Town of Mason, New Hampshire

Hazard Mitigation Plan Update 2018

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Prepared with Assistance from the Nashua Regional Planning Commission

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CHAPTER 1. PLANNING PROCESS

Section 1.1 ~ Overview of Planning Process

The Mason Hazard Mitigation Plan Update 2018 was prepared by the Nashua Regional Planning Commission (NRPC) for the Town of Mason, NH. NRPC staff worked closely with the Mason Hazard Mitigation Team to write this plan. The Mason Hazard Mitigation Team includes:

- Fred Greenwood, Fire Chief, Town of Mason, NH
- Jacob Olsen, Building Inspector, Town of Mason, NH
- Bob Bergeron, Assistant Building Inspector, Town of Mason, NH
- Dave Morrison, Road Agent, Town of Mason, NH
- Kevin Maxwell, Chief of Police, Town of Mason, NH
- Louise Lavoie, Board of Selectmen, Town of Mason, NH
- Scott MacGarvey, Planning Board Chair, Town of Mason, NH
- Lee Siegmann, Planning Board Member, Town of Mason, NH
- Kerrie Baldi, Planning Board Alternate, Town of Mason, NH
- Cassie Mullen, Town of Mason Circuit Rider, Nashua Regional Planning Commission

NRPC staff will meet with the Mason Hazard Mitigation Team for a series of 5 meetings in order to prepare the Mason Hazard Mitigation Plan Update 2018. Agendas from these meetings appear in the Appendix to this Plan. In between meetings, NRPC worked directly with Mason Hazard Mitigation Team members to obtain additional information needed to write the Plan.

The primary differences between the 2018 Plan and the 2011 Plan are 1) preparedness actions are not included in the 2018 Plan, 2) man-made hazards are not included in the 2018 Plan, and 3) climate change resiliency is addressed in the 2018 Plan.

Section 1.2 ~ Involvement of Neighboring Communities and Local/Regional Agencies

At the first Hazard Mitigation Team meeting, held on October 25, 2017, the group discussed who should be invited to participate on the planning team that was not currently represented. It was determined that the current Team provided adequate representation and no additional members were necessary. The Team also discussed who should be informed about the Plan, such as neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, and others. It was concluded that the following entities should be informed of the Plan update:

- Dartmouth Hitchcock Family Practice, Milford, NH
- St. Joseph Medical Center, Milford, NH

- Homeland Security and Emergency Management, Heather Dunkerly, Senior Field Representative, Concord, NH
- American Red Cross, Nashua NH and Manchester, NH
- Southern NH Medical Center, Nashua, NH
- St. Joseph Medical Center, Nashua, NH
- Eversource, Manchester, NH
- Manchester-Boston Regional Airport, Manchester, NH
- Nashua Airport Authority, Nashua, NH
- Board of Selectmen, Town of Mason, NH
- Board of Selectmen, Town of Milford, NH
- Board of Selectmen, Town of Brookline, NH
- Board of Selectmen, Town of Wilton, NH
- Board of Selectmen, Town of Greenville, NH
- Board of Selectmen, Town of New Ipswich, NH
- Nashua Community College, Nashua, NH
- Franklin Pierce College, Ringe, NH
- Southern NH University, Nashua, NH
- Board of Selectmen, Town of Townsend, MA
- Board of Selectmen, Town of Ashby, MA
- Pickity Place, Mason, NH
- Parker's Maple Barn, Mason, NH
- Mason Brook Nursery, Mason, NH
- Marty's Driving Range, Mason, NH
- Old Glory Guns & Ammo, Mason, NH
- Monadnock Security Systems, Mason, NH
- Mason Elementary School, Mason, NH
- Mason Congregational Church, Mason, NH
- Mason Hollow Nursery, Mason, NH

A copy of the letter that was sent to these entities appears in the Appendix to this Plan. There was no response from any of the entities listed above.

The Mason Board of Selectmen was given opportunity to provide input on this Plan through the participation of Louise Lavoie, Chairman of the Mason Board of Selectmen, who served on the Hazard Mitigation Team and was liaison to the Board of Selectmen. The Mason Planning Board was given opportunity to provide input on this Plan through the participation of Planning Board Chairman Scott MacGarvey, Member Lee Siegmann, and Alternate Kerri Baldi who all served on the Hazard Mitigation Team. Cassie Mullen, NRPC Circuit Rider and the Town of Mason's Planning Consultant, also participated.

Section 1.3 ~ Public Participation

During the first Hazard Mitigation Team meeting, held on October 25, 2017, the Team brainstormed methods currently employed to notify the public of Town meetings and news. These methods primarily include the Town's website (http://masonnh.us/). The Team determined that these methods should

also be used to encourage public participation in the Hazard Mitigation Plan update process. There was no public response to provide input to the Mason Hazard Mitigation Plan Update 2018 process.

NRPC staff also developed a webpage for the Mason Hazard Mitigation Plan Update 2018 (http://www.nashuarpc.org/energy-environmental-planning/hazard-mitigation-planning/), which allows members of the public to participate in the update process even if they cannot attend meetings. The webpage was updated throughout the planning process and includes the 2011 Mason Hazard Mitigation Plan, 2018 Hazard Mitigation Plan Outline, and Hazard Mitigation Plan Review Checklist. It also provides meeting times, locations, agendas, and homework assignments. The Town of Mason's website links to this webpage. The Nashua Regional Planning Commission will keep the website active and will add information about ongoing updates over the next 5 years. A screen shot of the website appears in the Appendix to this Plan.

Section 1.4 ~ Existing and Potential Authorities, Policies, Programs, and Resources

At the first Hazard Mitigation Team meeting, held on October 25, 2017, the Team discussed Mason's existing authorities, policies, programs, and resources related to hazard mitigation and its ability to expand and improve on these. The purpose of this discussion was to determine the ability of the Town to implement its hazard mitigation strategies and to identify potential opportunities to enhance specific policies, programs, or projects. The evaluation of Mason's existing authorities, policies, programs, and resources includes planning and regulatory capabilities, emergency management capabilities, floodplain management capabilities, administrative and technical capabilities, and fiscal capabilities. Each of these areas provides an opportunity to integrate hazard mitigation principles and practices into the local decision making process.

Planning and Regulatory Capabilities

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate Mason's commitment to guiding and managing growth in a responsible manner. The following is a summary of the relevant local plans, ordinances, and programs already in place in the Town of Mason. Each one should be considered as an available mechanism for incorporating the recommendations of the Mason Hazard Mitigation Plan Update 2018.

- Wetlands Conservation District Ordinance—the purpose of the Wetlands Conservation District is to protect the public health, safety, and general welfare by controlling and guiding the use of land areas which have been found to be subject to high water tables for extended periods of time.
- Floodplain Development Ordinance—the Town of Mason adopted this ordinance in 1967 to establish general guidelines for the siting of towers and antennas and to enhance and fulfill the following goals: 1) Preserve the authority of the Town of Mason to regulate and provide for reasonable opportunity for the siting of telecommunications facilities. 2) Enhance the ability of providers of telecommunications services to provide such services to the community effectively and efficiently. 3) Reduce the adverse impacts such facilities may create on, including, but not

limited to: migratory bird flight corridors, impacts on aesthetics, environmentally sensitive areas, historically significant locations, health and safety by injurious accidents to person and property, and diminution of property values. 4) Preserve unique viewsheds and scenic values.

- Aquifer and Wellhead Protection Overlay District Ordinance— The Aquifer and Wellhead Protection (AWP) Overlay District Ordinance was established for the purpose of protecting the quality and quantity of Groundwater resources available to be used as current and/or future drinking water supplies.
- Mason Master Plan 2007
- Planning Ordinance (Zoning Ordinance)
- Site Plan Review Regulations
- Subdivision Regulations
- International Building Code and International Residential Code
- National Flood Insurance Program
- Nashua Regional Water Resiliency Action Plan— Climate change in southern New Hampshire will impact the environment, ecosystem services, economy, public health, and quality of life. According to a 2014 study by the Sustainability Institute at the University of NH, southern NH is expected to become warmer and wetter over the next century with more extreme precipitation events. This weather pattern puts significant stress on the region's already aging water infrastructure. Furthermore, climate change is likely to cause a number of public health impacts on NH's most vulnerable residents. Despite efforts taking place to slow the rate of climate change, some level of change is inevitable. Therefore, municipalities must make sound decisions to help their communities adapt to a new climate normal. The goal of the Nashua Region Water Resiliency Action Plan is to help municipalities become more resilient to the impacts that climate change has on their water infrastructure and vulnerable populations.

Emergency Management Capabilities

Hazard mitigation is a key component of emergency management, along with preparedness, response, and recovery. Opportunities to reduce potential losses through mitigation practices are typically implemented before a hazard event occurs, such as enforcement of policies to regulate development that is vulnerable to hazards due to its location or design. Existing emergency management capabilities for the Town of Mason include:

Emergency Management Plans

- Mason Hazard Mitigation Plan Update 2011 —this document provides a guide for the community to reduce the impact of natural hazards on its residents and the built environment.

Emergency Management Departments, Facilities, Personnel, and Volunteers

- Mason Fire & EMS Department and Mason Police Department—these departments provide policies, programs, and resources related to hazard mitigation and emergency preparedness.

- Mason Fire Department is part of the Souhegan Mutual Aid Association. Towns that belong to this region include Amherst, Bedford, Brookline, Dunstable (MA), Goffstown, Greenfield, Greenville, Hollis, Hudson, Litchfield, Lyndeborough, Mason, Merrimack, Milford, Mount Vernon, Nashua, New Boston, New Ipswich, Pepperell Ma., Temple, Weare, and Wilton. In addition, all regional districts belong to a federation that covers the entire state.
- All municipalities in the Souhegan Mutual Aid Association are also part of the Souhegan Mutual Aid Hazardous Materials Response Team, which is based in Nashua.
- Emergency Operations Center—located at the Police Department; provides radio, computer, and phone support in conjunction with the State EOC for allocation of resources, equipment, and personnel during an emergency situation.
- Emergency Management Director – Dave Baker

Emergency Management Communications

- Dispatch—primary dispatch is through Town of Hollis, NH with backup provided by Milford, NH. If needed, Mason can provide its own dispatch through its radios.
- Mason Municipal Website—emergency management announcements and education
- Reverse 911 – emergency alert system through Mason schools

Floodplain Management Capabilities

The Town of Mason participates in the National Flood Insurance Program (NFIP). This provides full insurance coverage based on risk as shown on detailed Flood Insurance Rate Maps (FIRMs). Mason joined the NFIP on December 1, 1992. As a participant in the NFIP, communities must agree to adopt a floodplain management ordinance and enforce the regulations found in the ordinance. Mason has adopted the "Floodplain Ordinance," found in Article XVIII of the Town of Mason Planning Ordinance. The Floodplain Ordinance is enacted to prevent the development of buildings and uses in areas that are unsatisfactory and hazardous due to the threat of flooding, protect natural flows and drainage, and comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended). Additional information on the Floodplain Ordinance and Mason's participation in the NFIP will be located in Section 3.7 of this Plan.

Administrative and Technical Capabilities

Mason's ability to develop and implement mitigation projects, policies, and programs is closely related to the staff time and resources it allocates to that purpose. Administrative capability can be improved by coordinating across departments and integrating mitigation planning into existing Town procedures. The following departments, boards, and personnel are critical to Mason's hazard mitigation administrative and technical capabilities:

- Planning Department
- Fire and Rescue Department
- Police Department
- Building Inspector
- Health Officer

- Road Agent
- Town Administrator
- Board of Selectmen
- Zoning Board
- Planning Board
- Conservation Commission

Fiscal Capabilities

In addition to administrative and technical capabilities, the ability of the Town of Mason to implement mitigation actions is closely associated with the amount of money available for these projects. Mitigation actions identified in this Plan, including those that will appear in Table 12—Implementation and Administration, may utilize the following funding sources.

- Congestion Mitigation and Air Quality (CMAQ) Program—this program is administered by the Federal Highway Administration and was implemented to support surface transportation projects and related efforts that contribute to air quality improvements and provide congestion relief.
- FEMA Hazard Mitigation Grant Program—the Hazard Mitigation Grant Program provides grants to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the Program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.
- FEMA Pre-Disaster Mitigation Program—the Pre-Disaster Mitigation Program provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster.
- Community Development Block Grant Program—the Community Development Block Grant (CDBG) program, administered through the US Department of Housing and Urban Development, provides communities with resources to address a wide range of unique community development needs, including Disaster Recovery Assistance. HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.

Summary and Analysis of Mason's Existing Authorities, Policies, Programs, and Resources

Measures of Effectiveness are defined as follows:

- 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 works as intended but could be improved to meet higher standards
- Poor—the existing program does not work as intended, often falls short of its goals, and/or may present unintended consequences

Capability	Description	Area of Town Covered	Responsible Entities	Effectiveness	Changes or Improvements Needed
Planning and Regulatory	Wetlands Conservation District Ordinance, Floodplain Development Ordinance, Aquifer and Wellhead Protection Overlay District Ordinance, Open Space Development, Land Use Zoning Ordinance, Site Plan Regulations, Subdivision, Regulations, Mason Master Plan 2007, NFIP, Nashua Regional Water Resiliency Action Plan	Entire jurisdiction	Planning Board, Zoning Board	Good	Ordinances should be reviewed on a regular basis to ensure they are consistent with goals outlined in the Master Plan and Hazard Mitigation Plan. Consider conducting a Town specific vulnerability assessment to improve local resiliency to climate change impacts.
Emergency Management	Plans; Departments, Facilities, Personnel, and Volunteers; Communications	Entire jurisdiction	Mason Fire/EMS Dept.; Mason Police Dept.; Mason Police Mutual Aid; Souhegan Fire Mutual Aid; Statewide Fire Mutual Aid	Good	Utilize a variety of communications methods to ensure all residents are educated about emergency preparedness and hazard mitigation measures they can take.
Floodplain Management	Floodplain Development Ordinance, NFIP	Designated Flood Hazard Areas in Mason	Mason Planning Board	Good	Revise/adopt regulations to improve floodplain management if needed. Ensure future updates of Mason Master Plan include floodplain considerations. Incorporate updated floodplains for Merrimack

					Watershed into municipal planning activities when they become available.
Administrative and Technical	Planning Dept., Fire/EMS Dept., Police Dept., Emergency Management, Building Inspector, Health Officer, Road Agent, Board of Selectmen, Zoning Board, Planning Board, Conservation Commission	Entire jurisdiction	Entities listed in Description	Excellent	Promote communication across all departments and committees to ensure Hazard Mitigation Plan goals and actions are implemented.
Fiscal	Grant funding, Town Budget	Entire jurisdiction	Board of Selectmen, Planning Board	Good	Hazard mitigation actions should be considered for inclusion in the departmental budgets. Mason's Hazard Mitigation Plan should be updated at least every 5 years in order to maintain eligibility for FEMA grants.

Section 1.5 ~ Review and Incorporation of Existing Documents

A number of existing documents were reviewed and incorporated into the Mason Hazard Mitigation Plan Update 2018. The Mason Zoning Ordinance was used to provide information on where and how the Town builds. This was particularly helpful when mapping critical facilities corridors (Section 3.4). The Mason Master Plan provided insight on future development patterns (Section 2.1) and helped to inform the analysis and prioritization of mitigation actions (Section 4.3). The State of New Hampshire Multi-Hazard Mitigation Plan Update 2013 provided insight when developing the description of natural hazards (Section 3.1), description of previous hazards (Section 3.2), probability of future hazards (Section 3.3), vulnerability by hazard (Section 3.5), and goals to reduce vulnerabilities (Section 4.1). The City of Nashua's Comprehensive Emergency Management Plan was referenced to write the hazard descriptions used to determine Mason's vulnerability by hazard (Section 3.5). Finally, the Nashua Regional Planning Commission's "Nashua Regional Water Resiliency Action Plan" provided insight when developing the description of natural hazards (Section 3.1), probability of future hazards (Section 3.3), vulnerability by hazard (Section 3.5), and goals to reduce vulnerabilities (Section 4.1). It was used to inform the analysis and prioritization of mitigation actions (Section 4.3).

Section 1.6 ~ Updating the Plan

The Town of Mason is required to update its Hazard Mitigation Plan at least every five years. In order to monitor, evaluate, and update the Mitigation Strategies identified in Table 12—Implementation and Administration, the Mason Hazard Mitigation Team will meet annually. The Mason Emergency Management Director is responsible for initiating this review and will consult with members of the Mason Hazard Mitigation Team and the community. During this meeting, the Team will identify mitigation actions that can be conducted in the current year as well as mitigation actions that will require budget requests for the following year. These mitigation actions will be monitored throughout the year by the Team.

Changes should be made to the Plan to accommodate projects that have failed or are not considered feasible after an evaluation and review for their consistency with the benefit cost analysis, STAPLEE analysis, timeframe, community's priorities, and funding resources. Mitigation strategies that were not ranked as priorities during the 2018 update should be reviewed as well during the monitoring, evaluation, and update of this Plan to determine feasibility of future implementation. New mitigation actions or plans proposed upon adoption of this Plan should follow the benefit cost and STAPLEE analysis methods utilized in this Plan to ensure consistency with the adopted Plan and to help the Hazard Mitigation Team evaluate overall potential for success.

In addition to this annual meeting, the Hazard Mitigation Team will meet after any hazard occurrence as part of the Town's debriefing exercise. The Hazard Mitigation Plan will be updated following this meeting to reflect changes in priorities and mitigation strategies that have resulted from the hazard event. It is especially important to incorporate updates within one year after a Presidential Disaster Declaration.

The Town of Mason will utilize its website to notify members of the public about the annual Hazard Mitigation Plan Update meeting and to involve them in the update process. Any public input that is received will be incorporated into the Plan update. In addition, following its annual meeting, the Hazard Mitigation Team will report the results of its update process to the Mason Board of Selectmen. The Board of Selectmen's meetings are open to the public.

CHAPTER 2. CHANGES FROM PREVIOUS PLAN

Section 2.1 ~ Changes in Development

There have been no significant changes in development patterns in Mason since the 2011 Hazard Mitigation Plan. The Town has no formal commercial or industrial development zoning districts; however both uses can exist under a special exception or conditional use permit. Mason's commercial development is mostly in the southwest corner of town near Old Turnpike Road with the exception of a

commercial property off of Brookline Road in the eastern side of Town. There is also one parcel used for industrial purposes in the northern area of town off of Starch Mill Road. Residential development has not increased much. In 2012 there was 1 new home permit issued; 0 permits were issued in 2013, 4 permits in 2014, 1 permit in 2015, and 3 permits in 2016. According to the 2012 American community Survey Mason's population stands at 1,382 and the NH Office of Strategic Initiatives estimates a total of 586 housing units. There have also been no significant changes in development that have occurred in hazard prone areas that have increased Mason's vulnerability to hazards.

