=4271
	Flood Hazard Mitigation Handbook for Public Facilities	http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=3724
	FEMA 386-6, Mitigation Planning How To #6: Integrating Historic Property & Cultural Resource into Hazard Mitigation Planning	http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=1892
	FEMA P-787 Catalog of FEMA Building Science Branch: Publications and Training Courses (2015)	http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=3184
	Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials (2013)	http://www.fema.gov/media-library/assets/documents/31372
	Local Mitigation Planning Handbook (2013)	https://www.fema.gov/media-library/assets/documents/31598

APPENDIX B

Documentation of Planning Process

Including:

**Agendas
Attendance Sheets
Public Notices
Problem Statements
Mitigation Project Status Crosswalk
Mitigation Project Identification Matrix
Prioritized Mitigation Projects**

June 16, 2021

Committee/Public Meeting AGENDA

1. Introductions
2. Review/Update Goals
3. Review/Update Hazard History
4. Review/Update Risk Matrix
5. MISC:
 - a. Any significant changes in development since 2016, especially in hazard prone areas? NONE
 - b. Participation/activities in NFIP since 2016?
 - c. Was the HMP incorporated into other planning mechanisms? If not, why?
EOP / Town Budget / CIP (in the future to be started)

Returning the old town reservoir back to its original state. The State want's to revove the dam (Kimball). The state is paying for it and has started the process.

6. Review for next meeting:
 - Update Critical Infrastructure (Chap. 4)
 - Update Current Policies, Plans Mutual Aid (Chap.6)
 - Update Mitigation Projects from 2016 Plan

Name	Title/Affiliation
Jane Hubbard	Hubbard Consulting
Bona Ladd	Sec. to Admin. Assist.
Charles Goulet	Selectman/Recycle Manager
Charles Stinson III	Fire Chief
Clayton Macdonald	Selectman/PB Secretary
Dennis Corbiel	Resident
Harry Juergens	Selectman/Recycle Attendant
Jim Lee	Fireman
Kitty Kerner	TC/TC
Mike Lynch	Winter Road Maint./Water-Sewer
Suzanne Goulet	Administrative Assistant
Vicki DeLalla	former Selectman
Wayne Hall	Library Trustees

August 25, 2021

Committee/Public Meeting AGENDA

1. Review Problem Statements
2. Review/Update Critical Facilities Chapter
3. Review/Update Existing Mitigation Strategies Chapter
4. Update Status of Mitigation Projects
5. Review for next meeting:

Identify NEW Mitigation Projects

Name	Title/Affiliation
Jane Hubbard	Hubbard Consulting
Bona Ladd	Sec. to Admin. Assist.
Charles Goulet	Selectman/Recycle Manager
Charles Stinson III	Fire Chief
Clayton Macdonald	Selectman/PB Secretary
Harry Juergens	Selectman/Recycle Attendant
Jim Lee	Fireman
Kayla Henderson	NH HSEM
Kitty Kerner	TC/TC
Mike Lynch	Winter Road Maint./Water-Sewer
Suzanne Goulet	Administrative Assistant
Vicki DeLalla	former Selectman
Wayne Hall	Library Trustees

September 22, 2021

Committee/Public Meeting AGENDA

1. Identify new Mitigation Projects
2. Prioritize Mitigation Projects
3. Review Draft Chapters 1-6
4. Review for next meeting:

VIA EMAIL: Review final draft of Plan.

Name	Title/Affiliation
Jane Hubbard	Hubbard Consulting
Bona Ladd	Sec. to Admin. Assist.
Charles Goulet	Selectman/Recycle Manager
Charles Stinson III	Fire Chief
Chris Caron	Conservation Commission
Clayton Macdonald	Selectman/PB Secretary
Dennis Corbiel	Resident
Harry Juergens	Selectman/Recycle Attendant
Jim Lee	Fireman
Kitty Kerner	TC/TC
Mike Lynch	Winter Road Maint./Water-Sewer
Suzanne Goulet	Administrative Assistant
Vicki DeLalla	former Selectman
Wayne Hall	Library Trustees

The Town placed public notices (shown below) in the town office and post office. These notices reach local residents, business, and organizations.