Section 2.2 ~ Progress on Local Mitigation Efforts

The mitigation actions and implementation framework identified in the Mason Hazard Mitigation Plan Update 2018 have been revised to reflect progress in local mitigation efforts. Progress has been made on a number of local mitigation efforts identified in the 2011 Plan, including: provide a comprehensive safety education program for Mason citizens; survey elderly population and develop database of information; identify an alternate route for students to reach a shelter facility and provide provisions for public outreach to parents in the event conditions do not permit parental pick-up of students; continuously update town building codes; and install back-up generators at the Police Station and Mann House (Town Offices).

In order to assess progress on local mitigation efforts, the Hazard Mitigation Team reviewed the actions originally presented in the Mason Hazard Mitigation Plan 2011 and determined if they had been completed, deleted, or deferred. Progress on each action and its current priority level were also evaluated to determine if it should continue to be included in the mitigation actions identified in this Plan update.

Table 1—Status of Previous Actions

Mitigation Action	Status	Explanation
Replace culverts on Starch Mill Road, Wilton Road, Russell Road, and Briggs Road. Replace and upgrade old undersized culverts to provide adequate capacity.	Deferred	This is a mitigation action (Structural).
Designate an annual Safety Day to highlight the importance of safety education for all age groups within the community. Distribute information from FEMA.	Deleted	This is a mitigation action (Public Education, Prevention), provided that Safety Day focuses on mitigation rather than preparedness. Because new residents move into town and education is a lifelong process, this action will continue to be tracked in the Hazard Mitigation Plan Update 2018.
Provide a comprehensive safety education program for Mason citizens, including topics such as general safety, CPR, fire, electrical, and poison control with a focus on both prevention and emergency response.	Completed	This is a mitigation action (Public Education, Prevention), provided that educational programs focus on mitigation rather than preparedness. Because new residents move into town and education is a lifelong process, this action will continue to be tracked in the Hazard Mitigation Plan Update 2018.

Mitigation Action	Status	Explanation
Inventory of town-wide special needs and at-risk populations for mitigation planning as well as town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.	Completed	This is a mitigation action (Public Education).
Increase alert signage and personnel training for severe weather emergency snow and tree removal operations. Obtain additional signs.	Deleted	Because this is a preparedness action it will no longer be tracked in hazard mitigation plan updates.
Identify an alternate route for students to reach a shelter facility. Also include provisions for public outreach to parents in the event conditions do not permit parental pick-up of students.	Completed	Because this is a preparedness action it will no longer be tracked in hazard mitigation plan updates.
Need alarm systems at Highway Garage, Fire, and Police Stations to prevent vandalism.	Deferred	Because this is a preparedness action it will no longer be tracked in hazard mitigation plan updates.
Continuously update town building codes to ensure structural integrity of new and existing critical facilities and areas of concern.	Completed	This is a mitigation action (Prevention).
Install back-up generators at the Police Station and Mann House (Town Offices).	Completed	Because this is a preparedness action it will no longer be tracked in hazard mitigation plan updates.

Section 2.3 ~ Changes in Priorities

Many of the "mitigation" actions identified in Mason's 2011 Hazard Mitigation Plan were actually preparedness actions. While preparedness actions are important, the Mason Hazard Mitigation Plan Update 2018 will focus exclusively on mitigation actions.

The STAPLEE scoring system in the 2011 Mason Hazard Mitigation Plan was different from the STAPLEE scoring system used in the 2018 update. This makes it difficult to analyze changes in mitigation action priority levels by comparing STAPLEE scores. As such, Table 2 also notes whether the action falls within the top 50% or bottom 50% of all mitigations actions identified in the plan.

The following mitigation action rose in priority level from the 2011 Plan to the 2018 Plan:

- Replace culverts on Starch Mill Road, Wilton Road, Russell Road, and Briggs Road. Replace and upgrade old undersized culverts to provide adequate capacity.
- Inventory of town-wide special needs and at-risk populations for mitigation planning as well as town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.

The following mitigation action dropped in priority level from the 2011 Plan to the 2018 Plan:

- Continuously update town building codes to ensure structural integrity of new and existing critical facilities and areas of concern

Table 2—Changes in Mitigation Priorities

2011 Mitigation Action	Current Status	Priority Level in 2011 Plan	Priority Level in 2018 Plan
Replace culverts on Starch Mill Road, Wilton Road, Russell Road, and Briggs Road. Replace and upgrade old undersized culverts to provide adequate capacity.	Deferred	STAPLEE Score = 20 Rank = 2 out of 9	STAPLEE Score = 18 Rank = 1 out of 11
Designate an annual Safety Day to highlight the importance of safety education for all age groups within the community. Distribute information from FEMA.	Deleted	STAPLEE Score = 18 Rank = 8 out of 9	This action has been deleted and is no longer considered a priority. A similar action was not identified in the 2018 Plan update.
Provide a comprehensive safety education program for Mason citizens, including topics such as general safety, CPR, fire, electrical, and poison control with a focus on both prevention and emergency response.	Completed	STAPLEE Score = 18 Rank = 9 out of 9	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2018 Plan update.
Inventory of town-wide special needs and at-risk populations for mitigation planning as well as town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.	Completed and ongoing (this action will be completed on an ongoing basis throughout the life of the plan)	STAPLEE Score = 19 Rank = 7 out of 9	STAPLEE Score = 15 Rank = 3 out of 11
Increase alert signage and personnel training for severe weather emergency snow and tree removal operations. Obtain additional signs.	Deleted	STAPLEE Score = 20 Rank = 3 out of 9	This action has been deleted and is no longer considered a priority. A similar action was not identified in the 2018 Plan update.

2011 Mitigation Action	Current Status	Priority Level in 2011 Plan	Priority Level in 2018 Plan
Identify an alternate route for students to reach a shelter facility. Also include provisions for public outreach to parents in the event conditions do not permit parental pick-up of students.	Completed	STAPLEE Score = 19 Rank = 6 out of 9	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2018 Plan update.
Need alarm systems at Highway Garage, Fire, and Police Stations to prevent vandalism.	Deferred	STAPLEE Score = 20 Rank = 4 out of 9	Because this is a preparedness action it will no longer be tracked in hazard mitigation plan updates.
Continuously update town building codes to ensure structural integrity of new and existing critical facilities and areas of concern.	Completed and ongoing (this action will be completed on an ongoing basis throughout the life of the plan)	STAPLEE Score = 21 Rank = 1 out of 9	STAPLEE Score = 16 Rank = 2 out of 11
Install back-up generators at the Police Station and Mann House (Town Offices).	Completed	STAPLEE Score = 20 Rank = 5 out of 9	This action has been completed and is no longer considered a priority. A similar action was not identified in the 2018 Plan update.

CHAPTER 3. HAZARD IDENTIFICATION AND RISK ASSESSMENT

Section 3.1 ~ Description of Natural Hazards

The Town of Mason is susceptible to a variety of natural hazards, which are outlined in Table 3. For each hazard type, the hazard location within the Town, extent, and impact are also noted. Extent refers to how bad the hazard can be; it is not the same as location. Examples of extent include potential wind speed, depth of flooding, and existing scientific scales (ex. Enhanced Fujita Tornado Damage Scale). Impact refers to damages or consequences resulting from the hazard.

Landslides and snow avalanches have not been included in the Mason Hazard Mitigation Plan Update 2018. "A landslide is the downward or outward movement of slope forming materials reacting under the force of debris slides and earth flows" (State of NH Multi-Hazard Mitigation Plan Update 2013, pg. 56). "A snow avalanche is a slope failure consisting of a mass of rapidly moving, fluidized snow that

slides down a mountainside" (State of NH Multi-Hazard Mitigation Plan Update 2013, pg. 77). While Mason does have areas of hilly terrain, there have been no historic landslide or snow avalanche events in town. As such, the Hazard Mitigation Team did not feel it was necessary to include these hazards in this Plan.

Table 3—Natural Hazards in Jurisdiction

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
Climate Change	Entire jurisdiction.	See Hazard Extent descriptions for Drought, Extreme Temperatures, Flooding	See Impact descriptions for Drought, Extreme Temperatures, Flooding
Drought	Entire jurisdiction.	<u>NH DES Drought Management Plan</u> • Level 1—Alert • Level 2—Warning • Level 3—Emergency • Level 4—Disaster <u>US Drought Monitor</u> • D0—Abnormally Dry • D1—Moderate Drought • D2—Severe Drought • D3-Extreme Drought • D4—Exceptional Drought • S—Short term, typically less than 6 months • L—Long term, typically more than 6 months	<u>D0</u> • short term dryness slowing planting, growth of crops • some lingering water deficits • crops not fully recovered <u>D1</u> • some damage to crops • streams, reservoirs, or wells low, some water shortages developing or imminent • voluntary water-use restrictions requested <u>D2</u> • crop losses likely • water shortages common • water restrictions imposed <u>D3</u> • major crop losses • widespread water shortages or restrictions <u>D4</u> • Exceptional & widespread crop loss • Shortages of water in reservoirs, streams, & wells creating water emergencies <u>S</u> • impacts on agriculture <u>L</u> • impacts on hydrology & ecology
Earthquake	Entire jurisdiction.	<u>Richter Scale</u> • <3.4—detected only by seismometers	Structural damage or collapse of buildings.

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
		• >8—total damage, surface waves seen, objects thrown in air For full definitions of Richter Scale, see Section 3.5 Vulnerability by Hazard	Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Loss of water for fire protection. Increased risk of fire (gas break). Risk to life, medical surge.
Extreme Temperatures	Entire jurisdiction.	Extreme heat—period of 3 consecutive days when air temperature reaches 90°F or higher on each day. Extreme cold— period of 3 consecutive days of minimum temperatures at or below 0°F.	Overburdened power systems may experience failures due to extreme heat. Shortages of heating fuel in extreme cold due to high demand. Medical surge. Loss of municipal water supply for drinking water and fire protection due to freezing temperatures.
Flooding	Floodplains cover approximately 1.3% of Mason—1.3% of Mason is located in 1% annual floodplain and 0% of Mason is located in the 0.2% annual floodplain. Roadways with the potential to flood include: • Depot Road culvert at fire station • Wilton Road culvert at Sand Pit Road • Culvert at Starch Mill Rd and Abbott	FEMA flood probabilities: • 1% possibility per year • 0.2% possibility per year State of NH Dam Hazard Potential Classification system (for flooding resulting from dam/levee failure): • Class S—significant hazard • Class H—high hazard • Class L—low hazard • Class NM—non-menace For full definitions of Dam Hazard Classes, see Section 3.5 Vulnerability by Hazard	Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding.

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
	Hill Intersection • Townsend Road culvert near Jackson Road • Walker Brook Road • Townsend Road • Campbell Mill Road See Section 3.5 for additional information on flood-prone areas.		
Lightning	Entire jurisdiction. Areas with large populations present outdoors and large open spaces are particularly vulnerable.	Lightning Activity Level: • Level 1 • Level 2 • Level 3 • Level 4 • Level 5 • Level 6 For full definitions of Lightning Activity Level, see Section 3.5 Vulnerability by Hazard	Smoke and fire damage to structures and property. Disruption to power lines, municipal communications, and 911 communications. Damage to critical electronic equipment. Injury or death to people involved in outdoor activity.
Severe Wind	Entire jurisdiction.	Saffir-Simpson Hurricane Wind Scale: • Category 1—sustained winds 74-95 mph • Category 2—sustained winds 96-110 mph • Category 3—sustained winds 111-129 mph • Category 4—sustained winds 130-156 mph • Category 5—sustained winds 157 mph or higher	Wind damage to structures and trees. Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding. Water pressure, quality, and capacity issues impacting fire

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
			protection. Loss of natural resources.
Severe Winter Weather	Entire jurisdiction.	Depth of snow in a given time frame (ex. 2 or more inches per hour over a 12 hour period). Blizzard—violent snowstorm with minimum winds of 35 mph and visibility less than ¼ mile for 3 hours. Ground snow load factor. Ice Storm—Sperry-Piltz Ice Accumulation Index: • 0—little impact • 5—catastrophic damage to exposed utility systems For full definitions of Sperry-Plitz Ice Accumulation Index, see Section 3.5 Vulnerability by Hazard	Disruption to road network. Damage to trees municipal communications, and 911 communications. Structural damage to roofs/collapse. Increase in CO, other hazards.
Tornado/Downburst	Entire jurisdiction.	Enhanced Fujita Tornado Damage Scale: • EF0—winds 65-85 mph • EF1—winds 86-110 mph • EF2—winds 111-135 mph • EF3—winds 136-165 mph • EF4—winds 166-200 mph • EF5—winds >200 mph	Wind damage to structures and trees. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, 911 communications, radio system. Environmental hazards resulting from damage. Medical surge. Loss of natural resources.
Wildfire	Areas particularly prone to wildfire include forested areas near residential development.	NWCG Fire Size Classification: • A—greater than 0 but less than or equal to 0.25 acres • B—0.26 to 9.9 acres • C—10.0 to 99.9 acres • D—100-299 acres • E—300 to 999 acres • F—1,000 to 4,999 acres • G—5,000 to 9,999 acres • H—10,000 to 49,999 acres • I—50,000 to 99,999 acres • J—100,000 to 499,999 acres	Smoke and fire damage to structures in wild land/urban interface. Damage to habitat. Impacts to air quality. Impact to roadways. Loss of natural resources.

Hazard Type	Hazard Location within Jurisdiction	Hazard Extent	Impact
		• K—500,000 to 999,999 acres • L—1,000,000+ acres	

Section 3.2 ~ Description of Previous Hazards

The first step in determining the probability of future hazard events in the Town of Mason is to examine the location, extent, and impact of previous hazards. If a hazard event has not occurred within Mason but has occurred in the region it is also noted.

Table 4—Previous Occurrences of Hazards in Jurisdiction

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Climate Change	It is beyond the scope of this Plan to determine if a specific hazard event was the result of Climate Change.			
Drought	1960-1969	Entire jurisdiction	Long term drought—9 years of less than normal precipitation	Longest recorded continuous period of below normal precipitation
Drought	1999	Entire jurisdiction	Level 2—Warning. Drought warning issued on June 29, 1999.	Damage to crops. Low water levels in dug wells.
Drought	March 2002	Entire jurisdiction	Level 3—Emergency. First time Level 3 Drought Impact Level had been declared.	Damage to crops. Low water levels in dug wells.
Drought	May 2015	Entire jurisdiction	USDA D0 (Abnormally Dry)	Damage to crops.
Drought	June 2015	Entire jurisdiction	USDA D1 (Moderate Drought)	Damage to crops.
Drought	August-September 2015	Entire jurisdiction	USDA D0 (Abnormally Dry)	Damage to crops.
Drought	October 2015-February 2016	Entire jurisdiction	USDA D1 (Moderate Drought)	Damage to crops.
Drought	March 2016-June 2016	Entire jurisdiction	USDA D0 (Abnormally Dry)	Damage to crops. Low water levels in wells.
Drought	July 2016-September 2016	Entire jurisdiction	USDA D2 (Severe Drought)	Low water levels in wells.
Drought	October 2016-December 2016	Entire jurisdiction	USDA D3 (Extreme Drought)	Low water levels in wells.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Drought	January 2017-March 2017	Entire jurisdiction	USDA D2 (Severe Drought)	Low water levels in wells.
Drought	April 2017	Entire jurisdiction	USDA D1 (Moderate Drought)	Low water levels in wells.
Earthquake		There have been no earthquakes centered in Mason to date. Earthquakes noted below were centered in NH.	Earthquakes noted below had a magnitude of 2.5 or greater.	
Earthquake	March 18, 1926	Manchester, NH	No historic data on extent	Intensity V effects observed in Amherst, Lyndeborough, Manchester, Mason, and Wilton.
Earthquake	December 20, 1940	Lake Ossipee, NH	Magnitude 5.5 on Richter Scale	No damage in Mason
Earthquake	December 24, 1940	Lake Ossipee, NH	Magnitude 5.5 on Richter Scale	No damage in Mason
Earthquake	December 4, 1963	Laconia, NH (43.6 latitude, -71.5 longitude)	Magnitude 3.7 on Richter Scale	No damage in Mason
Earthquake	June 28, 1981	Sanbornton, NH (43.56 latitude, -71.56 longitude)	Magnitude 3.0 on Richter Scale	No damage in Mason
Earthquake	January 19, 1982	Sanbornton, NH (43.5 latitude, -71.6 longitude)	Magnitude 4.7 on Richter Scale	No damage in Mason
Earthquake	October 25, 1986	Northfield, NH (43.399 latitude, -71.59 longitude)	Magnitude 3.9 on Richter Scale	No damage in Mason
Earthquake	October 20, 1988	Milan, NH (44.539 latitude, -71.158 longitude)	Magnitude 3.9 on Richter Scale	No damage in Mason
Earthquake	November 22, 1988	Milan, NH (44.557 latitude, -71.183 longitude)	Magnitude 3.2 on Richter Scale	No damage in Mason
Earthquake	April 6, 1989	Berlin, NH (44.511 latitude, -71.144 longitude)	Magnitude 3.5 on Richter Scale	No damage in Mason
Earthquake	October 6, 1992	Canterbury, NH (43.324 latitude, -71.578 longitude)	Magnitude 3.4 on Richter Scale	No damage in Mason
Earthquake	June 16, 1995	Lyman, NH (44.286 latitude, -71.915 longitude)	Magnitude 3.8 on Richter Scale	No damage in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Earthquake	August 21, 1996	Bartlett, NH (44.184 latitude, -71.352 longitude)	Magnitude 3.8 on Richter Scale	No damage in Mason
Earthquake	January 27, 2000	Raymond, NH (43.00 latitude, -71.18 longitude)	Magnitude 3.0 on Richter Scale	No damage in Mason
Earthquake	September 26, 2010	Boscawen, NH (43.2915 latitude, -71.6568 longitude)	Magnitude 3.4 on Richter Scale	No damage in Mason
Earthquake	October 11, 2013	Contoocook, NH (43.255 latitude, -71.747 longitude)	Magnitude 2.6 on Richter Scale	No damage in Mason
Earthquake	March 21, 2016	Contoocook, NH (43.264 latitude, -71.767 longitude)	Magnitude 2.8 on Richter Scale	No damage in Mason
Earthquake		Earthquakes noted below were centered outside of NH but were felt by NH municipalities.		
Earthquake	November 18, 1929	Grand Banks, Newfoundland	Magnitude 7.2 on Richter Scale	No damage in Mason
Earthquake	November 1, 1935	Timiskaming, Canada	Magnitude 6.25 on Richter Scale	No damage in Mason
Earthquake	June 15, 1973	Near Canadian/NH border	Magnitude 4.8 on Richter Scale	No damage in Mason
Earthquake	June 23, 2010	Buckingham, Quebec, Canada	Magnitude 5.0 on Richter Scale	No damage in Mason
Earthquake	August 23, 2011	Washington, DC	Magnitude 5.8 on Richter Scale	No damage in Mason
Earthquake	October 16, 2012	Hollis Center, ME	Magnitude 4.0 on Richter Scale	No damage in Mason
Extreme Temperature (Cold)	January 16-20, 2000	Entire jurisdiction	5 consecutive days of minimum temperatures at or below 0°F: • 1/16/00: -3°F • 1/17/00: -2°F • 1/18/00: -5°F • 1/19/00: -6°F • 1/20/00: -4°F	No known impact in Mason
Extreme Temperature (Cold)	January 28-30, 2000	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/28/00: -6°F • 1/29/00: -2°F • 1/30/00: -4°F	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Extreme Temperature (Cold)	January 18-20, 2003	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/18/00: -9°F • 1/19/00: -11°F • 1/20/00: -11°F	No known impact in Mason
Extreme Temperature (Cold)	January 28-31, 2003	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/28/03: -9°F • 1/29/03: -5°F • 1/30/03: -0°F • 1/31/03: -0°F	No known impact in Mason
Extreme Temperature (Cold)	February 13-17, 2003	Entire jurisdiction	5 consecutive days of minimum temperatures at or below 0°F: • 2/13/03: -3°F • 2/14/03: -11°F • 2/15/03: -10°F • 2/16/03: -7°F • 2/17/03: -2°F	No known impact in Mason
Extreme Temperature (Cold)	February 26-28, 2003	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 2/26/03: -4°F • 2/27/03: -6°F • 2/28/03: -1°F	No known impact in Mason
Extreme Temperature (Cold)	January 9-12, 2004	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/9/04: -7°F • 1/10/04: -8°F • 1/11/04: -8°F • 1/12/04: -7°F	No known impact in Mason
Extreme Temperature (Cold)	January 14-17, 2004	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/14/04: -10°F • 1/15/04: -10°F • 1/16/04: -12°F • 1/17/04: -9°F	No known impact in Mason
Extreme Temperature (Cold)	January 24-27, 2004	Entire jurisdiction	4 consecutive days of minimum	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			temperatures at or below 0°F: • 1/24/04: -4°F • 1/25/04: -6°F • 1/26/04: -6°F • 1/27/04: -0°F	
Extreme Temperature (Cold)	January 18-25, 2005	Entire jurisdiction	8 consecutive days of minimum temperatures at or below 0°F: • 1/18/05: 0°F • 1/19/05: -8°F • 1/20/05: -3°F • 1/21/05: -5°F • 1/22/05: -12°F • 1/23/05: -9°F • 1/24/05: 0°F • 1/25/05: -1°F	No known impact in Mason
Extreme Temperature (Cold)	January 28-30, 2005	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 2/28/05: -1°F • 2/29/05: -7°F • 2/30/05: -5°F	No known impact in Mason
Extreme Temperature (Cold)	January 16-18, 2009	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/16/09: -16°F • 1/17/09: -16°F • 1/18/09: -9°F	No known impact in Mason
Extreme Temperature (Cold)	January 25-27, 2009	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/25/09: -7°F • 1/26/09: -7°F • 1/27/09: -5°F	No known impact in Mason
Extreme Temperature (Cold)	January 15-18, 2011	Entire jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 1/15/11: -6°F • 1/16/11: -5°F • 1/17/11: 0°F • 1/18/11: -2°F	No known impact in Mason
Extreme Temperature (Cold)	January 23-27, 2011	Entire jurisdiction	5 consecutive days of minimum	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			temperatures at or below 0°F: • 1/23/05: -5°F • 1/24/05: -10°F • 1/25/05: -9°F • 1/26/05: -3°F • 1/27/05: -2°F	
Extreme Temperature (Cold)	January 15-17, 2012	Entire jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 1/15/12: -2°F • 1/16/12: -2°F • 1/17/12: 0°F	No known impact in Mason
Extreme Temperature (Cold)	February 11-13, 2014	Entire Jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 2/11/14: -7°F • 2/12/14: -7°F • 2/13/14: -7°F	No known impact in Mason
Extreme Temperature (Cold)	February 1-4, 2015	Entire Jurisdiction	4 consecutive days of minimum temperatures at or below 0°F: • 2/1/15: 0°F • 2/2/15: 0°F • 2/3/15: -3°F • 2/4/15: -2	No known impact in Mason
Extreme Temperature (Cold)	February 14-19, 2015	Entire Jurisdiction	6 consecutive days of minimum temperatures at or below 0°F: • 2/14/15: -7°F • 2/15/15: -4°F • 2/16/15: -5°F • 2/17/15: -2°F • 2/18/15: -3°F • 2/19/15: -4°F	No known impact in Mason
Extreme Temperature (Cold)	February 14-16, 2016	Entire Jurisdiction	3 consecutive days of minimum temperatures at or below 0°F: • 2/14/16: -11°F • 2/15/16: -9°F • 2/16/16: -9°F	No known impact in Mason
Extreme Temperature (Cold)	December 28-31, 2017	Entire Jurisdiction	4 consecutive days of minimum	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			temperatures at or below 0°F: • 12/28/17: -7°F • 12/29/17: -9°F • 12/30/17: -6°F • 12/31/17: -11°F	
				No known impact in Mason
Extreme Temperature (Heat)	May 3-5, 2001	Entire jurisdiction*	3 consecutive days of temperatures above 90°F: • 5/3/01—93°F • 5/4/01—92°F • 5/5/01—92°F	No known impact in Mason
Extreme Temperature (Heat)	June 15-17, 2001	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 6/15/01—92°F • 6/16/01—95°F • 6/17/01—91°F	No known impact in Mason
Extreme Temperature (Heat)	July 22-26, 2001	Entire jurisdiction	5 consecutive days of temperatures above 90°F: • 7/22/01—90°F • 7/23/01—90°F • 7/24/01—92°F • 7/25/01—95°F • 7/26/01—93°F	No known impact in Mason
Extreme Temperature (Heat)	August 7-10, 2001	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 8/7/01—94°F • 8/8/01—97°F • 8/9/01—96°F • 8/10/01—100°F	No known impact in Mason
Extreme Temperature (Heat)	July 2-5, 2002	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/2/02—90°F • 7/3/02—95°F • 7/4/02—98°F • 7/5/02—97°F	No known impact in Mason
Extreme Temperature (Heat)	July 30-August 2, 2002	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/30/02—90°F • 7/31/02—91°F • 8/1/02—91°F	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 8/2/02—93°F	
Extreme Temperature (Heat)	August 13-20, 2002	Entire jurisdiction	8 consecutive days of temperatures above 90°F: • 8/13/02—94°F • 8/14/02—96°F • 8/15/02—98°F • 8/16/02—95°F • 8/17/02—94°F • 8/18/02—92°F • 8/19/02—94°F • 8/20/02—92°F	No known impact in Mason
Extreme Temperature (Heat)	June 25-28, 2003	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 6/25/03—90°F • 6/26/03—93°F • 6/27/03—92°F • 6/28/03—92°F	No known impact in Mason
Extreme Temperature (Heat)	July 5-7, 2003	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 7/5/03—91°F • 7/6/03—90°F • 7/7/03—91°F	No known impact in Mason
Extreme Temperature (Heat)	July 17-19, 2006	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 7/17/06—90°F • 7/18/06—93°F • 7/19/06—94°F	No known impact in Mason
Extreme Temperature (Heat)	August 2-4, 2006	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 8/2/06—96°F • 8/3/06—97°F • 8/4/06—92°F	No known impact in Mason
Extreme Temperature (Heat)	August 16-20, 2006	Entire jurisdiction	5 consecutive days of temperatures above 90°F: • 8/16/09—90°F • 8/17/09—90°F • 8/19/09—91°F • 8/19/09—93°F • 8/20/09—90°F	No known impact in Mason
Extreme Temperature (Heat)	July 4-10, 2010	Entire jurisdiction	7 consecutive days of temperatures above 90°F: • 7/4/10—90°F	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 7/5/10—90°F • 7/6/10—97°F • 7/7/10—98°F • 7/8/10—97°F • 7/9/10—92°F • 7/10/10—92°F	
Extreme Temperature (Heat)	July 17-20, 2010	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/17/10—93°F • 7/18/10—93°F • 7/19/10—93°F • 7/20/10—90°F	No known impact in Mason
Extreme Temperature (Heat)	August 30-Sept. 3, 2010	Entire jurisdiction	5 consecutive days of temperatures above 90°F: • 8/30/10—92°F • 8/31/10—91°F • 9/1/10—94°F • 9/2/10—95°F • 9/3/10—96°F	No known impact in Mason
Extreme Temperature (Heat)	July 21-24, 2011	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/21/11—92°F • 7/22/11—96°F • 7/23/11—101°F • 7/24/11—96°F	No known impact in Mason
Extreme Temperature (Heat)	June 21-23, 2012	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 6/21/12—96°F • 6/22/12—94°F • 6/23/12—93°F	No known impact in Mason
Extreme Temperature (Heat)	July 13-16, 2012	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 7/13/12—92°F • 7/14/12—92°F • 7/15/12—93°F • 7/16/12—91°F	No known impact in Mason
Extreme Temperature (Heat)	August 3-6, 2012	Entire jurisdiction	4 consecutive days of temperatures above 90°F: • 8/3/12—91°F • 8/4/12—94°F • 8/5/12—95°F • 8/6/12—93°F	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Extreme Temperature (Heat)	June 1-3, 2013	Entire jurisdiction	3 consecutive days of temperatures above 90°F: • 6/1/13—93°F • 6/2/13—92°F • 6/3/13—91°F	No known impact in Mason
Extreme Temperature (Heat)	July 16-21, 2013	Entire jurisdiction	6 consecutive days of temperatures above 90°F: • 7/16/13—90°F • 7/17/13—91°F • 7/18/13—93°F • 7/19/13—93°F • 7/20/13—96°F • 7/21/13—91°F	No known impact in Mason
Extreme Temperature (Heat)	July 29-31, 2015	Entire Jurisdiction	3 consecutive days of temperatures above 90°F: • 7/29/15—93°F • 7/30/15—94°F • 7/31/15—90°F	No known impact in Mason
Extreme Temperature (Heat)	August 16-20, 2015	Entire Jurisdiction	5 consecutive days of temperatures above 90°F: • 8/16/15—90°F • 8/17/15—90°F • 8/18/15—91°F • 8/19/15 – 93°F • 8/20/15 – 90°F	No known impact in Mason
Extreme Temperature (Heat)	September 2-4, 2015	Entire Jurisdiction	3 consecutive days of temperatures above 90°F: • 9/2/15—91°F • 9/3/15—92°F • 9/4/15—92°F	No known impact in Mason
Extreme Temperature (Heat)	September 7-11, 2015	Entire Jurisdiction	5 consecutive days of temperatures above 90°F: • 9/7/15—90°F • 9/8/15—94°F • 9/9/15—94°F • 9/10/15 – 94°F • 9/11/15 – 93°F	No known impact in Mason
Extreme Temperature (Heat)	July 22-29, 2016	Entire Jurisdiction	8 consecutive days of temperatures above 90°F: • 7/22/16—95°F • 7/23/16—93°F • 7/24/16—93°F	No known impact in Mason

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
			• 7/25/16—92°F • 7/26/16—96°F • 7/27/16—96°F • 7/28/16—93°F • 7/29/16—93°F	
Extreme Temperature (Heat)	June 12-14, 2017	Entire Jurisdiction	3 consecutive days of temperatures above 90°F: • 6/12/17—94°F • 6/13/17—98°F • 6/14/17—96°F	No known impact in Mason
Extreme Temperature (Heat)	July 20-22, 2017	Entire Jurisdiction	3 consecutive days of temperatures above 90°F: • 7/20/17—93°F • 7/21/17—94°F • 7/22/17—92°F	No known impact in Mason
Extreme Temperature (Heat)	August 1-4, 2017	Entire Jurisdiction	4 consecutive days of temperatures above 90°F: • 8/1/17—90°F • 8/2/17—92°F • 8/3/17—91°F • 8/4/17—90°F	No known impact in Mason
Extreme Temperature (Heat)	September 25-28, 2017	Entire Jurisdiction	4 consecutive days of temperatures above 90°F: • 9/25/17—93°F • 9/26/17—91°F • 9/27/17—90°F • 9/28/17—91°F	No known impact in Mason
Flooding—Dam Failure	There has been no significant damage from flooding due to dam failure in Mason to-date.			
Flooding	1927	Hillsborough County	No data on extent available	Damage to road network.
Flooding	March 11-21, 1936	Hillsborough County	25-50 year recurrence interval	$133,000,000 in property damage and 77,000 homeless throughout New England. Primary

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				impact to structures, infrastructure, and road network. Flooding caused by heavy snowfall totals, heavy rains, and warm weather. Impact listed here are general to Hillsborough County. Specific impacts to Mason are unknown.
Flooding	July 11, 1973	Hillsborough County	No data on extent available	FEMA Disaster Declaration #399. Specific impacts to Mason are unknown.
Flooding	July 29-August 10, 1986	Hillsborough County	No data on extent available	FEMA Disaster Declaration #771. Many roads impassable in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	March 30-April 11, 1987	Hillsborough County	25-50+ year recurrence interval	$4,888,889 in damage in NH. FEMA Disaster Declaration #789. Primary impact to agricultural fields in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	August 7-11, 1990	Hillsborough County	No data on extent available	$2,297,777 in damage in NH. FEMA Disaster Declaration #876. Primary impact to infrastructure in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	October 20-23, 1996	Hillsborough County	No data on extent available	$2,341,273 in damage in NH.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				FEMA Disaster Declaration #1144. Primary impact to structures and infrastructure in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	July 2, 1998	Hillsborough County	No data on extent available	$3,400,000 in damage in NH, 6 counties impacted including Hillsborough. FEMA Disaster Declaration #1231. Primary impact to structures and infrastructure in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	October 26, 2005	Hillsborough County	50-100 year recurrence interval	5 counties impacted in NH, including Hillsborough. FEMA Disaster Declaration #1610. Primary impact to structures and infrastructure in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	May 12-23, 2006	Hillsborough County	As much as 14 inches of rainfall in region. 100-500 year recurrence interval.	7 counties impacted in NH, including Hillsborough. FEMA Disaster Declaration #1643. Specific impacts to Mason are unknown.
Flooding	April 15, 2007	Hillsborough County	100-500 year recurrence interval	$27,000,000 in damages in NH; 2,005 home owners and renters applied for assistance in NH. FEMA Disaster Declaration #1695.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				Primary impact to structures and infrastructure in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	September 6-7, 2008	Hillsborough County	50-100 year recurrence interval	$6.90 per capita in damages in Hillsborough County. FEMA Disaster Declaration #1799 Primary impact to structures and infrastructure in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	March 14, 2010	Hillsborough County	50-100 year recurrence interval	$1,880,685 in FEMA public assistance in NH; $1.80 per capita in Hillsborough County. Flooding near Johnson Corner due to undersized culvert. FEMA Disaster Declaration #1913 Primary impact to roads and bridges in Hillsborough County. Specific impacts to Mason are unknown.
Flooding	May 26, 2011	Hazard was not experienced in jurisdiction.	N/A	Disaster Declaration #4006. No impact to Mason.
Flooding	May 29, 2012	Hazard was not experienced in jurisdiction.	N/A	Disaster Declaration #4065. No impact to Mason.
Flooding	June 26, 2013	Hazard was not experienced in jurisdiction.	N/A	Disaster Declaration #4139. No impact to Mason.
Flooding	July 1, 2017	Hazard was not experienced in jurisdiction	N/A	Disaster Declaration #4329. No impacts to Mason.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Severe Wind	Great Hurricane of 1938	Hillsborough County	No data on extent available	$12,337,643 total damages (not adjusted for inflation), 13 deaths and 494 injuries in NH. Damage to road network and structures caused by flooding.
Severe Wind	August 31, 1954 (Carol)	Hillsborough County	Saffir-Simpson Scale Category 3.	Extensive tree and crop damage.
Severe Wind	September 12, 1960 (Donna)	Hillsborough County	Saffir-Simpson Scale Category 3	Water damage to structures due to flooding.
Severe Wind	September 27, 1985 (Gloria)	Hillsborough County	Saffir-Simpson Scale Category 2	Damage to trees and power lines from high winds.
Severe Wind	August 19, 1991 (Bob)	Hillsborough County	Saffir-Simpson Scale Category 1	FEMA Disaster Declaration #917. Damage to structures, trees, and power lines from high winds. Structural damage in Mason from fallen trees.
Severe Wind	September 16-18, 1999 (Floyd)	Hillsborough County	Tropical Storm (winds 39-73 mph)	FEMA Disaster Declaration #1305. Primary impact to trees, infrastructure, and road network.
Severe Wind	August 28, 2011 (Irene)	Hillsborough County	Tropical Storm (winds 39-73 mph).	FEMA Disaster Declaration #4026. Damage to trees and power lines from high winds. Flash floods.
Severe Wind	October 26, 2012 (Sandy)	Hillsborough County	Tropical Storm (winds 39-73 mph).	FEMA Disaster Declaration #4095. Minimal damage.
Severe Wind	October 29-30, 2017	Hillsborough County	Tropical Storm (winds 39-73 mph).	FEMA Disaster Declaration #4355. A powerful storm fed by tropical moisture knocked out power to more than 270,000 homes and business across the state.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				Eversource reported around 190,000 customers were without power at its peak, ranking it as 1 of its top 5 largest outages in NH. The storm affected 330 roads in NH — 230 local and 100 state. In addition to the wind, 2.8 inches of rain fell in Nashua. There were more than 430 closings around the state. Nashua Fire Rescue responded to more than 100 calls in 12-hour period beginning at 8 p.m. Oct. 29. Falling trees severely damaged many homes and electrical infrastructure. On Nov. 28 Governor Sununu, requested assistance for Belknap, Carroll, Coos, Grafton, and Sullivan counties.
Lightning	2012	Darling Hill Road	Lightning damage to Police Station and Mann House	Insurance Settlement checks received totaling over $28,000
Lightning	2014	Mason Elementary School	Unknown	$275.95 check from Primex for damage
Severe Winter Weather	March 11-14, 1888	Entire jurisdiction	30-50 inches of snow	No historic data on impact
Severe Winter Weather	1922	Entire jurisdiction	No historic data on extent	Extreme snow drifts paralyzed road network.
Severe Winter Weather	February 14-15, 1940	Entire jurisdiction	Over 30 inches of snow	Snow and high winds paralyzed road network.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Severe Winter Weather	February 14-17, 1958	Entire jurisdiction	20-33 inches of snow	Primary impact to road network.
Severe Winter Weather	March 18-21, 1958	Entire jurisdiction	22-24 inches of snow	Primary impact to road network.
Severe Winter Weather	March 2-5, 1960	Entire jurisdiction	Up to 25 inches of snow	Primary impact to road network.
Severe Winter Weather	January 18-20, 1961	Entire jurisdiction	Up to 25 inches of snow	Blizzard conditions paralyze road network.
Severe Winter Weather	February 22-28, 1969	Entire jurisdiction	24-98 inches of snow in Central NH	Primary impact to road network. Slow moving storm.
Severe Winter Weather	December 25-28, 1969	Entire jurisdiction	12-18 inches of snow	Primary impact to road network.
Severe Winter Weather	January 19-21, 1978	Entire jurisdiction	Up to 16 inches of snow	Primary impact to road network.
Severe Winter Weather	February 5-7, 1978 (Blizzard of '78)	Entire jurisdiction	25-33 inches of snow	Snow paralyzed road network, trapped commuters in cars, and forced closure of businesses.
Severe Winter Weather	April 5-7, 1982	Entire jurisdiction	18-22 inches of snow	Primary impact to road network.
Severe Winter Weather	March, 1983	Entire jurisdiction	Over 18 inches of snow, 30-40 mph winds	Snow paralyzed road network and forced closure of businesses.
Severe Winter Weather	December 1996	Entire jurisdiction	14 inches of snow	Damage to power lines forces closure of businesses. Heavy wet snow caused many trees to come down. Power outages.
Severe Winter Weather	January 7, 1998	Entire jurisdiction	Ice storm, no data on extent available	$12,446,202 in total damages, 1 death and 6 injuries in NH. $17,000,000 in damages to PSNH equipment. FEMA Disaster Declaration #1199. 20 major road closures; 67,586 without power; 2,310 without phone service; 1 communication tower failure.