**PUBLIC NOTICE TO THE
RESIDENTS OF STRATFORD, NH**

HAZARD MITIGATION PLAN UPDATE

**DATE
10:00am - 12:00pm**

The Town of Stratford, with the Hazard Mitigation Planning Committee, is currently working to update Stratford's *Hazard Mitigation Plan*. The *Plan* identifies potential natural and man-made hazards throughout the town and various projects and/or strategies to mitigate their effects. The President signed into law, the Disaster Mitigation Act of 2000 (DMA), Section 322-Mitigation Planning. It requires all local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) project grants.

All residents, neighboring communities, businesses, and interested parties are formally invited to review a draft of the Updated *Plan* and publicly comment on their concerns regarding the *Plan*. The meeting will be held the Town Hall on

For more information please contact Jane Hubbard at
jhubb_99@yahoo.com.

Notices posted before every meeting at the Town Office, Town Website, post office, hollow store, email and newspaper. In addition, email invitations were sent as outlined below on the following dates: January 20, 2020, March 5, 2020 and June 1, 2020.

MITIGATION PROJECT STATUS CROSSWALK			
2016 Mitigation Action Plan Projects	Completed	2021 Project #	Delete
1. Advise the public about the local flood hazard, flood insurance and flood protection measures by obtaining and keeping on hand a supply of NFIP brochures to have available in the Town Offices; give NFIP materials to homeowners and builders when proposing new development or substantial improvements; encourage property owners to purchase flood insurance, whether or not they are in the flood zone and provide appropriate links to the NFIP and Ready.gov on the Emergency Management Services webpage.		#4	Projects 1 and 2 combined into new Project #4 in the Mitigation Action Plan
2. Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in the flood zone and measures that can be taken to reduce the chance of flooding, such as securing debris, propane tanks, yard items or stored objects that may otherwise be swept away, damaged, or pose a hazard if picked up and washed away by floodwaters; add links and info to website.		#4	
3. Notify the public, during incident notify public of temporary use of town hall of warming, cooling, wifi....etc. Jane – just reword. Provide public outreach to the citizens of Stratford regarding the availability of the Town Office as a "warming center" during times of extended low temperatures and severe winter weather.		#3	
4. Increase public outreach regarding the dangers of lightning by including links and other lightning information on the Town's website and/or the Town Facebook page.		#1	Combine all public education projects to be All Hazards.
5. Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes; provide "Firewise" brochures to those residents seeking burn permits; advise residents of the importance of maintaining defensible space, the safe disposal of yard and household waste and the removal of dead or dry leaves, needles, twigs, and combustible materials from roofs, decks, eaves, porches and yards.		#10	
6. Establish a webpage for educating the public on hazard mitigation and preparedness measures by adding to the Town's Emergency Management Services a webpage that will include such information as emergency contacts, shelter locations, evacuation routes, methods of emergency alerting, 911 compliance, water saving techniques, earthquake risk and mitigation activities that can be taken in residents'		#1	Reworded to be more concise.

MITIGATION PROJECT STATUS CROSSWALK			
2016 Mitigation Action Plan Projects	Completed	2021 Project #	Delete
homes, steps homeowners can take to protect themselves and their properties when extreme temperatures occur, safety measures that can be taken during hail, high winds and lightning storms, mitigation techniques for property protection and links to available sources; educate homeowners regarding the risks of building in hazard zones and encourage homeowners to install carbon monoxide monitors and alarms.			
7. EMD will encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200.		#12	
8. Through public outreach, remind residents the importance of keeping their roads and driveways clear of obstacles that impede Emergency Response; advise residents who live on private roads of the importance of maintaining their roads for first responders; perhaps using the Town's Emergency Webpage.		#9	
9. Develop a written storm water maintenance plan that will include a complete list of bridges and culverts and a record of the maintenance of culverts and ditches with an eye towards improving storm water flow issues and flooding and to identify culverts that need improvements in the future; keeps projects on-task and use when seeking funding for improvements.		#5	
10. Improve the flow of storm water on Egan Road by upgrading the culvert and doing further drainage improvements.	Completed		
11. Address the flooding and storm water flow issues around and under Kimball Brook Bridge; upgrade (or alternatively eliminate) the current bridge structure to a larger bridge that will allow river debris to pass more effectively under the bridge and down Kimball Brook.	Bridge has been replaced.		
12. Improve the flow of stormwater on the class v section of McMann Road by upgrading the remaining culvert and further ditching and drainage improvements.			Does not meet STAPLEE
13. Increase security measures at the Town Office (using EMPG funding) by installing security cameras, better lighting and other measures as recommended by HSEM.	Done		
14. Upgrade electrical, lighting and insulation telephone wiring at the Hollow Fire Station.		#8	