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Severe Winter Weather	January 24, 1998	Entire jurisdiction	No data on extent available	Power outages.
Severe Winter Weather	December 11, 2008	Entire jurisdiction	Ice storm, no data on extent available	$10,383,602 in FEMA public assistance in NH; $6.35 per capita in Hillsborough County. FEMA Disaster Declaration #1812 Damage to power and phone lines and trees.
Severe Winter Weather	February 23, 2010	Entire jurisdiction	Snow followed by rainfall between 2-6 inches. Winds over 70 mph.	$6,268,179 in FEMA public assistance in NH; $3.68 per capita in Hillsborough County. FEMA Disaster Declaration #1892 Damage to power and phone lines, trees, and road network. Over 330,000 customers without power state-wide.
Severe Winter Weather	October 29-30, 2011	Entire jurisdiction	15-20 inches of snow.	$3,052,769 in FEMA public assistance in NH; $5.11 per capita in Hillsborough County. FEMA Disaster Declaration #4049 Damage to power and phone lines, trees, and road network.
Severe Winter Weather	February 8-10, 2013	Entire jurisdiction	Snowfall totals of 12-18 inches across region, up to 30 inches in parts of NH. Winds 10-20 mph with gusts up to 40 mph. Visibility less than ¼ mile.	FEMA Disaster Declaration #4105
Severe Winter Weather	January 26-28, 2015	Entire jurisdiction.	Snowfall totals of 18-24 inches across region. Winds 35 mph. Visibility 0.	$3,293,059 in FEMA public assistance in NH; $3.88 per capita in Hillsborough

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
				County. FEMA Disaster Declaration DR-4209.
Severe Winter Weather	March 14, 2017	Hazard was not experienced in jurisdiction	N/A	Disaster Declaration #4316. No impacts to Mason.
Tornado		There have been no tornados originating in Mason to date. Tornados noted below originated in Hillsborough Co, NH.		
Tornado	July 2, 1961	Northern Hillsborough Co, originated near Weare, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	July 21, 1961	Central Hillsborough Co, originated near New Boston, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	May 9, 1963	Northeastern, Hillsborough Co, originated near Goffstown, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	May 20, 1963	Western Hillsborough Co, originated near Peterborough, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	June 9, 1963	Northeastern Hillsborough Co, originated near Manchester, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	August 28, 1965	Eastern Hillsborough Co, originated near Litchfield, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 19, 1966	Southern Hillsborough Co, originated near Amherst, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 17, 1968	Central Hillsborough Co, originated near Wilton, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	August 20, 1968	Northeastern Hillsborough Co, originated near Manchester, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 19, 1972	Southeastern Hillsborough Co, originated near Hudson, NH	Fujita Scale F1	0 fatalities, 0 injuries

Hazard Type	Date	Hazard Location within Jurisdiction	Hazard Extent	Impact
Tornado	July 5, 1984	Western Hillsborough Co, originated near Harrisville, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 5, 1984	Southeastern Hillsborough Co, originated near Pelham, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	June 16, 1986	Western Hillsborough Co, originated near Swanzey, NH	Fujita Scale F1	0 fatalities, 0 injuries
Tornado	July 3, 1997	Central Hillsborough Co, originated near Greenfield, NH	Fujita Scale F2	0 fatalities, 0 injuries
Tornado	May 31, 1998	Western Hillsborough Co, orginated near Antrim, NH	Fujita Scale F2	0 fatalities, 0 injuries
Downburst	July 6, 1999	Merrimack, Grafton, and Hillsborough Co.	Macroburst	2 fatalities, 2 lost roofs, damage to trees and utility infrastructure
Wildfire	April 18, 2015	350 Ashby Road, Mason, NH	Fire Department reported approximately 1 acre of brush burning	Mutual aid, tankers for water supply
Wildfire	April 14, 2016	Valley Road	Fire Department and Police Department assisted	Damage unknown

**NOAA does not have a full history of temperature data for the Town of Mason, NH. Extreme Temperature data is based on readings from NOAA weather station in Milford, NH, Nashua NH, and Greenville, NH.*

Section 3.3 ~ Probability of Future Hazard Events

After documenting the occurrence of previous hazard events in the Town of Mason and the surrounding region, the Hazard Mitigation Team used this information to calculate the annual probability of these events occurring in the future. The first step was to determine how many times a particular hazard had occurred in a given number of years. The number of occurrences was then divided by the number of years to determine annual probability. For example, if history shows that a particular hazard typically occurs 1 time every 4 years, the annual probability is 25%. Annual probability was calculated twice for each hazard. First, annual probability was calculated since the first recorded historic occurrence of the event. Second, annual probability was calculated based on occurrences since 2000 to reflect potential

recent changes in hazard event occurrence rates. The probability of future hazard events for each hazard type in the Town of Mason is outlined in Table 5.

Table 5—Probability of Future Hazard Events

Hazard Type	Probability of Future Event	Source
Climate Change—Drought	The frequency of short term drought (1-3 months) in New Hampshire is predicted to increase 2-3 times in the long term (2070-2099) under the higher emissions scenario. The state will experience a more significant increase in medium-term drought (3-6 months) during this period. Short and medium term droughts are primarily caused by evapotranspiration as a result of hotter summers. The frequency of long-term drought (6 plus months) does not change significantly in the future under the low or high emissions scenario compared to past long-term drought events in New Hampshire (Wake et al., "Climate Change in Southern New Hampshire," pg. 30-31).	"Climate Change in Southern New Hampshire," Sustainability Institute, University of New Hampshire, 2014
Climate Change—Increased Precipitation	Annual average precipitation is predicted to increase 17-20% in southern New Hampshire by the end of the century under both the low and high emissions scenarios. Larger increases in precipitation are expected in the winter and spring, while summer and fall will only experience slight increases (Wake et al., "Climate Change in Southern New Hampshire," pg. 29). Southern New Hampshire can also expect more extreme precipitation events, defined as those where more than 1 inch of rain falls within 24 hours or more than 2-4 inches falls in 48 hours. Under both low and high emissions scenarios, the frequency of extreme precipitation events in predicted to more than double by the end of the century (Wake et al., "Climate Change in Southern New Hampshire," pg. 29).	"Climate Change in Southern New Hampshire," Sustainability Institute, University of New Hampshire, 2014

Hazard Type	Probability of Future Event	Source
Climate Change—Warmer Temperatures	Temperatures in southern New Hampshire will continue to rise under a lower or higher future emissions scenario. In the short-term (2010-2039), average annual temperatures are predicted to increase by approximately 2°F. Under a higher emissions scenario, long-term (2070-2099) average annual temperatures are predicted to increase by 8 to 9°F. If a lower emissions scenario is achieved, long-term average annual temperatures are predicted to increase by 4°F (Wake et al., "Climate Change in Southern New Hampshire," pg. 23). The region is also predicted to experience more extreme heat events. From 1970-1999, southern New Hampshire had an average of seven days above 90°F each year. In the long-term under a higher emissions scenario, southern New Hampshire is predicted to have over 54 days per year above 90°F. Under a lower emissions scenario, the region is predicted to have 23 days per year above 90°F in the long-term (Wake et al., "Climate Change in Southern New Hampshire," pg. 25).	"Climate Change in Southern New Hampshire," Sustainability Institute, University of New Hampshire, 2014
Dam Failure	Because of limited data on previous dam failure events, probability cannot be calculated statistically. History shows no occurrences of dam failures causing damage in Hudson. However, this hazard is still possible and therefore the probability is low.	Local knowledge and public input
Drought	14 years of drought from 1960 through 2017. 14 events in 58 years = .24 events per year **Annual Probability = 24%**	NH DES Current Drought Conditions http://des.nh.gov/organization/divisions/water/dam/drought/drought-conditions.htm US Drought Monitor http://droughtmonitor.unl.edu/

Hazard Type	Probability of Future Event	Source
	4 years of drought from 2000 through 2017. 4 events in 18 years = .22 **Annual Probability = 22%**	
Earthquake	History shows no known earthquakes centered in Mason. However, this hazard is still possible. 6 magnitude 5.0 or greater earthquakes felt in NH from 1929 through 2016. 6 events in 89 years = .07 events per year **Annual Probability = 7%** 2 magnitude 5.0 or greater earthquakes felt in NH from 2000 through 2016. 2 events in 17 years = .12 events per year **Annual Probability = 11%**	US Geological Survey http://earthquake.usgs.gov/earthquakes/search/
Extreme Temperatures	30 extreme heat events from 2000 through 2017. 30 event in 18 years = 1.67 event per year **Annual Probability = 100%** 21 extreme cold events from 2000 through 2017. 21 event in 18 years = 1.17 event per year **Annual Probability = 100%**	NOAA National Climatic Data Center https://www.ncdc.noaa.gov/cdo-web/search
Flooding	19 flooding events in Hillsborough County from 1927 through 2017. 19 events in 90 years = .21 events per year	Local knowledge FEMA Presidential Disaster Declaration https://www.fema.gov/disasters/grid/year

Hazard Type	Probability of Future Event	Source
	Annual Probability = 21% 5 flooding events in Hillsborough County from 2000 through 2017. 5 events in 18 years = .28 events per year **Annual Probability = 28%**	
Severe Wind	8 hurricanes/tropical storms from 1938 through 2017. 8 events in 80 years = .10 events per year **Annual Probability = 10%** 2 hurricanes/tropical storms from 2000 through 2017. 2 events in 18 years = .11 events per year **Annual Probability = 11%**	Local knowledge FEMA Presidential Disaster Declaration https://www.fema.gov/disasters/grid/year National Hurricane Center http://www.nhc.noaa.gov/data/tcr/index.php?season=2014&basin=atl
Lightning	Because of limited data on previous lightning events, probability cannot be calculated statistically. History shows few occurrences of lightning strikes causing damage in Mason. However, this hazard is still possible and therefore the probability is low. Low probability is defined as a 0-25% chance of occurrence annually.	Local knowledge and public input
Severe Winter Weather	21 severe winter weather events in Hillsborough County from 1888 through 2017. 21 events in 130 years = .16 events per year **Annual Probability = 16%** 5 severe winter weather events in Hillsborough County from 2000 through 2017.	Local knowledge FEMA Presidential Disaster Declaration https://www.fema.gov/disasters/grid/year

Hazard Type	Probability of Future Event	Source
	5 events in 18 years = .28 events per year **Annual Probability = 28%**	
Tornado/Downburst	16 tornados and 2 downbursts in Hillsborough Co. from 1961 through 2017. 18 events in 57 years = .32 events per year **Annual Probability = 32%** 0 tornados and 0 downbursts in Hillsborough Co. from 2000 through 2017. 0 events in 18 years = 0 events per year **Annual Probability = 0-25%**	Tornado History Project (Joshua Lietz, Storm Prediction Center, National Climatic Data Center) and public input http://www.tornadohistoryproject.com
Wildfire	Because of limited data on previous wildfire events, probability cannot be calculated statistically. History shows few occurrences of wildfires causing damage in Mason. However, this hazard is still possible and therefore the probability is low. Low probability is defined as a 0-25% chance of occurrence annually.	Local knowledge and public input

Section 3.4 ~ Critical Facilities and their Vulnerability

The next step in determining Mason's overall vulnerability was to inventory the Town's community assets and determine what assets would be affected by each type of hazard event. The Hazard Mitigation Team began by reviewing the Mason Zoning Ordinance to provide information on where and how the Town builds and to identify the corridors where critical facilities would likely be located. The Team then identified the broad categories of important assets within Mason, including critical facilities essential to health and welfare; vulnerable populations, such as children and the elderly; economic assets and major employers; areas of high-density residential and commercial development; and historic, cultural, and natural resources. The Team then further divided the Town's critical facilities into the following categories:

1. **General Occupancy**
    a. Commercial

b. Education
c. Government
d. Recreation
e. Religious
f. Residential

2. **Essential Facilities**
    a. Fire Station
    b. Police Station
    c. Department of Public Works
    d. Schools
    e. Emergency Operations Centers
    f. Medical Care Facilities
3. **Transportation Systems**
    a. Highway Systems—Roads
    b. Highway Systems—Bridges
    c. Airport Systems
4. **Utility Systems**
    a. Communications
    b. Electric
    c. Water
5. **High Potential Hazard Facilities**
    a. Dams/Levees
6. **Hazardous Materials Facilities**
    a. EPA Toxics Release Inventory facilities (http://www2.epa.gov/toxics-release-inventory-tri-program)

The critical facilities within each category appear in the Tables 6.1-6.6 below. Each table includes the critical facility's name, content vulnerability, and locational vulnerability to hazards. Note that Climate Change is not included as a hazard in this analysis because its effects on critical facilities are included under the hazards of Drought, Extreme Temperatures, and Flooding.

Table 6.1—General Occupancy Critical Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Government - Town Offices (the Mann House)	Official records and documents, historic structure, potentially large population present, generator	✓	✓			✓	✓	✓	✓	✓
Government - Town Hall	Official records and documents, historic structure, potentially large population present	✓	✓			✓	✓	✓	✓	✓
Government - Solid Waste Transfer Station	Potentially large population present, potentially hazardous materials present	✓	✓			✓	✓	✓	✓	✓
Government - Mason Public Library (Mann House)	Official records and documents, historic structure, potentially large population present	✓	✓			✓	✓	✓	✓	✓

Table 6.2—Essential Facilities

Facility Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Police Station/Emergency Operations Center	Contents and staff valuable to emergency management, generator	✓	✓			✓	✓	✓	✓	✓
Fire and EMS Station	Contents and staff valuable to emergency management, generator	✓	✓			✓	✓	✓	✓	✓
Public Works Facility	Contents valuable to transportation network and public infrastructure, generator	✓	✓			✓	✓	✓	✓	✓

Facility Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Mason Elementary School	Potentially large population present, shelter	✓	✓			✓	✓	✓	✓	✓
Mason Congregational Church	Potentially large population present, shelter	✓	✓			✓	✓	✓	✓	✓

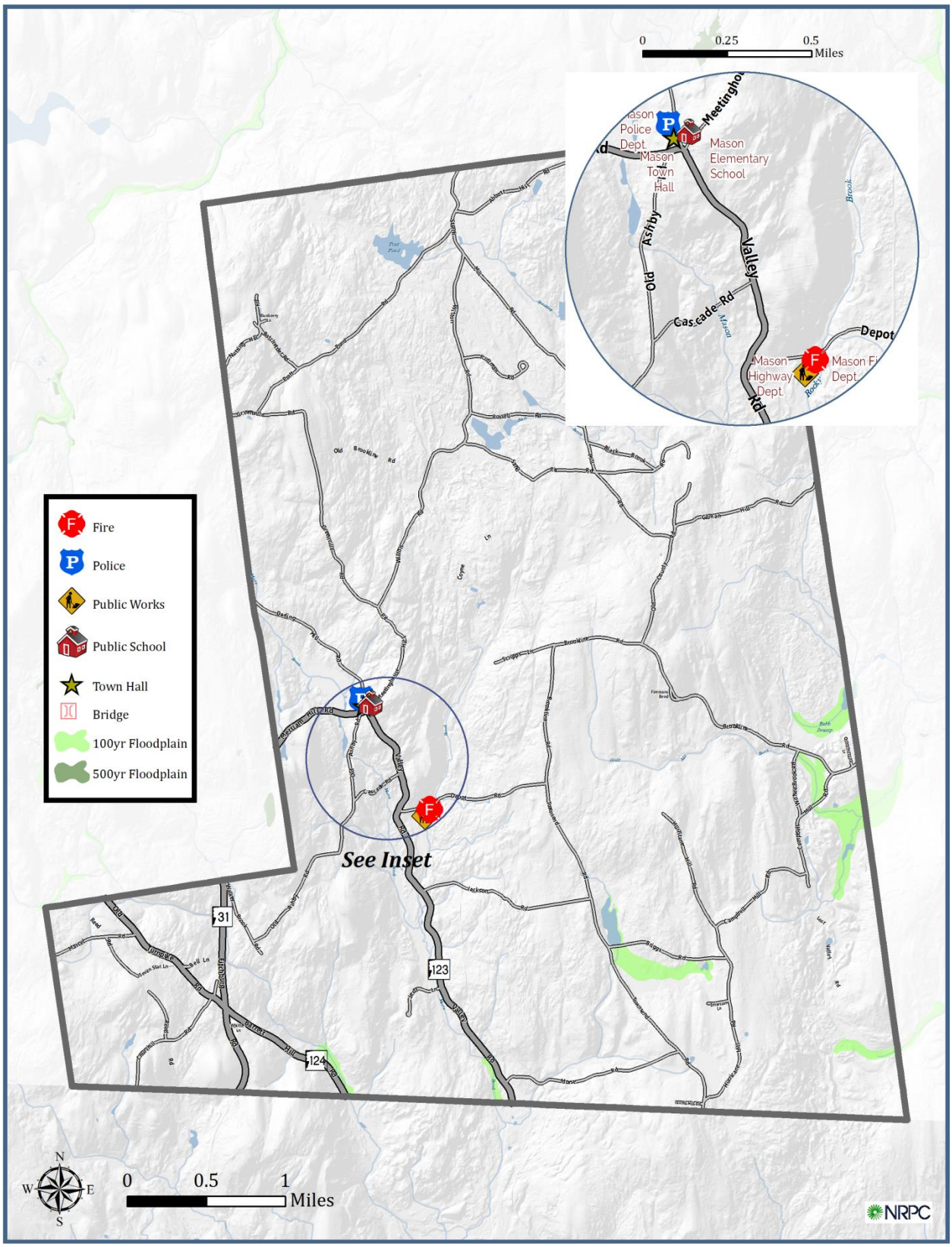
0 0.25 0.5 Miles
Mason Police Dept.
Mason Town Hall
Mason Elementary School
Meetinghouse
Ashby
Old
Valley
Cascade Rd
Depot
Mason Highway Dept.
Mason Fire Dept.
Fire
Police
Public Works
Public School
Town Hall
Bridge
100yr Floodplain
500yr Floodplain
See Inset
31
123
124
N
W
E
S
0 0.5 1 Miles
NRPC

Table 6.3—Transportation Critical Facilities

Transportation infrastructure is particularly vulnerable to flooding hazards. Flooding events frequently cause culvert failures and undermine bridges and roads. Mason has a total of 57.32 road miles, of which 0.24 miles or 0.42% is located in the 1% annual floodplain.

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Sever Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Highway System—Route 31	Structure valuable to motor vehicle travel and safety		✓			✓		✓	✓	
Highway System—Route 123	Structure valuable to motor vehicle travel and safety, portion located in 1% annual floodplain		✓		✓	✓		✓	✓	
Highway System—Route 124	Structure valuable to motor vehicle travel and safety		✓		✓	✓		✓	✓	
Highway System—Brookline Road	Structure valuable to motor vehicle travel and safety		✓			✓		✓	✓	
Highway System—Darling Hill Road	Structure valuable to motor vehicle travel and safety		✓			✓		✓	✓	
Highway System—Brookline/Townsend Road	Structure valuable to motor vehicle travel and safety, portion located in 1% annual floodplain		✓		✓	✓		✓	✓	
Highway System—Marcel Road	Structure valuable to motor vehicle travel and safety		✓			✓		✓	✓	
Highway System—Abbott Hill Road	Structure valuable to motor vehicle travel and safety		✓			✓		✓	✓	
Highway System—Starch Mill Road	Structure valuable to motor vehicle travel and safety		✓			✓		✓	✓	
Mason Airfield – 815 Old Ashby Road	Structure valuable to air traffic		✓			✓	✓	✓	✓	✓
Mason Flight Paths – North, Central, and Western Mason	Structures valuable to air traffic		✓			✓	✓	✓	✓	✓

Table 6.4—Utility Systems

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Communications Antenna – 960 Townsend Road	Structure valuable to communications and emergency management		✓			✓	✓		✓	✓
Electric (Eversource) — Distribution system (poles & wires), including transformers and other electrical equipment. There are also transmission lines in North Mason.	Structure valuable to utility network		✓			✓	✓	✓	✓	✓
Water—100% of the population in Mason has private well water.	Structures valuable to water supply	✓			✓					

Table 6.5—High Potential Hazard Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Name—Pratt Pond Dike Dam # D154001 Hazard Class—L Water body—Branch Mitchell Brook Owner—NH DES Water Division	Structure valuable to flood control		✓			✓		✓	✓	
Name—Pratt Pond Dam Dam # D154002 Hazard Class—L Water body— TR Mitchell Brook Owner—NH DES Water Division	Structure valuable to flood control		✓			✓		✓	✓	

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
Name—Pratt Pond III Dike Dam # D154003 Hazard Class—L Water body—TR Mitchell Brook Owner—NH DES Water Division	Structure valuable to flood control		✓			✓		✓	✓	
Name—McCaffrey Dam Dam # D154004 Hazard Class—L Water body—Mitchell Brook Owner—Privately Held	Structure valuable to flood control		✓			✓		✓	✓	
Name—Walker Brook Dam Dam # D154005 Hazard Class—NM Water body—Walker Brook Owner—Privately Held	Structure valuable to flood control		✓			✓		✓	✓	
Name—Fire Pond Dam Dam # D154008 Hazard Class—NM Water body—Unnamed Stream Owner—Privately Held	Structure valuable to flood control		✓			✓		✓	✓	

Table 6.6—Hazardous Materials Facilities

Facility Type and Name	Content Vulnerability	Drought	Earthquake	Extreme Temperatures	Flooding	Severe Wind	Lightning	Severe Winter Weather	Tornado	Wildfire
There are no Hazardous Materials Facilities in Mason as reported by the EPA Toxics Release Inventory Program.										

Section 3.5 ~ Vulnerability by Hazard

Climate Change

Climate change in southern New Hampshire will impact the environment, ecosystem services, economy, public health, and quality of life. According to a 2014 study by the Sustainability Institute at the University of NH, southern NH is expected to become warmer and wetter over the next century with more extreme precipitation events. This weather pattern puts significant stress on the region's already aging water infrastructure. Furthermore, climate change is likely to cause a number of public health impacts on NH's most vulnerable residents, including heat stress; flood related deaths and injuries; respiratory and cardiovascular illness, including asthma; allergies; vector, food, and water-borne disease; chronic disease; and mental health and stress-related disorders. Despite efforts taking place to slow the rate of climate change, some level of change is inevitable. Therefore, municipalities must make sound decisions to help their communities adapt to a new climate normal.

Temperatures in southern New Hampshire will continue to rise under a lower or higher future emissions scenario. In the short-term (2010-2039), average annual temperatures are predicted to increase by approximately 2◦F. Under a higher emissions scenario, long-term (2070-2099) average annual temperatures are predicted to increase by 8 to 9◦F. If a lower emissions scenario is achieved, long-term average annual temperatures are predicted to increase by 4◦F (Wake et al., "Climate Change in Southern New Hampshire," pg. 23). The region is also predicted to experience more extreme heat events. From 1970-1999, southern New Hampshire had an average of seven days above 90◦F each year. In the long-term under a higher emissions scenario, southern New Hampshire is predicted to have over 54 days per year above 90◦F. Under a lower emissions scenario, the region is predicted to have 23 days per year above 90◦F in the long-term (Wake et al., "Climate Change in Southern New Hampshire," pg. 25).

Annual average precipitation is predicted to increase 17-20% in southern New Hampshire by the end of the century under both the low and high emissions scenarios. Larger increases in precipitation are expected in the winter and spring, while summer and fall will only experience slight increases (Wake et al., "Climate Change in Southern New Hampshire," pg. 29). Southern New Hampshire can also expect more extreme precipitation events, defined as those where more than 1 inch of rain falls within 24 hours or more than 2-4 inches falls in 48 hours. Under both low and high emissions scenarios, the frequency of extreme precipitation events in predicted to more than double by the end of the century (Wake et al., "Climate Change in Southern New Hampshire," pg. 29).

The frequency of short term drought (1-3 months) in New Hampshire is predicted to increase 2-3 times in the long term (2070-2099) under the higher emissions scenario. The state will experience a more significant increase in medium-term drought (3-6 months) during this period. Short and medium term droughts are primarily caused by evapotranspiration as a result of hotter summers. The frequency of long-term drought (6 plus months) does not change significantly in the future under the low or high emissions scenario compared to past long-term drought events in New Hampshire (Wake et al., "Climate Change in Southern New Hampshire," pg. 30-31).

Climate Change Hazard Loss Estimate

Because the impacts of climate are wide ranging and have little historic data to draw from, it is beyond the scope of this Plan to estimate the dollar value of losses to the municipality resulting from climate change.

Some insights on the municipality's vulnerability to climate change may be gained by examining the results of the Nashua Region Water Vulnerability Assessment, conducted by the Nashua Regional Planning Commission in 2016. Based on the results of the vulnerability assessment, the Nashua Region is most vulnerable to threats related to warmer temperatures and threats that affect water supply.

Threats related to warmer temperatures are highly likely to occur, are broad ranging, have critical severity, and moderately effective mitigation options. In addition, while the region has experience with flooding (and drought to a smaller extent), the region has no experience with warming temperatures to provide historical guidance.

Threats that affect water supply are likely to occur, have moderate to critical severity, will likely affect between 10 and 50% of the region's population, and have moderately effective mitigation options. There are numerous threats in this category and they have broad implications from public health and safety to agriculture and the economy.

It may also be helpful to review the Drought, Extreme Temperatures, and Flooding sections in this Plan for more insight on the municipality's vulnerability to climate change.

Drought

Hydrological drought is evidenced by extended periods of negative departures from normal rainfall. New Hampshire has been under several drought warnings, including a drought emergency, since 1999. The most severe drought conditions occurred between 1960 and 1969; the event had a greater than 25 year recurrence interval. The southern New Hampshire region experienced a 100-year drought event from 1964 to 1965.

Southern New Hampshire also experienced a 50-year drought event beginning in May 2015 and lasting through April 2017. During that time, Mason experienced drought levels from USDA D0 (Abnormally Dry) to USDA D3 (Extreme Drought).

Although drought is not likely to damage structures, low water levels can have a negative impact on existing and future home sites, especially those that depend on groundwater for water needs. Additionally, the dry conditions of a drought may lead to an increase wild fire risk. Drought can cause the most significant impact to agricultural land and assets.

Drought Hazard Loss Estimate

Because the impacts of drought are long lasting and wide ranging, it is beyond the scope of this Plan to estimate the dollar value of losses to Mason resulting from drought. Instead, the Hazard Mitigation Team estimated the percentage of land in Mason vulnerable to drought and the percentage of the population vulnerable to drought as a quantitative measure of this hazard's impact.

Total Acres of Land in Mason	Total Acres of Agricultural Land in Mason	% of Land in Mason Vulnerable to Drought
15,347.6	176.7	0.96%

% of population with Public Drinking Water in Mason	% of population with Private Well Water in Mason	Water Utility	Primary Water Source	Secondary Water Source
0%	100%	None	Private Wells	None

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Drought Hazard Area	Percentage of this type of Critical Facilities in Drought Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	0	0%
Utility System	3	1	33.3%
High Potential Hazard	6	0	0%
Hazardous Materials	0	0	0%

Earthquake

An earthquake is a sudden and violent shaking of the ground, sometimes causing great destruction, as a result of movements within the earth's crust or volcanic action. The Richter magnitude scale was developed by Charles F. Richter in 1935 as a way to compare the size of earthquakes. The magnitude of an earthquake is calculated from the logarithm of the amplitude of waves recorded by seismographs.

- Magnitude <2.0—micro-earthquakes. Recorded by seismographs, but not felt or rarely felt by people. Several million occur annually worldwide on average.
- Magnitude 2.0-2.9—felt slightly by some people. No damage to buildings. Over 1 million occur annually worldwide on average.
- Magnitude 3.0-3.9—often felt by people but very rarely cause damage. Shaking of indoor objects can be noticeable. Over 100,000 occur annually worldwide on average.
- Magnitude 4.0-4.9—noticeable shaking of indoor objects and rattling noises. Felt by most people in affected area. Generally causes minimal to no damage. Moderate to significant damage is very unlikely. 10,000-15,000 occur annually worldwide on average.

- Magnitude 5.0-5.9—felt by everyone. Can cause damage of varying severity to poorly constructed buildings; slight to no damage to all other buildings. Few, if any, casualties. 1,000-1,500 occur annually worldwide on average.
- Magnitude 6.0-6.9—felt up to hundreds of miles from epicenter. Strong to violent shaking in epicenter. Damage to many buildings in populated areas. Poorly designed structures have moderate to severe damage. Earthquake-resistant structures have slight to moderate damage. Damage can be caused far from epicenter. Death toll up to 25,000. 100-150 occur annually worldwide on average.
- Magnitude 7.0-7.9—felt in very large area. Damage to most buildings, including partial or complete collapse. Death toll up to 250,000. 10-20 occur annually worldwide on average.
- Magnitude 8.0-8.9—felt in extremely large region. Major damage to buildings over large areas. Structures likely destroyed. Moderate to heavy damage to sturdy or earthquake-resistant buildings. Death toll up to 1 million. 1 occurs annually worldwide on average.
- Magnitude 9.0< —damage and shaking extends to distant locations. Near or total destruction. Severe damage and collapse to all buildings. Permanent changes in ground topography. 1 occurs every 10-50 years worldwide on average.

Since 1940, there have been 14 earthquakes centered in NH with a magnitude of 3.0 or greater and only two earthquakes with a magnitude of 5.0 or greater. There have been no recorded earthquakes to-date centered in Mason, however, one could occur.

Earthquake Hazard Loss Estimate

Step 1. Determine potential earthquake strength in Mason

- US Seismic Hazard, 2% in 50 years PGA is 0.03 to 0.36(g) in Mason
- *Source: USGS NH Seismic Map 2014*

Step 2. Determine percent building damage ratio to single family residence from PGA (g) 0.15 earthquake

- Wood Frame Construction with Low general seismic design level = 1.3% building damage
- *Source: FEMA Identifying Hazards and Estimating Losses, pg. 4-17*

Step 3. Determine percent of structures in Mason that would be damaged by PGA (g) 0.15 earthquake

- 1-5% of structures estimated to be damaged by earthquake
- *Source: Mason Hazard Mitigation Team (no historical data on earthquake damage in Mason)*

Step 4. Determine total assessed value of structures in Mason

- Total Assessed Value of all Structures in Mason = $88,051,300
- *Source: Mason Assessing Department (11/6/17)*

Step 5. Determine total loss from PGA (g) 0.15 Earthquake

- Total Loss from Earthquake = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio

- Total Loss from Earthquake = $88,051,300 * .01 * .013 = $11,446.67
- Total Loss from Earthquake = $88,051,300 * .05 * .013 = $57,233.35
- **$11,446.67 to $57,233.35**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Earthquake Hazard Area	Percentage of this type of Critical Facilities in Earthquake Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	11	100%
Utility System	3	2	66.7%
High Potential Hazard	6	6	100%
Hazardous Materials	0	0	0%

Extreme Temperatures

Extreme temperatures can be broken into both extreme heat and extreme cold. Though the hazards are different, the effects would be similar to vulnerable populations in Mason.

Extreme heat is defined as a period of three consecutive days during which the air temperature reaches 90 degrees Fahrenheit or higher on each day. Extreme heat should not be confused with a drought (extended periods of negative departures from normal rainfall). Overburdened power networks may experience failures due to the impacts of extreme heat.

Extreme cold is defined as a period of three consecutive days during which minimum air temperatures are at or below 0 degrees Fahrenheit. With the rising costs of heating fuel and electric heat, many low-income or homeless citizens are not able to adequately heat their homes, exposing themselves to cold related emergencies or death. Extremely cold winters can lead to shortages in heating fuels due to high demand.

Extreme Temperatures Hazard Loss Estimate

Because the impacts of extreme temperatures can result in the loss of life, it is beyond the scope of this Plan to estimate the dollar value of losses to Mason resulting from extreme temperatures. Though the entire Mason population may experience a thermal emergency, populations without adequate climate control are most at risk. Extreme temperatures are not likely to cause damage to structures, although pipes can burst in extreme cold conditions.

Flooding

Localized Flooding

Localized flooding can result from even minor storms. Runoff overloads the drainage ways and flows into the streets and low-lying areas. Homes and businesses can be inundated, especially basements and the lower part of first floors. Localized flooding poses most of the same problems caused by larger

floods, but because it typically has an impact on fewer people and affects small areas, it tends to bring less State or Federal involvement such as funding, technical help, or disaster assistance. As a result, the community and the affected residents or business owners are left to cope with the problems on their own. Finally, flooding of this type tends to recur; small impacts accumulated over time can become major problems.

Riverine Flooding

Riverine flooding involves the overflowing of normal flood channels, rivers or streams, generally as a result of prolonged rainfall or rapid thawing of snow cover. The lateral spread of floodwater is largely a function of the terrain, becoming greater in wide, flat areas, and affecting narrower areas in steep terrain. In the latter cases, riparian hillsides in combination with steep declines in riverbed elevation often force waters downstream rapidly, sometimes resulting in flash floods.

Floodplains cover approximately 1.3% of Mason; 1.3% of the Town is within the 1% annual floodplain and 0% is within the 0.2% annual floodplain. Floodplains in Mason are located along Walker Brook, Mason Brook, Lancy Brook, Gould Mill Brook, Wallace Brook, and two unnamed waterbodies and an unnamed stream in the southern part of town

Dam Failure

The NH Department of Environmental Services indicates several failure modes for dams. Most typical include hydraulic failure or the uncontrolled overflowing of water, seepage, or leaking at the dam's foundation or gate; structural failure or rupture; general deterioration; and gate inoperability. These modes vary between dams depending on their construction type.

The State of New Hampshire uses a hazard potential classification to define the extent of a dam breach or failure. All class S (Significant) and H (High hazard) dams have the potential to cause damage if they breach or fail.

Class H—high hazard: 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 probably 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 that is occupied under normal conditions; water levels rising above 1st floor elevation of a habitable residential structure or a commercial or industrial structure that is occupied under normal conditions when the rise due to dam failure is greater than 1 foot; structural damage to an interstate highway, which could render the roadway impassible or otherwise interrupt public safety services; release of a quantity and concentration of material that qualify as “hazardous waste” under RSA 147-A:2 VII; any other circumstance that would more likely than not cause one or more deaths.

Class S—significant hazard: dam has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: no probably loss of lives; major economic loss to structures or property; structural damage to a Class I or Class II road that would

render the road impassable or otherwise interrupt public safety services; major environmental or public health losses.

Class L—low hazard: dam has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: no possible loss of life; low economic loss to structures or property; structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassible or otherwise interrupt public safety service; the release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than 2 acre-feet and is located more than 250 feet from a water body or water course; reversible environmental losses to environmentally-sensitive sites.

Class NM—non-menace: dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is less than 6 feet in height it if has a storage capacity greater than 50 acre-feet; or less than 25 feet in height if it has a storage capacity of 15-50 acre-feet.