MITIGATION PROJECT STATUS CROSSWALK			
2016 Mitigation Action Plan Projects	Completed	2021 Project #	Delete
15. Research the State reverse 911 system to determine the capability of adding cell (although limited in Stratford) and email addresses; if this is possible, provide public outreach to encourage all residents to contact Reverse 911 to add cell numbers, unlisted numbers and to verify information; use the website, a possible brochure or a sign up at Town Meeting.			Delete – no longer relevant
16. Update the Stratford Emergency Operations Plan.		#13	
17. Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance development and/or public outreach.		#7	
18. Review, revise and complete the Stratford Subdivision Regulations to include specific language requiring developers to install fire suppression mechanisms (fire ponds, fire breaks, cisterns) to protect property from wildfires.		#11	Project #18 and 19 Combined
19. Review, revise and complete the Stratford Subdivision Regulations to include specific language that addresses building roads, driveways and structures on steep slopes, with particular emphasis on new development; review and adjust the Town's driveway specifications.			
20. Continue a public outreach campaign to educate the public on the impact that clear cutting has on the natural environment and storm water flow issues; offer alternative suggestions such as select cutting and/or planting water absorbing shrubbery; use Town's website.		#2.	
21. Complete the update of the Stratford Master Plan and incorporate a stand-alone element for hazard mitigation and natural hazards.			Updating Currently in 2021
22. Lobby the State to do more work at Smart's Mill Brook to improve the flow of storm water, by upgrading the culvert at Smart's Mill Brook with a new and larger culvert.			Delete some repairs done and likely not to have a new one. It was never failed, so the State won't upgrade.
23. Obtain current Emergency Action Plans for Murphy Dam (Class C), Stratford Bog Dam (Class B) and Kimball Brook dam on Kimball Brook.	complete		

Hazard	Problem Statements	<p style="text-align: center;">Projects <i>BOLD are existing projects from last edition of plan</i></p>	Social	Technical	Administrative	Political	Legal	Economic	Environments
Avalanche	N/A								
Dam Failure	<p>1. If Murphy Dam or Bog Brook Dam and Kimball Brook Dam were breached, there could be significant damage to structures and road infrastructure.</p>	<p>Update town website to educate the public on hazard mitigation and preparedness measures by adding a Emergency Preparedness informational section. Include information such as emergency contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.</p>	+	+	+	+	+	+	+
Drought	<p>2. An extended drought increases the probability of fires and may hinder fire suppression in minimal fire protection areas.</p>								
	<p>3. Private and municipal wells would be affected in an extended drought.</p>	<p>DUPLICATE: Update town website to include a section for educating the public on hazard mitigation and preparedness measures by adding a section on Emergency Preparedness to the Town webpage. Include information such as emergency contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.</p>	+	+	+	+	+	+	+

Hazard	Problem Statements	Projects <i>BOLD are existing projects from last edition of plan</i>	Social	Technical	Administrative	Political	Legal	Economic	Environments
Earthquake	4. Critical facilities and structures of un-reinforced masonry, as well as buried utilities, are susceptible to earthquake damage.	See public education project							
Erosion	5. Riverbank erosion and fluvial erosion could result in damage to road infrastructure and indirect damage or injury.	Continue a public outreach campaign to educate the public on the impact that clear cutting has on the natural environment and storm water flow issues; offer alternative suggestions such as select cutting and/or planting water absorbing shrubbery; use Town's website.	+	+	+	+	+	+	+
		Bank stabilization on unnamed brook Baldwin cemetery (town owned).	+	+	-	+	+	+	+
Extreme Temperatures	6. Special populations would be at risk during an extended period of extreme heat or cold.								
	7. Shelter may need to be opened for residents during periods of extreme temperatures.	During emergencies, notify the public of temporary use of the Town Hall as a warming/cooling center.	+	+	+	+	+	+	+
Flood-Localized	8. Roads are frequently flooded as a result of heavy rain and rapid snow melt; the subsequent erosion and	Through Public Outreach and the Town's website, educate homeowners regarding local flood hazards, flood insurance and flood	+	+	+	+	+	+	+