Mason has 2 Class NM dams (Non-Menace), 4 Class L dams (Low hazard potential), 0 Class S dams (Significant hazard potential), and 0 Class H dams (High hazard potential). The 4 Class L dams (Low Hazard Potential) are the McCaffrey Dam on Mitchell Brook, the Pratt Pond Dike on Branch Mitchell Brook, Pratt Pond Dam on TR Mitchell Brook, and the Pratt Pond III Dike also on TR Mitchell Brook. There have been no known dam breaches to-date in Mason.

Flood Hazard Loss Estimate

Step 1. Determine percent building damage to a 1 or 2 story building with basement

- 1 foot flood depth = 15% building damage
- 2 foot flood depth = 20% building damage
- 3 foot flood depth = 23% building damage
- 4 foot flood depth = 28% building damage
- *Source: FEMA Identifying Hazards and Estimating Losses, pg. 4-13*

Step 2. Determine number of structures in Mason located in the floodplain

- 3 structures located in 1% floodplain
- 0 structures located in 0.2% floodplain—there are no 0.2% floodplains in Mason
- *Source: Nashua Regional Planning Commission* [*http://data-nashuarpc.opendata.arcgis.com/datasets/98afc8bbe9a14c5494c87cc92480b4b1_0*](http://data-nashuarpc.opendata.arcgis.com/datasets/98afc8bbe9a14c5494c87cc92480b4b1_0)

Step 3. Determine total value of structures in Mason located in 1% floodplain

- Average assessed value of all structures in Mason = $96,125.87
- Total number of structures in Mason located in 1% floodplain = 3
- Total assessed value of all structures in Mason in 1% floodplain = $96,125.87 * 3
- Total assessed value of all structures in Mason in 1% floodplain = $288,377.61

- *Source: Mason Hazard Mitigation Team calculations based on Mason Assessing data & NRPC GIS data*

Step 4. Determine total loss from flooding in 1% floodplain

- Total Loss from Flooding = Total Assessed Value of all structures in 1% Floodplain * Percent Building Damage Ratio
- Total Loss from 1 foot flood depth = $288,377.61* .15 = **$43,256.64**
- Total Loss from 2 foot flood depth = $288,377.61* .20 = **$57,675.52**
- Total Loss from 3 foot flood depth = $288,377.61* .23 = **$66,326.85**
- Total Loss from 4 foot flood depth = $288,377.61* .28 = **$80,745.73**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in 1% Annual Floodplain	Percentage of this type of Critical Facilities in 1% Annual Floodplain	Number of this type of Critical Facilities in 0.2% Annual Floodplain	Percentage of this type of Critical Facilities in 0.2% Annual Floodplain
General Occupancy	4	0	0%	0	0%
Essential Facilities	5	0	0%	0	0%
Transportation	11	3	27.3%	0	0%
Utility System	3	1	33.3%	0	0%
High Potential Hazard	6	0	0%	0	0%
Hazardous Materials	0	0	0%	0	0%

Severe Wind

The Atlantic hurricane season lasts from June 1 through November 30 and peaks in late August and September. The Saffir-Simpson Hurricane Wind Scale categorizes hurricanes from 1 to 5 based on sustained wind speed. The National Weather Service National Hurricane Center provides the following estimates of potential property damage based on hurricane wind speed (http://www.nhc.noaa.gov/aboutsshws.php).

Category 1—sustained winds 74-95 mph. Very dangerous winds will produce some damage. Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.

Category 2—sustained winds 96-110 mph. Extremely dangerous winds will cause extensive damage. Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted

trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.

Category 3—sustained winds 111-129 mph. Devastating damage will occur. Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.

Category 4—sustained winds 130-156 mph. Catastrophic damage will occur. Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Category 5—sustained winds 157 mph or higher. Catastrophic damage will occur. A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possible months. Most of the area will be uninhabitable for weeks or months.

FEMA declared disasters in Hillsborough County during Hurricane Bob (1991) and Hurricane Floyd (1999). Though these were the only formally declared incidents, Mason has experienced strong remnants of numerous tropical cyclones including Hurricane Carol (1954), Donna (1960), Gloria (1985), Irene (2011), and Sandy (2012).

Severe Wind Hazard Loss Estimate

There are no standard loss estimation models or tables for wind damage (*Understanding Your Risks,* FEMA, pg. 4-30). As such, the Hazard Mitigation Team used data from previous hurricane events to determine damage estimates. Historically, the strongest hurricane seen in NH was a Category 3, so loss estimates were calculated based on a hurricane of that strength. Hurricanes have primarily damaged road networks and infrastructure in NH. It is beyond the scope of this project to estimate the costs of repairing or replacing transportation and utility infrastructure damaged by a hurricane. The Hazard Mitigation Team used the following calculations to estimate loss to single family residential structures from a hurricane.

Step 1. Determine percent building damage ratio to single family residence from Category 3 hurricane

- Wood Frame Construction, Low general hurricane design level = 20% building damage
- *Source: Mason Hazard Mitigation Team*

Step 2. Determine percent of structures in Mason that would be damaged by Category 3 hurricane

- 5% of structures estimated to be damaged by Category 3 hurricane
- *Source: Mason Hazard Mitigation Team (no historical data on hurricane damage in Mason)*

Step 3. Determine total assessed value of structures in Mason

- Total Assessed Value of all Structures in Mason = $88,051,300
- *Source: Mason Assessing Department (11/6/17)*

Step 4. Determine total loss from Category 3 hurricane

- Total Loss from Hurricane = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Hurricane = $88,051,300 * .05 * .2 = **$880,513**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Severe Wind Hazard Area	Percentage of this type of Critical Facilities in Severe Wind Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	11	100%
Utility System	3	2	66.7%
High Potential Hazard	6	6	100%
Hazardous Materials	0	0	0%

Lightning

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 about 50,000 degrees Fahrenheit, considerably hotter than the surface of the Sun. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction causes a shock wave that we hear as thunder.

Lightning is a major hazard to citizens involved in outdoor activities. A lightning strike at a densely attended special event has the potential to create a major mass casualty incident. Lightning also can create wildfires and structure fires and may cause power and/or communications outages.

The Lightning Activity Level (LAL) grid can be used to measure the extent of a lightning event.

LAL	**Cloud & Storm Development**	**Lightning Strikes/15 min**
1	No thunderstorms	-
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8

3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two or three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rian is moderate to heavy and lightning is frequent and intense.	>25
6	Similar to LAL 3 except thunderstorms are dry.	9-15

Lightning Hazard Loss Estimate

Losses from lightning would be on a small, localized scale. The Hazard Mitigation Team used the following calculations to estimate loss to single family residential structures from lightning.

Step 1. Determine percent building damage ratio to single family residence from lightning

- Wood Frame Construction = 5% building damage
- *Source: Mason Hazard Mitigation Team*

Step 2. Determine percent of structures in Mason that would be damaged by lightning

- 0.25% of structures estimated to be damaged by lightning
- *Source: Mason Hazard Mitigation Team (no historical data on lightning damage in Mason)*

Step 3. Determine total assessed value of structures in Mason

- Total Assessed Value of all Structures in Mason = $88,051,300
- *Source: Mason Assessing Department (11/6/17)*

Step 4. Determine total loss from lightning

- Total Loss from Lightning = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Severe Thunderstorm = $88,051,300 * .0025 * .05 = **$11,006.41**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Lightning Hazard Area	Percentage of this type of Critical Facilities in Lightning Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	2	18.2%
Utility System	3	2	66.7%
High Potential Hazard	6	0	0%
Hazardous Materials	0	0	0%

Severe Winter Weather

A heavy snowstorm is generally considered to be one that deposits two or more inches of snow per hour in a twelve-hour period. Heavy snow can immobilize a region, stranding commuters, closing businesses, and disrupting emergency services. Accumulating snow can collapse buildings and knock down trees and power lines. Snow removal from roadways, utility damage, and disruption to businesses can have a significant economic impact on municipalities and residents.

A blizzard is a violent snowstorm with winds blowing at a minimum speed of 35 miles per hour and visibility of less than one-quarter mile for three hours. 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 impact the coast and inland areas in a Northeasterly direction. Winds from a Nor'easter can meet or exceed hurricane force, knocking down trees, utility poles, and power lines.

Ice storms occur when a mass of warm, moist air collides with a mass of cold, arctic air. The less dense warm air rises and the moisture precipitates out in the form of rain. When this rain falls through the colder, more-dense air and comes in contact with cold surfaces, ice forms and can become several inches thick. Heavy accumulations of ice can knock down trees, power lines, and communications for extended periods of time. Ice Storm extent can be defined by the Sperry-Piltz Ice Accumulation Index:

- 0—minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages
- 1—some isolated or localized utility interruptions are possible, typically lasing on a few hours. Roads and bridges may become slick and hazardous.
- 2—scattered utility interruptions expected, typically lasing 12-24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
- 3—numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasing 1-5 days.
- 4—prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasing 5-10 days.
- 5—catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed

In recent years, FEMA issued disaster declarations in Hillsborough County for severe winter weather in 1998, 2008, 2010, 2011, 2013, and 2015. Among these storms was a rare Nor'easter in late October of 2011 that caused major destruction in Hillsborough and Rockingham Counties. Heavy wet snow fell on trees that had much of their foliage remaining. Many trees could not withstand the extra weight of the snow and collapsed under the stress. Damage was very focused in the southern part of New Hampshire and caused nearly three times the amount of debris that the 2008 ice storm produced.

Severe Winter Weather Hazard Loss Estimate

Severe Winter Weather events have primarily damaged road networks and infrastructure in NH. It is beyond the scope of this project to estimate the costs of repairing or replacing transportation and utility

infrastructure damaged by severe winter weather. The Hazard Mitigation Team used the following calculations to estimate loss to single family residential structures from severe winter weather.

Step 1. Determine percent building damage ratio to single family residence from severe winter weather

- Wood Frame Construction, no additional provisions for roof snow loads = 5% building damage
- *Source: Mason Hazard Mitigation Team*

Step 2. Determine percent of structures in Mason that would be damaged by severe winter weather

- 1% of structures estimated to be damaged by severe winter weather
- *Source: Mason Hazard Mitigation Team*

Step 3. Determine total assessed value of structures in Mason

- Total Assessed Value of all Structures in Mason = $88,051,300
- *Source: Mason Assessing Department (11/6/17)*

Step 4. Determine total loss from Severe Winter Weather

- Total Loss from Severe Winter Weather = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Severe Winter Weather = $88,051,300 * .01 * .05 = **$44,025.65**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Severe Winter Weather Hazard Area	Percentage of this type of Critical Facilities in Severe Winter Weather Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	11	100%
Utility System	3	1	33.3%
High Potential Hazard	6	6	100%
Hazardous Materials	0	0	0%

Tornado/Downburst

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of 1 mile wide and 50 miles long. Tornadoes are created when cold air overrides warm air, causing the warm air to rise rapidly.

A downburst is a severe localized wind blasting down from a thunderstorm. These 'straight line' winds are distinguishable from tornadic activity by their pattern of destruction and debris. Depending on the size and location of these events, the destruction to property may be devastating. Downbursts fall into

two categories. Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area at least 2.5 miles in diameter.

Hillsborough County has a higher risk of tornado activity compared to the rest of the State. Between 1961 and 1998 there were 15 known tornadoes in Hillsborough County. The most recent downburst activity occurred on July 6, 1999 in the form of a macroburst in Merrimack, Grafton and Hillsborough Counties. There were two fatalities as well as roof damage, widespread power outages, and downed trees, utility poles and wires.

Tornado Hazard Loss Estimate

There are no standard loss estimation models or tables for tornados (*Understanding Your Risks,* FEMA, pg. 4-27). As such, the Hazard Mitigation Team used data from previous tornado events to determine damage estimates. Historically, the strongest tornado seen in Hillsborough County was a F2, so loss estimates were calculated based on a tornado of that strength.

Step 1. Determine percent building damage ratio to single family residence from F2 tornado

- Wood Frame Construction, Low general tornado design level = 50% building damage
- *Source: Mason Hazard Mitigation Team*

Step 2. Determine percent of structures in Mason that would be damaged by F2 tornado

- 1% of structures estimated to be damaged by F2 tornado
- *Source: Mason Hazard Mitigation Team (no historical data on tornado damage in Mason)*

Step 3. Determine total assessed value of structures in Mason

- Total Assessed Value of all Structures in Mason = $88,051,300
- *Source: Mason Assessing Department (11/6/17)*

Step 4. Determine total loss from F2 Tornado

- Total Loss from Tornado = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Tornado = $88,051,300 * .01 * .5 = **$440,256.50**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Tornado Hazard Area	Percentage of this type of Critical Facilities in Tornado Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	11	100%
Utility System	3	2	66.7%
High Potential Hazard	6	6	100%
Hazardous Materials	0	0	0%

Wildfire

Wildfires are fires ignited in grassy or wooded areas. They may be ignited intentionally by humans, naturally through lightning, or accidentally due to spark ignition from sources such as power lines or fireworks. The interface between forested lands and developed lands poses an ongoing threat to property from wildfires. Potential wildfire areas outside of the recommended response time radius from the fire station may pose a higher risk to structures and residents than those located closer to the fire station.

Wildfire Hazard Loss Estimate

Step 1. Determine percent building damage ratio to single family residence from wildfire

- Wood Frame Construction, combustible siding and decking = 20% building damage
- *Source: Mason Hazard Mitigation Team*

Step 2. Determine percent of structures in Mason that would be damaged by wildfire

- 0.5% of structures estimated to be damaged by wildfire
- *Source: Mason Hazard Mitigation Team*

Step 3. Determine total assessed value of structures in Mason

- Total Assessed Value of all Structures in Mason = $88,051,300
- *Source: Mason Assessing Department (11/06/17)*

Step 4. Determine total loss from Wildfire

- Total Loss from Wildfire = Total Assessed Value of all Structures *Percentage of Structures Estimated to be Damaged * Percent Building Damage Ratio
- Total Loss from Wildfire = $88,051,300* .005 * .2 = **$88,051.30**

Critical Facility Type	Total Number of this type of Critical Facilities in Mason	Number of this type of Critical Facilities in Wildfire Hazard Area	Percentage of this type of Critical Facilities in Wildfire Hazard Area
General Occupancy	4	4	100%
Essential Facilities	5	5	100%
Transportation	11	2	18.2%
Utility System	3	2	66.7%
High Potential Hazard	6	0	0%
Hazardous Materials	0	0	0%

Section 3.6 ~ Overall Summary of Vulnerability

This section summarizes the Town of Hudson's vulnerability by hazard and by facility type. The Town of Hudson acknowledges that they are equally at risk to and should address all hazards discussed throughout this chapter and listed below.

Table 7.1—Overall Summary of Vulnerability by Hazard

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
Climate Change	• General Occupancy • Essential Facilities • Transportation • Utility Systems • High Potential Hazard • Hazardous Materials • Agricultural Land	See Impacts related to Drought, Extreme Temperatures, and Flooding below.	See Critical Facilities calculations for Drought, Extreme Temperatures, and Flooding below.	See damage estimates for Drought, Extreme Temperature, and Flooding below.	Calculating $ value of losses is beyond the scope of this Plan (see Section 3.5 Climate Change for explanation)
Drought	Agricultural land. Not likely to have a significant impact on structures themselves, but can have significant impact on people's ability to utilize them.	Loss of crops. Inadequate quantity of drinking water—0% of Mason population on public drinking water, 100% of Mason's population is on private well water. Loss of water for fire protection. Increased risk of fire.	General Occupancy = 100% Essential Facilities = 100% Transportation = 0% Utility Systems = 33.3% High Potential Hazard = 0% Hazardous Materials = 0%	0 acres of agricultural land (0% of total land area)	Calculating $ value of losses is beyond the scope of this Plan (see Section 3.5 Drought for explanation)
Earthquake	• General Occupancy • Essential Facilities • Transportation • Utility Systems • High Potential Hazard • Hazardous Materials	Structural damage or collapse of buildings. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system.	General Occupancy = 100% Essential Facilities = 100% Transportation = 100% Utility Systems = 66.7% High Potential Hazard = 100%	1-5%	**$11,446.67 to $57,233.35**

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
		Loss of water for fire protection. Risk to life, medical surge.	Hazardous Materials = 0%		
Extreme Temperatures	Not likely to have a significant impact on structures.	Overburdened power networks. Heating fuel shortages. Risk to life from prolonged exposure.	General Occupancy = 0% Essential Facilities = 0% Transportation = 0% Utility Systems = 0% High Potential Hazard = 0% Hazardous Materials = 0%	0%	$0
Flooding	• General Occupancy • Transportation • High Potential Hazard • Hazardous Materials	Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding.	General Occupancy = 0% in 1% annual floodplain Essential Facilities = 0% in 1% annual floodplain Transportation = 27.3% in 1% annual floodplain Utility Systems = 33.3% in 1% annual floodplain High Potential Hazard = 0% in 1% annual floodplain	3 structures (0.3% of total) in 1% floodplain No 0.2% floodplains in Mason	Loss from 1 foot flood depth = **$43,256.64** 2 foot flood depth = **$57,675.52** 3 foot flood depth = **$66,326.85** 4 foot flood depth = **$80,745.73** No 0.2% floodplains in Mason

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
			Hazardous Materials = 0% in 1% annual floodplain No 0.2% floodplains in Mason		
Severe Wind	• General Occupancy • Essential Facilities • Transportation • Utility Systems • High Potential Hazard • Hazardous Materials	Wind damage to structures and trees. Water damage to structures and their contents. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system. Environmental hazards resulting from damage. Isolation of neighborhoods resulting from flooding.	General Occupancy = 100% Essential Facilities = 100% Transportation = 100% Utility Systems = 66.7% High Potential Hazard = 100% Hazardous Materials = 0%	5%	**$880,513**
Lightning	• General Occupancy • Essential Facilities • Utility System • High Potential Hazard • Hazardous Materials	Smoke and fire damage to structures. Disruption to power lines and municipal communications. Damage to critical electronic equipment.	General Occupancy = 100% Essential Facilities = 100% Transportation = 18.2%	0.5%	**$11,006.41**

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
		Injury or death to people involved in outdoor activity.	Utility Systems = 66.7% High Potential Hazard = 0% Hazardous Materials = 0%		
Severe Winter Weather	• General Occupancy • Essential Facilities • Transportation • Utility • High Potential Hazard • Hazardous Materials	Disruption to road network. Damage to trees and power lines, communications. Structural damage to roofs/collapse. Increase in CO, other hazards.	General Occupancy = 100% Essential Facilities = 100% Transportation = 100% Utility Systems = 33.3% High Potential Hazard = 100% Hazardous Materials = 0%	1%	**$44,025.65**
Tornado/Downburst	• General Occupancy • Essential Facilities • Transportation • Utility System • High Potential Hazard • Hazardous Materials	Wind damage to structures and trees. Damage or loss of infrastructure, including roads, bridges, railroads, power and phone lines, municipal communications, radio system. Environmental hazards resulting from damage. Medical surge.	General Occupancy = 100% Essential Facilities = 100% Transportation = 100% Utility Systems = 66.7% High Potential Hazard = 100% Hazardous Materials = 0%	1%	**$440,256.50**

Hazard	Types of Critical Facilities Impacted by Hazard	Impact of Hazard	% of Critical Facilities in Hazard Area	% of Structures Estimated to be Damaged	$ Value of Loss
Wildfire	• General Occupancy • Essential Facilities • Utility System • High Potential Hazard • Hazardous Materials	Smoke and fire damage to structures in wild land/urban interface. Damage to habitat. Impacts to air quality. Loss of natural resources.	General Occupancy = 100% Essential Facilities = 100% Transportation = 18.2% Utility Systems = 66.7% High Potential Hazard = 0% Hazardous Materials = 0%	0.5%	**$88,051.30**

Table 7.2—Overall Summary of Vulnerability by Facility Type

Note that Climate Change is not included as a hazard in this analysis because its effects on critical facilities are included under the hazards of Drought, Extreme Temperatures, and Flooding.

Facility Type	Total # of facilities	# susceptible to Drought	# susceptible to Earthquake	# susceptible to Extreme Temperatures	# susceptible to Flooding	# susceptible to Severe Wind	# susceptible to Lightning	# susceptible to Severe Winter Weather	# susceptible to Tornado/Downburst	# susceptible to Wildfire
General Occupancy	4	4	4	0	0 in 1% annual, 0 in 0.2% annual	4	4	4	4	4
Essential Facilities	5	5	5	0	0 in 1% annual; 0 in 0.2% annual	5	5	5	5	5

Facility Type	Total # of facilities	# susceptible to Drought	# susceptible to Earthquake	# susceptible to Extreme Temperatures	# susceptible to Flooding	# susceptible to Severe Wind	# susceptible to Lightning	# susceptible to Severe Winter Weather	# susceptible to Tornado/Downburst	# susceptible to Wildfire
Transportation	11	0	11	0	27.3 in 1% annual; 0 in 0.2% annual	11	2	11	11	2
Utility	3	1	2	0	33.3 in 1% annual; 0 in 0.2% annual	2	2	1	2	2
High Hazard	6	0	6	0	0 in 1% annual; 0 in 0.2% annual	6	0	6	6	0
Hazardous Materials	0	0	0	0	0 in 1% annual; 0 in 0.2% annual	0	0	0	0	0

Section 3.7 ~ National Flood Insurance Program

The Town of Mason participates in the National Flood Insurance Program (NFIP). This provides full insurance coverage based on risk as shown on detailed Flood Insurance Rate Maps (FIRMs). Mason joined the NFIP on December 1, 1992. The Town's initial Flood Hazard Boundary Map was identified on February 21, 1975 and its initial Flood Insurance Rate Map was also identified on December 1, 1992. The current effective map date is September 25, 2009.

Mason has 2 NFIP policies in force and $272,000 of insurance in force. There has been 1 paid loss totaling $7,622. Mason has 0 repetitive loss properties with total repetitive loss payments of $0.

As a participant in the NFIP, communities must agree to adopt a floodplain management ordinance and enforce the regulations found in the ordinance. Mason has adopted the "Floodplain Ordinance," found in Article XVIII of the Town of Mason, NH Planning Ordinance. The Floodplain Ordinance is enacted to prevent the development of buildings and uses in areas that are unsatisfactory and hazardous due to the threat of flooding, protect natural flows and drainage, and comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended). The ordinance includes the following sections: Definition of Terms, Provisions, and Variance and Appeals Procedures.

To demonstrate Mason's continued compliance with NFIP requirements, the Hazard Mitigation Team identified the follow mitigation actions as part of its comprehensive mitigation strategy. These actions also appear in Section 4.2, Table 9—Mitigation Actions.

Table 8—National Flood Insurance Program Mitigation Actions

National Flood Insurance Program Mitigation Actions			
Mitigation Action	**Mitigation Type**	**Hazard Addressed**	**Critical Facilities Addressed**
Identify and become knowledgeable of non-compliant structures in the community	• Prevention • Property protection • Structural	• Flooding	• General Occupancy
Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM.	• Public Information	• Flooding	• General Occupancy

CHAPTER 4 MITIGATION STRATEGY

Section 4.1 ~ Goals and Objectives to Reduce Vulnerabilities to Hazards

The first step in developing a mitigation strategy is to establish goals that reflect what the municipality wishes to achieve through the implementation of its Hazard Mitigation Plan. The Mason Hazard Mitigation Team established the following goals and objectives, based on its desire to protect the Town's population, critical facilities, infrastructure, emergency services, natural resources, and private property. These goals provided the basis for identifying and prioritizing mitigation actions.

Goal 1—Prevent the impacts of natural hazards on the Town's population, critical facilities, infrastructure, emergency services, natural resources, and private property whenever possible.

- Objective 1.1—Manage development in known hazard areas to avoid the risks associated with natural hazards.
- Objective 1.2—Plan to incorporate hazard mitigation into capital improvements and other future initiatives.
- Objective 1.3—Ensure building codes and other standards include requirements that make new construction more disaster resistant.
- Objective 1.4—Support the maintenance of this hazard mitigation plan.

Goal 2—Protect the Town's existing critical facilities, infrastructure, and private property from the impacts of natural hazards through cost effective mitigation activities.

- Objective2.1—Modify existing structures to reduce damage from future natural hazard events.
- Objective 2.2—Perform cost effective flood hazard mitigation measures to protect private property.

Goal 3—Educate and inform the Town's residents to help them become more resilient to natural hazards impacting the community.

- Objective 3.1—Utilize educational methods to change the perception from "disaster losses are acceptable" to "many disaster losses are preventable if mitigation practices are followed."
- Objective 3.2—provide educational opportunities across all age ranges.
- Objective 3.3—Develop and distribute public awareness materials regarding the relative risk of natural hazards and practical mitigation measures to reduce damages and injuries.

Goal 4—become more resilient to the impacts that climate change has on the Town's population, critical facilities, infrastructure, emergency services, natural resources, and private property.

- Objective 4.1—Utilize existing documents, including the Nashua Regional Water Resiliency Action Plan (NRPC, 2016) and "Climate Change in Southern New Hampshire" (Sustainability Institute, University of New Hampshire, 2014) to better understand predicted changes in the region's climate.
- Objective 4.2—Conduct a town-specific vulnerability assessment to better understand the municipality's strengths and weaknesses with respect to climate change readiness.
- Objective 4.3—Prioritize which climate change impacts to address and when. Prioritization could be based on vulnerability assessment results, current needs, upcoming plans, feasibility, or budget considerations.
- Objective 4.4—Develop an adaptation strategy, including potential mitigation measures, timelines, responsible parties, and available funding sources.
- Objective 4.5—Implement the adaptation strategy and incorporate finding into hazard mitigation plan updates.
- Objective 4.6—Track progress and monitor results to determine where improvements can be made. Adjust the implementation strategy as necessary.

Goal 5—Address the challenges of natural resource degradation and the associated increased risk from hazards.

- Objective 5.1—Ensure development in hazard areas does not destroy natural barriers to damage, such as floodplains and vegetation.
- Objective 5.2—Protect or recreate environmental assets to help safeguard the built environment.

Goal 6—Protect emergency services, critical facilities, and other critical capabilities from hazard damage in order for them to remain operational.

- Objective 6.1—Identify critical facilities, infrastructure, and emergency services and their vulnerabilities to natural hazards.

- Objective 6.2— Develop and implement programs to promote hazard mitigation actions that protect the provision of emergency services in Town.
- Objective 6.3—Identify, maintain, and protect evacuation routes from hazard damage so they are usable when needed.

Section 4.2 ~ Mitigation Actions

After establishing goals and objectives to reduce vulnerabilities to each hazard type, the Hazard Mitigation Team identified mitigation actions to achieve these goals. The resulting mitigation actions appear in Table 9 below.

Table 9—Mitigation Actions

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
MITIGATION ACTIONS FROM 2011 PLAN			
Replace culverts on Starch Mill Road, Wilton Road, Russell Road, and Briggs Road. Replace and upgrade old undersized culverts to provide adequate capacity.	• Structural	• Flooding	• Transportation Systems
Review and update Building Codes, Floodplain Ordinance, and Zoning Regulations. Proactively enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquake, flooding, severe wind, severe winter weather, and tornado.	• Prevention • Property Protection	• Earthquake • Flooding • Severe Wind • Severe Winter Weather • Tornado	• General Occupancy • Essential Facilities • Hazardous Materials
Inventory of town-wide special needs and at-risk population for preparedness planning as well as a town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.	• Prevention • Public Information	• Extreme Temperatures • Severe Winter Weather	• Human lives
NATIONAL FLOOD INSURANCE PROGRAM MITIGATION ACTIONS			
Identify and become knowledgeable of non-compliant structures in the community	• Prevention • Property protection • Structural	• Flooding	• General Occupancy
Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM.	• Public Information	• Flooding	• General Occupancy

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
ADDITIONAL MITIGATION ACTIONS			
Post signage that restricts withdrawal of water from fire ponds that are vulnerable to drought. Monitor water supply and drought conditions. Utilize NH Division of Forest and Lands reports and consult the New Hampshire Drought Management Team (DMT) and the State Drought Management Plan to monitor drought indicators. Drought regions and updates on the drought status may be found here.	• Natural Resources Protection	• Wildfire • Drought	• General Occupancy • Essential Facilities
Design a "natural runoff" or "zero discharge" policy for stormwater in subdivision design to improve floodplain management in Mason.	• Prevention • Natural Resources Protection	• Flooding • Erosion • Severe Wind • Drought	• General Occupancy
Protect critical facilities and equipment from lightning damage. Install lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities.	• Property Protection • Emergency Services Protection	• Lightning	• Essential Facilities • Utility System
Continue to work with Eversource to harden electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments.	• Prevention	• Severe Winter Weather • Severe Wind	• Transportation Systems • Utility Systems
Protect vulnerable populations from the impacts of extreme temperatures by establishing cooling and warming stations at community centers. Develop targeted outreach methods, including notifying occupants of senior housing facilities.	• Prevention • Public Information	• Extreme Temperatures • Severe Winter Weather	• Human lives
Tightly control burn permits and revoke when not properly and safely being utilized. Provide education on wildfire danger to residents when they apply for burn permits. Conduct education on campfire safety at schools. Post fire danger categories. Continue roadside mowing to reduce the likelihood of	• Natural Resource Protection • Property Protection	• Wildfire	• General Occupancy

Mitigation Action	Mitigation Type	Hazard Addressed	Critical Facilities Addressed
wildfires spreading and clear brush from around fire ponds.			

Section 4.3 ~ Prioritizing Mitigation Actions

After identifying mitigation actions to address each hazard, the Team then began a two-step process to prioritize them. The first step was to conduct a benefit cost review. Benefit cost reviews provide a comprehensive overview of the monetary and non-monetary costs and benefits associated with each action. During this process, the Hazard Mitigation Team asked a variety of questions such as, "How beneficial is this action to the entire Town?" "How many people will benefit from this action?" "How large of an area is impacted by this project?" "How costly is this project?"

Table 10—Benefit Cost Review

Mitigation Action	Likely Benefits	Likely Costs
Review and update Building Codes, Floodplain Ordinance, and Zoning Regulations. Proactively enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquake, flooding, severe wind, severe winter weather, and tornado.	• This action would be effective at avoiding and reducing future losses. • This action is beneficial to all applicable buildings across the entire Town.	• This action may not benefit older structures not subject to newer building codes. • $0 additional costs, percentage of existing $7,500 Building Inspector budget *(source: 2018 Mason Town budget item)*
Inventory of town-wide special needs and at-risk population for preparedness planning as well as a town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.	• Helps vulnerable populations • Voluntary participation	• May be difficult to get personal contact information • Voluntary participation means not everyone would be covered • $750 annually *(source: Mason Operating Budget, Emergency Management appropriation)*
Identify and become knowledgeable of non-compliant structures in the community	• This action would be most beneficial to residents in flood-prone areas of Town. • This action has the potential to reduce flood related structural damage and economic losses.	• Some individuals may view these building standards as an economic hardship. • Additional responsibility for building inspector. • $0 additional costs, percentage of existing $7,500 Inspectional Services budget *(source: 2018 MasonTown budget item)*
Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM.	• Educate residents, builders, and other professionals about NFIP • Reduce property loss costs	• Minimal, part of normal town operations • $0 additional costs, percentage of existing $7,500 Inspectional Services budget *(source: 2018 Mason Town budget item)*
Post signage that restricts withdrawal of water from fire ponds that are vulnerable to drought. Monitor water supply	• This action has environmental benefits if residents comply with	• This action may have limited impact if there is not an accompanying enforcement mechanism.

Mitigation Action	Likely Benefits	Likely Costs
and drought conditions. Utilize NH Division of Forest and Lands reports and consult the New Hampshire Drought Management Team (DMT) and the State Drought Management Plan to monitor drought indicators. Drought regions and updates on the drought status may be found here.	reduced water consumption measures. • This action may help ensure adequate water supply for firefighting and emergency management purposes.	• $0 additional costs, percentage of existing $1,500 Fire Dept. Waterhole maintenance budget *(source: 2018 Mason Town budget item)*
Design a "natural runoff" or "zero discharge" policy for stormwater in subdivision design to improve floodplain management in Mason.	• This action would be most beneficial to residents in flood-prone areas of Town. • This action has the potential to reduce flood related structural damage and economic losses.	• Some individuals may view these building standards as an economic hardship. • $0 in additional costs. Established and enforced by the Planning Board
Continue to work with Eversource to harden electrical infrastructure, including trimming trees near power lines.	• Trimming trees near power lines would reduce the risk of outages. • Fewer trees directly along road would also reduce root systems in roadways, allow more sunlight for better snowmelt, and improve overall improve road conditions.	• Removal of trees along designated scenic roads requires Planning Board approval • Tree removal may be incompatible with local aesthetics • Burying power lines may be cost prohibitive • $1,200-$1,500 per large tree for removal *(source: 2018 Mason Town budget TBG-Maintenance-Tree item)*
Protect critical facilities and equipment from lightning damage. Install lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities.	• Reduced inconvenience and loss associated with a shutdown of critical facilities due to lightning damage.	• $1,000-$5,000 per critical facility for lightning protection devices *(source: Mason Operating Budget, General Government Buildings appropriation)*

Mitigation Action	Likely Benefits	Likely Costs
Tightly control burn permits and revoke when not properly and safely being utilized. Provide education on wildfire danger to residents when they apply for burn permits. Conduct education on campfire safety at schools. Post fire danger categories. Continue roadside mowing to reduce the likelihood of wildfires spreading and clear brush from around fire ponds.	• This action would result in reduced fire-fighting costs. • This action would be most beneficial to portions of Town near wooded areas. • Sound forestry practices can help reduce the risk of wildfire. • This action would also be beneficial to mitigate man-made fire related hazards.	• Implementing this action may outweigh the benefits of reduced property damage. • Opinions vary about wildfire management, so this action could cause social and political tension. • Enforcement of burn permits can be costly. • $0 additional costs, percentage of existing Fire Dept. and Public Works budgets *(source: 2018 Mason Town budget item)*

After completing a Benefit Cost review for each action, the Hazard Mitigation Team then prioritized the actions by conducting a STAPLEE Analysis, which stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental factors. For each mitigation action, the Team asked the following questions:

- Social— Will the action unfairly affect any one segment of the population? Will it disrupt established neighborhoods? Is it compatible with present and future community values? Will it adversely affect cultural resources?
- Technical—How effective is the action in avoiding or reducing future losses? Will it create more problems than it solves? What are some secondary impacts? Does it solve a problem or only a symptom?
- Administrative— Does the community have the capability to implement the action? Can the community provide the necessary maintenance? Can it be accomplished in a timely manner?
- Political— Is there public support both to implement and maintain the action? Is the political leadership willing to support it? Does it present a financial burden to stakeholders?
- Legal— Does the community have the authority to implement the action? Is enabling legislation necessary? What are the legal side effects? Will the community be liable for the actions, support of actions, or lack of actions?
- Economic— What are the costs of this action? How will the costs be borne? Are state/federal grant programs applicable? Does the action fit into existing capital improvements or economic development budgets?
- Environmental— How will this action affect the environment? Does it comply with local, state, and federal environmental regulations? Is it consistent with community environmental goals? Are endangered or threatened species likely to be affected?

The cost and benefit of each mitigation action were then evaluated and assigned a quantitative score based on the STAPLEE criteria.

Benefit Score Range: 0 = Not Beneficial, 1 = Somewhat Beneficial, 2 = Beneficial, 3 = Very Beneficial

Cost Score Range: 0 = Not Costly, -1 = Somewhat Costly, -2 = Costly, -3 = Very Costly

Next, the scores for each action were added to determine priority. Finally, the Hazard Mitigation Team reviewed the scores and resulting prioritization to make sure it was consistent with the Town's goals and Master Plan. The STAPLEE analysis and prioritized mitigation actions appear in Table 11 below.