Hazard	Problem Statements	Projects <i>BOLD are existing projects from last edition of plan</i>	Social	Technical	Administrative	Political	Legal	Economic	Environments
	washouts create difficulties for residents and emergency responders.	<p>protection measures, as well as ways to reduce the impact of flooding (i.e. securing propane tanks, structural mitigation, etc.)</p> <p>Develop a written storm water maintenance plan that will include a complete list of bridges and culverts and a record of the maintenance of culverts and ditches with an eye towards improving storm water flow issues and flooding and to identify culverts that need improvements in the future; keeps projects on-task and use when seeking funding for improvements.</p>							
Flood - Riverine	9. The Connecticut River floods its banks causing structure flooding in the lower mill houses, the sewer leach fields and the village of North Stratford. Stratford Hollow is also affected by flooding of Bog Brook.	Provide information to property owners about available grants to mitigate flood damage.	+	+	+	+	+	+	+
Flood – Ice Jam	10. Flooding may occur as a result of Ice Jams along the Connecticut River.	See Flood projects above							
Hail	11. Hail can cause minor to moderate damage to property, agriculture crops and people.	See public education project							

Hazard	Problem Statements	Projects <i>BOLD are existing projects from last edition of plan</i>	Social	Technical	Administrative	Political	Legal	Economic	Environments
Hurricane	12. Power outages from downed utilities, structural damage, limited access and flooding can affect the town as a result of a hurricane.	Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance development and/or public outreach.	+	+	+	+	+	+	+
		Install a new generator at the water pumphouse and fire station.	+	+	+	+	+	+	+
Infectious Disease	13. Public health emergencies have and will occur in New Hampshire; continue to work with the North Country Public Health Network.	DUPLICATE: Update town website to include a section for educating the public on hazard mitigation and preparedness measures by adding a section on Emergency Preparedness to the Town webpage. Include information such as emergency contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.	+	+	+	+	+	+	+
Lightning	14. Populations involved in outdoor activities are at risk from lightning strikes.	DUPLICATE: Update town website to include a section for educating the public on hazard mitigation and preparedness measures by adding a section on Emergency Preparedness to the Town webpage. Include information such as emergency	+	+	+	+	+	+	+

Hazard	Problem Statements	Projects <i>BOLD are existing projects from last edition of plan</i>	Social	Technical	Administrative	Political	Legal	Economic	Environments
		contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.							
	15. Critical facilities and utilities (i.e. communication towers) are at risk to lightning strikes.	Upgrade electrical, lighting and insulation telephone wiring at the Hollow Fire Station.	+	+	+	+	+	+	+
Severe Wind <i>(Tornado/ Downburst)</i>	16. Wind damage can result in property damage, downed utilities causing power outages and limited access.	Through public outreach, remind residents the importance of keeping their roads and driveways clear of obstacles that impede Emergency Response; advise residents who live on private roads of the importance of maintaining their roads for first responders.	+	+	+	+	+	+	+
	17. Populations involved in activities in outdoor recreation areas are at high risk in severe wind events.								
Solar Storms	18. Geomagnetic solar storms can impact radio, TV and cell phone, satellite navigation and electric power grid.								
Wild/ Forest Fire	19. Due to the abundance of slash on the forest floor left by logging operations, blow downs and storms,	Utilizing "Firewise" brochures, educate homeowners on methods to reduce fire risk	+	+	+	+	+	+	+

Hazard	Problem Statements	<p style="text-align: center;">Projects <i>BOLD are existing projects from last edition of plan</i></p>	Social	Technical	Administrative	Political	Legal	Economic	Environments
	there is potential for fast burning fuels.	around their homes. (See www.nfpa.org for more information.)							
	20. There is a need for additional water supply for fire suppression in rural areas.	Review, revise and complete the Stratford Subdivision Regulations to include specific language regarding: fire suppression mechanisms (fire ponds, fire breaks, cisterns) to protect property from wildfires.	-	+	+	-	+	+	+
Winter Weather	21. Extended power outages due to winter storms may require activation of a shelter.	DUPLICATE: Update town website to include a section for educating the public on hazard mitigation and preparedness measures by adding a section on Emergency Preparedness to the Town webpage. Include information such as emergency contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.	+	+	+	+	+	+	+
	22. Special populations would be at risk during an extended period of extreme cold.								
	23. Property damage from winter weather.								

Hazard	Problem Statements	Projects <i>BOLD are existing projects from last edition of plan</i>	Social	Technical	Administrative	Political	Legal	Economic	Environments
Human Caused Hazards	24. Hazardous materials related incidents on Route 3 and the Railroad may occur.								
	25. Governmental buildings, schools, utilities and infrastructure could be likely targets for a terrorist incident.								
All Hazards		EMD will encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200.	+	+	+	+	+	+	+
		Update the Stratford Emergency Operations Plan.	+	+	+	+	+	+	+

For purposes of prioritizing the mitigation projects listed in the table below, each committee member should vote for half of the projects (total of 8) by placing a check mark in the "# of votes" column. The projects will be prioritized based upon the total number of votes received for each project.

PRIORITIZED MITIGATION PROJECTS	# OF VOTES
1. Update town website to include a section for educating the public on hazard mitigation and preparedness measures by adding a section on Emergency Preparedness to the Town webpage. Include information such as emergency contacts, shelter locations, evacuation routes methods of emergency alerting, current emergency status, links to State and Federal resources.	8
2. Continue a public outreach campaign to educate the public on the impact that clear cutting has on the natural environment and storm water flow issues; offer alternative suggestions such as select cutting and/or planting water absorbing shrubbery; use Town's website.	5
3. During emergencies, notify the public of temporary use of the Town Hall as a warming/cooling center.	2
4. Through Public Outreach and the Town's website, educate homeowners regarding local flood hazards, flood insurance and flood protection measures , as well as ways to reduce the impact of flooding (i.e. securing propane tanks, structural mitigation, etc.)	4
5. Develop a written storm water maintenance plan that will include a complete list of bridges and culverts and a record of the maintenance of culverts and ditches with an eye towards improving storm water flow issues and flooding and to identify culverts that need improvements in the future; keeps projects on-task and use when seeking funding for improvements.	8
6. Consider ways to improve 911 signage compliance so that emergency responders can better assist the public at the time of need; perhaps through purchase of signs by the Town, ordinance development and/or public outreach.	3
7. Upgrade electrical, lighting and insulation telephone wiring at the Hollow Fire Station.	8
8. Through public outreach, remind residents the importance of keeping their roads and driveways clear of obstacles that impede Emergency Response; advise residents who live on private roads of the importance of maintaining their roads for first responders.	7
9. Utilizing "Firewise" brochures, educate homeowners on methods to reduce fire risk around their homes. (See www.nfpa.org for more information.)	2

10. Review, revise and complete the Stratford Subdivision Regulations to include specific language regarding: fire suppression mechanisms (fire ponds, fire breaks, cisterns) to protect property from wildfires; and driveway specifications for steep slopes.	3
11. EMD will encourage all town officials and new hires to take NIMS 700 and ICS 100 and 200.	2
12. Update the Stratford Emergency Operations Plan.	2
13. Bank stabilization on unnamed brook Baldwin cemetery (town owned).	7
14. Provide information to property owners about available grants to mitigate flood damage.	7
15. Install a new generator at the water pumphouse and fire station.	9
16. Develop Cyber Plan for Town Hall.	10

Priority: 0-3 Low

4-7 Medium

8-11 High

11 voters total

APPENDIX C

Approval Letter from FEMA