Table 11—STAPLEE Analysis

Mitigation Action: Replace culverts on Starch Mill Road, Wilton Road, Russell Road, and Briggs Road. Replace and upgrade old undersized culverts to provide adequate capacity.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action is compatible with present and future community values, including ensuring safe, reliable transportation. This action could be disruptive to residents living near construction.	0	3
Technical	This action solves the problem of roadway flooding.	0	3
Administrative (including responsible party)	Mason has the ability to administer and maintain this action. The Mason Road Agent is the responsible party. Actual implementation of this project will be subcontracted out to a construction and engineering firm.	0	3
Political	There is public and political support to implement and maintain this action.	0	3
Legal	Mason has the legal authority to implement this action.	0	3
Economic (including direct cost)	Culvert replacement costs will be funded by the existing $450,515.35 Highway Town Maintenance Budget.	-2	3
Environmental	This action is beneficial to the environment by reducing flooding and road washout.	0	2
Subtotal		**-2**	**20**
Total		**18**	
Priority		**1**	

Mitigation Action: Review and update Building Codes, Floodplain Ordinance, and Zoning Regulations. Proactively enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquake, flooding, severe wind, severe winter weather, and tornado.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	There are not social impacts associated with this action. Enforcement would apply evenly across all applicable buildings, including new construction, major renovations, and changes of use.	0	3
Technical	This action is effective at avoiding and reducing future losses and it mitigates the impacts of these hazards.	0	3
Administrative (including responsible party)	Mason has the capability to implement this action. Responsibility would fall under the Mason Building Inspector.	0	3
Political	There is public support for this action. Concerns may exist among some property owners who would be directly impacted.	-1	2
Legal	Mason has adopted these codes and has the legal authority to enforce them.	0	2
Economic (including direct cost)	There would be no additional costs associated with enforcing building codes, as it falls under the existing $9,239.75 Building Inspection budget. This action could have a positive economic impact by reducing the number of emergency response calls.	0	2
Environmental	This action has the potential to reduce property damage and subsequent environmental impacts.	0	2
Subtotal		**-1**	**17**
Total		**16**	
Priority		**2**	

Mitigation Action: Inventory of town-wide special needs and at-risk populations for mitigation planning as well as town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This is a voluntary program, so it would not affect any one segment of the population. Helping vulnerable populations is compatible with community values.	0	3
Technical	This action is only effective at avoiding or reducing future losses if residents voluntarily participate in it.	0	2
Administrative (including responsible party)	The Town has the capability to implement this action if information is voluntarily provided by residents. The Mason Emergency Management Director or Fire Chief is responsible for implementing this action.	0	3
Political	There is political support for this action.	0	2
Legal	The Town has the authority to implement this action and no enabling legislation is necessary. Participation in this program in entirely voluntary.	0	2
Economic (including direct cost)	This action would cost roughly $750 annually. It is consistent with normal town operations and does not impose additional economic costs.	0	3
Environmental	This action would not impact the environment.	0	0
Subtotal		**0**	**15**
Total		**15**	
Priority		**3**	

Mitigation Action: Protect vulnerable populations from the impacts of extreme temperatures by establishing cooling and warming stations at community centers. Develop targeted outreach methods, including notifying occupants of senior housing facilities.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action primarily benefits Mason's most vulnerable residents. It is compatible with present and future community values.	0	2
Technical	This action does not solve the problem of extreme temperatures, but it does solve the symptom of exposure. Extreme temperatures are very likely to occur in Mason, so mitigation measures are important.	0	2
Administrative (including responsible party)	Mason has the capability to implement this action. The Mason Emergency Management Director is responsible for it and it falls under ongoing emergency management operations. This action can be implemented in a very timely manner.	0	2
Political	There is public support to implement and maintain this action.	0	2
Legal	Mason has the legal authority to implement this action.	0	2
Economic (including direct cost)	This action falls under Mason's existing $19,861 Emergency Management budget and does not impose additional costs on the Town.	0	2
Environmental	There are no environmental impacts associated with this action.	0	2
Subtotal		**0**	**14**
Total		**14**	
Priority		**4**	

Mitigation Action: Tightly control burn permits and revoke when not properly and safely being utilized. Provide education on wildfire danger to residents when they apply for burn permits. Conduct education on campfire safety at schools. Post fire danger categories. Continue roadside mowing to reduce the likelihood of wildfires spreading and clear brush from around fire ponds.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action does not unfairly impact any segment of the population and it is compatible with present and future community values.	0	2
Technical	This action helps to avoid or reduce future losses. Wildfire poses danger during dry periods, which Mason has been experiencing in recent years. It has the potential to solve the underlying problem of wildfires by removing the fuel source. It will not create additional problems or cause secondary impacts.	0	3
Administrative (including responsible party)	Mason has the capability to implement this action, although it poses an additional burden on the Fire Dept., particularly for enforcement of burn permits. Eversource is responsible for removing underbrush and standing deadwood under power lines.	-2	3
Political	There is public and political support for this action.	0	2
Legal	Mason has the legal authority to implement this action.	0	2
Economic (including direct cost)	The benefits of reduced fire-fighting costs and potential decrease in property damage could exceed the costs of implementing this action. At the same time, large scale wildfires are relatively rare in Mason and therefore the costs of implementing this action may outweigh the benefits. Eversource would be responsible for the direct costs of brush removal under power lines.	-2	3
Environmental	Fire is a natural part of the ecosystem and suppressing it may have negative consequences. On the other hand, large-scale, man-made fires can have a detrimental impact on the environment.	0	2
Subtotal		**-4**	**17**
Total		**13**	
Priority		**5**	

Mitigation Action: Post signage that restricts withdrawal of water from fire ponds that are vulnerable to drought. Restrict municipal water usage during periods of drought. Monitor water supply and drought conditions. Utilize NH Division of Forest and Lands reports and consult the New Hampshire Drought Management Team (DMT) and the State Drought Management Plan to monitor drought indicators. Drought regions and updates on the drought status may be found here.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action does not unfairly impact any segment of the population and it is compatible with present and future community values.	0	1
Technical	This action helps to solve symptoms of drought my making emergency response personnel and residents aware of current conditions. Monitoring alone has limited ability to reduce future loss—additional action is needed.	-1	1
Administrative (including responsible party)	The Mason Fire Dept. is responsible for monitoring water supply and drought conditions.	0	3
Political	There is public and political support for this action.	0	2
Legal	Mason has the legal authority to implement this action.	0	2
Economic (including direct cost)	Monitoring costs are covered under the existing $1,500 Fire Dept. Waterhole Maintenance budget.	-1	2
Environmental	This action has a positive impact on the environment by providing the data needed to promote water conservation.	0	3
Subtotal		**-2**	**14**
Total		**12**	
Priority		**6**	

Mitigation Action: Identify and become knowledgeable of non-compliant structures in the community.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action may be viewed as placing an economic burden on residents building new homes and properties. It would benefit residents in flood-prone areas by reducing flood damage.	-1	2
Technical	This action would help to avoid or reduce future losses. It has more potential to solve symptoms related to flooding rather than the underlying problem itself. It will not create additional problems or cause secondary impacts.	0	2
Administrative (including responsible party)	The Town has the capacity to administer this action. The Mason Building Inspector is responsible for oversight of this action and private surveyors would be responsible for implementation.	0	2
Political	There are no political issues associated with this action.	0	1
Legal	The Town has the authority to implement this action and no enabling legislation is necessary.	0	2
Economic (including direct cost)	Some landowners may believe they will face an economic hardship if they are required to take extra measures in order to build in flood-prone areas. Private surveyors would be responsible for the direct costs related to this action. Oversight for this action is consistent with normal town operations and would come out of the $9,239.75 Mason Inspectional Services budget.	-1	2
Environmental	This action has the potential to reduce property damage and subsequent environmental impacts.	0	2
Subtotal		**-2**	**13**
Total		**11**	
Priority		**7**	

Mitigation Action: Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would not unfairly affect any segment of the population, disrupt established neighborhoods, or adversely affect cultural resources.	0	1
Technical	This action would help to avoid or reduce future losses. It would not create additional problems or cause secondary impacts.	0	2
Administrative (including responsible party)	Mason has the capability to implement this action. The Mason Building Inspector would be responsible for it.	0	1
Political	There is public support to implement and maintain this action. The political leadership is also willing to support it.	0	1
Legal	Mason has the legal authority to implement this action.	0	1
Economic (including direct cost)	This action is consistent with normal town operations and does not impose additional economic costs.	0	1
Environmental	This action has the potential to reduce property damage and subsequent environmental impacts only if the specified parties understand and correctly utilize the FIRM.	0	1
Subtotal		**0**	**15**
Total		**10**	
Priority		**8**	

Mitigation Action: Continue to work with Eversource to harden electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would not unfairly affect any segment of the population or disrupt established neighborhoods. It is compatible with community values that understand trees need to be trimmed for road maintenance and public safety	0	2
Technical	This action would be effective in avoiding or reducing future losses. It is very likely that a severe winter storm or severe wind event will occur and impact power lines. It would not create more problems than it solves, and it solves the problem rather than only a symptom. Fewer trees directly along the road would also improve drainage, reduce rood systems in the roadway, and allow more sunlight to melt the snow, all resulting in better road conditions.	0	2
Administrative (including responsible party)	Mason has the capacity to implement this action. The Mason Road Agent and Eversource would be the responsible parties.	0	1
Political	In general there is political support for this action, although there may be some opposition to tree trimming along designated scenic roads.	-1	2
Legal	The Town does not have the authority to trim trees along scenic roads without first receiving approval from the Planning Board. The Planning Board has the legal authority to declare dead trees along a scenic road a public hazard and therefore allow them to be removed.	-2	3
Economic (including direct cost)	Some costs associated with this action would be borne by Eversource. The remaining costs would be borne by the Town. The removal of large trees would cost an estimated $1,200-$1,500 per large tree and would be performed by a hired contractor. The removal of small trees would be performed by the Road Agent. The benefits of a more resilient electrical infrastructure far outweigh the costs of this action.	-2	3
Environmental	This action would positively impact the environment by improving road drainage and decreasing the need to use ice melting agents.	0	1
Subtotal		**-5**	**14**
Total			**9**
Priority			**9**

Mitigation Action: Design a "natural runoff" or "zero discharge" policy for stormwater in subdivision design to improve floodplain management in Mason.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would affect property owners. It would have a positive social impact on the community by reducing flooding.	-1	2
Technical	This action helps solve the problem of flood related damage. It is effective in reducing future losses.	0	2
Administrative (including responsible party)	Mason has the capability to implement this action. Revisions to subdivision regulations require a public hearing. The Planning Board is the responsible party for this action.	-1	2
Political	There is public support for this action, though concerns exist among some property owners who would be directly impacted.	-1	1
Legal	Mason has the legal authority to implement this action.	0	1
Economic (including direct cost)	The estimated cost to update ordinances and regulations is $10,000. It is recommended that this action is completed in conjunction with similar mitigation actions to maximize economic benefits.	-1	2
Environmental	This action has positive environmental impacts by encouraging natural runoff and reduced stormwater runoff. It is consistent with community environmental goals.	0	2
Subtotal		**-4**	**12**
Total		**8**	
Priority		**10**	

Mitigation Action: Protect critical facilities and equipment from lightning damage. Install lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities.			
Criteria	**Evaluation**	**Cost**	**Benefit**
Social	This action would not unfairly affect any segment of the population, disrupt established neighborhoods, or adversely affect cultural resources.	0	1
Technical	This action is effective in avoiding or reducing future losses. It would not create more problems than it solves. It would reduce the inconvenience from a shutdown of critical facilities resulting from power outages. However, incidents related to lightning are very rare in Mason.	-1	3
Administrative (including responsible party)	Mason has the capacity to implement this action. Each critical facility department head is responsible for implementing the installation of lightning protection devices.	0	1
Political	There is political support to implement and maintain this action.	0	1
Legal	Mason has the authority to implement this action.	0	1
Economic (including direct cost)	The cost of $1,000-$5,000 per critical facility for lightning protection devices would come out of the Mason Operating Budget, General Government Buildings appropriation. The cost of taking this action is less than the potential costs of damage to critical electronics and facilities.	-1	2
Environmental	This action would not impact the environment.	0	0
Subtotal		**-2**	**9**
Total		**7**	
Priority		**11**	

Section 4.4 ~ Implementing and Administering Mitigation Actions

The Town of Mason has integrated its 2011 Hazard Mitigation Plan into a variety of other planning mechanisms, including the Town of Mason Proposed Budget. In addition, the Town of Mason has incorporated and will continue to integrate requirements of the Mason Hazard Mitigation Plan Update 2018 into other planning mechanisms and actions, such as upcoming master plan and regulatory updates.

The Mason Hazard Mitigation Team will be responsible for helping Town boards and departments to integrate the Hazard Mitigation Plan into their own planning mechanisms. The Hazard Mitigation Team developed Table 12, which is an action plan that outlines who is responsible for implementing the prioritized mitigation actions, how they will be funded, and when they will be completed.

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

**Ongoing indicates that the action will be completed on an ongoing basis throughout the life of the Plan.*

Table 12—Implementation and Administration

Priority	Mitigation Action	Responsible Party	Cost & Funding	Timeframe
1	Replace culverts on Starch Mill Road, Wilton Road, Russell Road, and Briggs Road. Replace and upgrade old undersized culverts to provide adequate capacity.	Road Agent	Cost = $0 additional costs, percentage of the existing $450,515.35 Highway Town Maintenance Budget Funding Source: Mason Town budget item	Short Term
2	Review and update Building Codes, Floodplain Ordinance, and Zoning Regulations. Proactively enforce the International Building Code (IBC) and International Residential Code (IRC) to protect buildings and infrastructure from the impacts of earthquake, flooding, severe wind,	Building Inspector	Cost = $0 additional costs, percentage of the existing $9,239.75 Building Inspection budget. Funding Source: Mason Town budget item	Short Term

Priority	Mitigation Action	Responsible Party	Cost & Funding	Timeframe
	severe winter weather, and tornado.			
3	Inventory of town-wide special needs and at-risk populations for mitigation planning as well as town-wide questionnaire to identify privately maintained social and physical resources available to town officials during an emergency response.	Fire Chief/Emergency Management Director	Cost = This action would cost roughly $750 annually but is consistent with normal town operations and does not impose additional economic costs. Funding Source: Mason Town Budget	Short Term
4	Protect vulnerable populations from the impacts of extreme temperatures by establishing cooling and warming stations at community centers. Develop targeted outreach methods, including notifying occupants of senior housing facilities.	Emergency Management Director	Cost = $0 additional costs, this action falls under Mason's existing $19,861 Emergency Management budget Funding Source: Mason Town budget item	Short Term
5	Tightly control burn permits and revoke when not properly and safely being utilized. Provide education on wildfire danger to residents when they apply for burn permits. Conduct education on campfire safety at schools. Post fire danger categories. Continue roadside mowing to reduce the likelihood of wildfires spreading and clear brush from around fire ponds.	Fire Department	Cost = $0 additional costs, percentage of existing Fire Dept. and Public Works budgets Funding Source: Mason Town budget item	Short Term
6	Post signage that restricts withdrawal of water from fire ponds that are vulnerable to drought. Restrict municipal water usage during periods of drought. Monitor water supply and drought conditions. Utilize NH Division of Forest and Lands reports and consult the New Hampshire	Fire Department	Cost = $0 additional costs, percentage of existing $1,500 Fire Dept. Waterhole Maintenance budget Funding Source: Mason Town budget item	Short Term

Priority	Mitigation Action	Responsible Party	Cost & Funding	Timeframe
	Drought Management Team (DMT) and the State Drought Management Plan to monitor drought indicators. Drought regions and updates on the drought status may be found here.			
7	Identify and become knowledgeable of non-compliant structures in the community	Building Inspector	Cost = $0 additional costs, percentage of the existing $9,239.75 Building Inspection budget. Funding Source: Mason Town budget item	Short Term
8	Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM.	Building Inspector	Cost = $0 additional costs, percentage of the existing $9,239.75 Building Inspection budget. Funding Source: Mason Town budget item	Short Term
9	Continue to work with Eversource to harden electrical infrastructure, including trimming trees near power lines. Consider the costs and benefits of requiring that overhead power lines be buried in all new developments.	Road Agent	Cost = $1,200-$1,500 per large tree for removal Funding Source: Mason Town budget item – Highway Town Maintenance	Short Term
10	Design a "natural runoff" or "zero discharge" policy for stormwater in subdivision design to improve floodplain management in Mason.	Planning Board	Cost = $10,000 to update ordinances and regulations; complete in conjunction with similar mitigation actions Funding Source: Mason Planning Department budget	Medium Term
11	Protect critical facilities and equipment from lightning damage. Install lightning protection devices and methods, such as lightning	Each Critical Facility Department Head	Cost = $1,000-$5,000 per critical facility for lightning protection devices	Long Term

Priority	Mitigation Action	Responsible Party	Cost & Funding	Timeframe
	rods and grounding, on communications infrastructure and other critical facilities.		Funding Source: Mason Town Gen. Gov. Buildings budget item	

CHAPTER 5. PLAN ADOPTION

Section 5.1 ~ Formal Adoption by Governing Body

CERTIFICATE OF ADOPTION

TOWN OF MASON, NH BOARD OF SELECMEN

A RESOLUTION ADOPTING THE TOWN OF MASON, NH HAZARD MITIGATION PLAN UPDATE 2018

WHEREAS, the Town of Mason has historically experienced damage from natural hazards and it continues to be vulnerable to the effects of climate change, drought, earthquake, extreme temperatures, flooding, severe wind, lightning, severe winter weather, tornado, and wildfire, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Mason has developed and received conditional approval from the New Hampshire Homeland Security and Emergency Management (NH HSEM) for its Hazard Mitigation Plan Update 2018 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between October 25, 2017 and February 28, 2018 regarding the development and review of the Hazard Mitigation Plan Update 2018; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedures for the Town of Mason; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Mason, 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 Mason eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by the Mason Board of Selectmen:

1. The Plan is hereby adopted as an official plan of the Town of Mason
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.

4. An annual report on the progress of the implementation elements of the Plan shall be presented to the City Council/Board of Selectmen by the Mason Hazard Mitigation Team.

Adopted this day, the 24th **of** July**, 2018.**

_____

Bernard O'Grady, Chair, Mason Board of Selectmen

_____

Charles Moser, Mason Board of Selectmen

_____

Louise Lavoie, Mason Board of Selectmen

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Town of Mason the 24 of July, 2018.

_____

Witness

Section 5.2 ~ FEMA Approval Letter

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

FEMA

AUG 0 6 2018

Whitney Welch
State Hazard Mitigation Officer
NH Department of Safety
Homeland Security and Emergency Management
33 Hazen Drive
Concord, NH 03303

Dear Ms. Welch:

We would like to acknowledge the Town of Mason and the State of New Hampshire for their dedication and commitment to mitigation planning.

As outlined in the FEMA-State Agreement for FEMA-DR-4316 your office has been delegated the authority to review and approve local mitigation plans under the Program Administration by States Pilot Program. On **July 27, 2018** our Agency was notified that your office completed its review of the Town of Mason, New Hampshire Hazard Mitigation Plan Update 2018 and determined it meets the requirements of 44 C.F.R. Pt. 201.

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

Approved mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Complete information regarding the CRS can be found at http://www.fema.gov/national-flood-insurance-program-community-rating-system, or through your local floodplain administrator.

The Town of Mason, New Hampshire Hazard Mitigation Plan Update 2018 must be reviewed, revised as appropriate, and resubmitted to New Hampshire Homeland Security and Emergency Management for approval within **five years of the plan approval date of July 27, 2018** in order to maintain eligibility for mitigation grant funding. We encourage the Town to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

AUG 0 6 2018

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Melissa Surette at (617) 956-7559.

Sincerely,

Douglas F. Wolcott Jr.
Acting Deputy Regional Administrator

PFF: ms

cc: Fallon Reed, Chief of Planning, New Hampshire
Kayla Henderson, Hazard Mitigation Planner, New Hampshire
Jennifer Gilbert, New Hampshire State NFIP Coordinator